ERIA Research Project Report 2020, No. 20

Joint Study on 10+3 Cooperation for Improvement of Supply Chain Connectivity

ASEAN Sub-Report

Economic Research Institute for ASEAN and East Asia

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Preface

This report is part of the Joint Study on 10+3 Cooperation for Improvement of Supply Chain Connectivity, which was submitted to the 23rd ASEAN Plus Three Summit in November 2020. Other parts of the joint study include the overview and joint policy recommendations published in the ASEAN Secretariat website (ASEAN, 2020b); as well as the China report prepared by the Chinese Academy of International Trade and Economic Cooperation, the Japan report prepared by the Japan External Trade Organization, and the Republic of Korea report prepared by the Korea Institute for International Economic Policy. The Joint Study was mentioned in the chairman's statement of the 23rd ASEAN Plus Three Summit (ASEAN, 2020a).

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Study Background

The Economic Research Institute for ASEAN and East Asia (ERIA) implemented the Association of Southeast Asian Nations (ASEAN) portion of the project, Joint Study on 10+3 Cooperation for Improvement of Supply Chain Connectivity. The objective of ERIA's study was to provide insights on the operation and resilience of supply chains in the region in the face of uncertainties, such as the coronavirus disease (COVID-19), from the viewpoint of ASEAN. The ERIA team gathered the latest information on the impact of COVID-19 in ASEAN, interviewed company executives, and held focus group discussions with experts. We collected data from Cambodia, Indonesia, Malaysia, the Philippines, Singapore, Thailand, and Viet Nam, and held focus group discussions in Indonesia, Malaysia, and Viet Nam. Country-based consultants implemented the study, adhering to the prescribed methodology, and submitted country reports. The ERIA team then analysed the results of individual country studies and developed insights for ASEAN. The result of the analysis and the policy recommendations for an exit strategy are in this report.

ERIA staff members directly involved in the study are:

- Dr. Dionisius Narjoko (Senior Economist),
- Dr. Rashesh Shrestha (Economist),
- Mr. Salvador Buban (Policy Fellow),
- Mr. Pyan Muchtar (Research Associate), and
- Mr. Edo Setyadi (Research Associate).[*]

The views expressed in the ERIA sub-report are those of the project members listed above and may not be attributed to ERIA.

[*] Dr. Ayumi Kodama was a project member until July 2020, after which she left ERIA.

1. Introduction

The growth of the Association of Southeast Asian Nations (ASEAN) is driven largely by internationally integrated economic activities. Much of the important manufacturing in the region – such as the automotive; electrical and electronics; textile and garment; and footwear industries – serves foreign markets and utilises imported inputs. As discussed in the Overview chapter, China, Japan, and the Republic of Korea are key sources of imported inputs and investments and destinations of intermediate and finished products, and thus carry a large weight in these sectors. The importance of each sector varies across ASEAN Member States (AMS). Middle-income AMS are engaged in the more advanced automotive and electrical and electronics supply chains. Emerging AMS have seen rapid growth in textiles and garments.

Largely because of their business model, the sectors are closely integrated within ASEAN and with China, Japan, and the Republic of Korea. Automotive companies apply brand-to-brand complementation schemes: companies with multiple factories in ASEAN countries produce different components in accordance with their specialties and complement each other. Countries manufacturing electrical and electronics supply and import raw materials to and from China, the Republic of Korea, and Japan. The garment and textile industry employs a cut-make-trim model: most raw materials are imported and instructions for cutting and sewing them come from the clothing brand's specifications.

These linkages are evident in AMS' manufacturing activities. Cambodia's garment and textile and footwear industries, which account for about 70% of the country's total exports in 2019, rely heavily on importing raw materials and intermediate goods from China, the Republic of Korea, Malaysia, Thailand, and Viet Nam. In Indonesia, almost three-quarters (72%) of exports are sent to Asian countries and most raw and supporting materials are imported from Asian countries. For instance, 30%–50% of raw materials used in the plastics, garment and textile, footwear, steel, and chemical industries rely on supply from China. In the case of the Philippines, the first, second, and fourth largest import partners are China, Japan, and the Republic of Korea, with a combined share of over one-third. In Malaysia's electrical and electronics sector, the import content of exports as a share of exports is over 50%. Businesses in Singapore, although mostly focused on services, continue to rely on China, India, Japan, the Republic of Korea, and Malaysia for products, services, and labour.

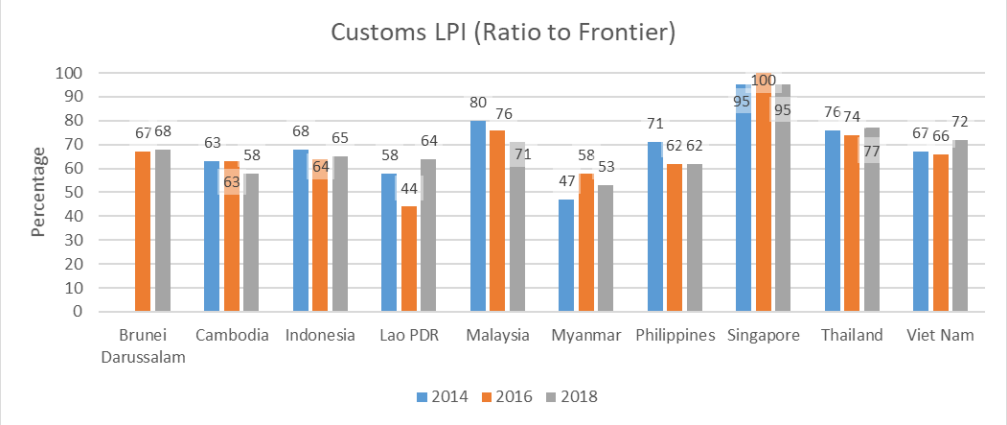
ASEAN is the major destination for Thailand's exports while China and Japan are sources of imports. Japan and Singapore are by far the largest investors in the country and account for slightly more than half of foreign direct investment inflows. Viet Nam has become increasingly competitive in processing and manufacturing, and saw import and export turnover grow by an average of 14.1% per year during 2000–2019. The proportion of the foreign value-added contribution to the country's export value added is more than 40%. Supplies from China, Japan, and the Republic of Korea are important to Viet Nam's garments and textiles and electrical and electronics industries. With such production structures,

efficiency and connectivity of the supply chain have a large impact on the economic growth of all AMS.

Given the importance of supply chains, creating an environment for seamless flow of goods within the region is high on ASEAN's agenda. The ASEAN Economic Community (AEC) Blueprint 2025 envisions 'a deeply integrated and highly cohesive ASEAN economy'. ASEAN's commitment to this goal is reflected in the ASEAN Economic Ministers' meeting decision in 2017 to reduce trade transaction costs in the region by 10% by 2020, which has provided an impetus for AMS to quickly implement best practices in trade facilitation. Improvement in intra-ASEAN connectivity is likely to positively impact supply chain connectivity amongst ASEAN Plus Three countries.

The current status of supply chain connectivity varies across member states, with highly trade- dependent AMS such as Singapore setting global standards, while the developing AMS continuously develop their infrastructure and improve their practices. According to the most recent Logistics Performance Indicator (LPI), which is based on perceptions of logistics professionals, Malaysia, Singapore, Thailand, and Viet Nam are the top performers in the region (ratio to frontier above 70%), while the rest have significant room for improvement. The Lao People's Democratic Republic (LaoPDR) and Viet Nam have seen quick improvement from 2016 to 2018, whilst Malaysia and the Philippines have experienced slight decline.

Figure 1: Logistics Performance Indicators for ASEAN Member States.



Source: World Bank.

The COVID-19 pandemic has not only affected domestic economies but also disrupted supply chains, creating additional difficulties for ASEAN-based firms in internationally integrated sectors. Many businesses in ASEAN, for which exports comprise a large percentage of revenue, suffered because of reduced foreign demand. Slower industry output has dampened demand for capital and materials. Reduced movement of cargo has increased costs to businesses that rely on foreign inputs, which now need to be shipped by air. Restrictions on domestic and international travel have immobilized experts and technicians needed in key sectors, delaying production. The pandemic has brought into sharp relief the

importance of a seamless flow of goods and services amongst ASEAN Plus Three countries for economic growth.

The breakdown of supply chains caused by the COVID-19 pandemic was a major source of economic disruption, prolonged by continued restrictions on international travel even as many countries' economies have returned to normal. In Cambodia, garment manufacturing suffered because of temporary disruptions in the supply of raw materials from China and elsewhere in the early stage of the pandemic because factories closed. The disruption forced more than 100 garment factories to reschedule working hours, temporarily suspend operations or even close down, affecting more than 100,000 workers.

In Indonesia, the supply of raw materials, intermediate inputs, and capital goods for a number of industries was disrupted during the early period of the pandemic (January to March 2020), affecting many manufacturers, especially of plastics, textiles and garments, footwear, steel, and chemicals. Most inputs originated from China; the recorded drop in imports was 16%–18% of the normal level for all intermediate inputs and capital goods. The Indonesia Statistics Bureau documented that the import value of raw materials decreased by 15.89% and imports of capital goods decreased by 18.03%.

In Malaysia, electrical and electronics companies have reported losses on export contracts or orders, with cumulative losses amounting to RM7.28 billion (US$1.75 billion) of gross domestic product (GDP) and RM29 billion (US$7billion) in exports.

In the Philippines, during the quarantine (first quarter [Q] 2020 data), the sectors that contributed the most to the GDP decline included mining and quarrying, accommodation and food service, transport and storage, other services, manufacturing, and construction. Positive growth rates were recorded, however, in finance and insurance, human health and social work activities, information and communication, electricity, steam water and waste treatment, real estate and homeownership, and wholesale and retail trade. Exports had been declining since Q2 2019 but they declined sharply in Q2 2020. Imports of goods and services declined noticeably in Q1 and Q2 of 2020.

Despite successfully preventing the spread of the disease, Viet Nam suffered from disruptions in the supply chain. Many firms found it difficult to import raw materials from APT countries. Textile production and exports have faced many difficulties caused by the shortage of raw materials, the sharp decrease in export orders (postponement or cancellation), and delays in delivery and payment. The textile and garment industry lost up to an estimated 50% of orders in May, and about 60% of enterprises lacked supply, mostly imported raw materials for multinational companies.

The region's international production networks have developed over several decades and are mostly resilient to temporary shocks. The disruptions caused by the COVID-19 pandemic, however, are unlike anything that the region has had to face in recent times. In addition, the pandemic could alter the growth trajectory of developing ASEAN countries, which have recently started integrating into the supply chain.

2. ASEAN's Policy Environment amid the COVID-19 Pandemic

Many of the policies to fight the spread of the disease have caused difficulties in operating the supply chain. During the start of the pandemic, many countries implemented strict lockdown protocols, including limits on travel and economic activity, that severely limited the operation of non-essential businesses. Since the first COVID-19 case was reported in early March, the Brunei Darussalam government has imposed 14-day self-isolation on anyone entering the country, with stiff penalties for violations, and banned travel, restricted public gatherings, and enforced a work-from-home policy.

In Cambodia, inbound and outbound flights were banned, and domestic travel restrictions introduced during Khmer New Year (9–16 April). The country has few confirmed COVID-19 cases and no community transmission, so the government never imposed an economic lockdown.

Indonesia issued large-scale social restriction (PSBB) in several cities in response to the COVID-19 pandemic. This measure was implemented by local governments under the surveillance of the Ministry of Health, but a national lockdown has never been imposed. Jakarta was one of the first provinces to formally implement PSBB, in early April, followed by other provinces in April–May 2020. Under PSBB, companies were encouraged to continue their operations through work from home, schools shifted to teaching online, and public places such as places of worship and entertainment centres were closed. Essential businesses could remain open.

The Lao PDR government adopted a nationwide lockdown in April–May 2020 to prevent COVID-19 transmission. Residents were ordered to stay home while essential businesses remained open. Before the lockdown, the government had already restricted mass gatherings, asked people to practice social distancing, implemented a 14-day quarantine for travellers, suspended tourist visas, and closed all border checkpoints with Thailand.

Malaysia was one of the first countries in Southeast Asia to issue a movement control order, on 18 March, to contain the spread of disease. Only critical sectors were allowed to operate and only with government-approved skeleton staff. Since 15 September, the government has banned travellers from countries with more than 150,000 cumulative COVID-19 cases.

In Myanmar, the government took precautionary measures by imposing curfews in some cities, including Yangon; stay-at-home orders in several townships in the Yangon region; and a travel ban, complementing the 14-day quarantine measure for all travellers to Myanmar. Factories were allowed to open after government inspections, and pharmaceutical and food factories and factories with more than 1,000 workers could open under social-distancing and compulsory mask-wearing protocols. The government restricted public gatherings, closing schools and entertainment centres and reducing public transport passenger capacity.

In the Philippines, the government raised the COVID-19 alert system on 12 March, and imposed stringent social-distancing measures in the National Capital Region for 30 days, including the suspension of classes, closing of public offices, and prohibition of mass

gatherings, as well as the adoption of flexible work arrangements in the private sector and community quarantine protocols in some affected areas. Domestic air, land, and sea travel to the capital was suspended for 48 hours after the emergency declaration, although public transport systems remained operational.

Viet Nam took proactive, comprehensive measures to prevent and combat the spread of the pandemic immediately after the first COVID-19 case was confirmed on 23 January. The measures included isolating, tracing, and tracking potentially exposed people, and keeping people out of infected areas; closing borders; implementing medical declarations; and distributing information. Public gatherings were limited. In many places, the authorities checked body temperature, gave out disinfectants, distributed free face masks in public places, and tightened control methods.

To reduce economic damage, AMS instituted fiscal measures such as direct assistance, interest rate cuts, debt restructuring, tax reductions, and price cutting for essential services.

In Brunei Darussalam, the government implemented several targeted measures, particularly deferred payment of taxes, utilities, and social security, to assist individuals and micro, small, and medium-sized enterprises (MSMEs) affected by COVID-19, especially in the tourism, hospitality, transport, and restaurant sectors. A BND450 million stimulus package covered the deferment of principal or loan repayment and exemption from fees and charges. The government announced a BND400 special allowance for healthcare workers and financial aid for market vendors and taxi drivers.

In Cambodia, the government implemented the following measures: (i) laid-off garment workers received US$70 (US$40 from the government and US$30 from employers); (ii) small and medium-sized enterprises (SMEs) affected by the pandemic were eligible for tax holidays of 6–12 months; (iii) a co-financing mechanism for government-owned SME banks and financial institutions has been established to provide low interest rates to affected SMEs; and (iv) cash was given to eligible poor families.

In Indonesia, the government issued fiscal stimulus of Rp695.20 trillion for public health spending, social protection, business incentives, and others. Business incentives consist of labour income tax exemption, entity income tax relaxation, tax instalment reduction, and preliminary value-added tax (VAT) refunds. In Thailand, tax measures include payment extension, reduction of withholding tax, income tax deduction for SMEs, faster VAT refund, and exemption from import duties for products related to preventing or treating COVID-19.

The Lao People's Democratic Republic government has allocated LAK10 billion for the prevention and control of COVID-19. In April, the Ministry of Finance issued a policy granting 3 months' tax exemption to MSMEs with an annual income of LAK50 million–LAK400 million, and to employees earning less than LAK5 million a month. Other measures include duty fee exemption for imported goods used to control the COVID-19 outbreak, tax exemption for tourism-related businesses, and postponement of mandatory social security contributions for affected businesses.

In Malaysia, the government introduced economic stimulus packages providing cash to businesses to facilitate their debt repayments, support and wage subsidies to businesses, and increased access to liquidity for companies. A RM260 billion economic stimulus package provides cash for households and MSMEs. A RM1.5 billion employment incentive programme encourages employers to hire local workers. A 6-month 15% discount on electricity bills for homeowners and businesses was given to the six most affected businesses: tourism, aviation, retail, theme parks, conventions and exhibitions, and travel agencies. The Central Bank of Malaysia has reduced the overnight policy rate by 25 basis points to 1.75%.

In late March, the Myanmar government announced a K10 billion targeted fiscal stimulus for the most vulnerable sectors: cut-make-package garment and manufacturing, tourism, and locally owned SMEs. The stimulus package consists of a 1-year loan with 1% interest to help employers pay salaries, income tax deferment for businesses until the end of September, and advance income tax exemption on export products until the end of FY2020.

The Philippines adopted a two-pronged approach to support MSMEs: immediate financial support for employees and provision of liquidity to businesses. The first prong addressed the need to support employees without overburdening SMEs' resources. The second supports businesses when they resume operations. The Small Business Wage Subsidy Program provided PHP5,000–PHP8,000 (US$98–US$158, based on the regional minimum wage) per month for 2 months for employees affected by the enhanced community quarantine. The government allotted PHP1 billion (US$19 million) to expand the microfinance programme to include the enterprise rehabilitation financing facility, which will provide low interest, zero collateral, and relaxed payment terms (a grace period on payments until the economic crisis abates) for micro and small enterprises. The central bank announced a series of regulatory relief measures from the banking sector.

In Thailand, the government employed several relief measures for businesses, such as tax measures, expenditure reduction, soft loans, and debt restructuring. The tax measures include payment extension, reduction of withholding tax, income tax deduction for SMEs, faster VAT refund, and exemption from import duties for products used to prevent or treat COVID-19. Expenditure reduction includes refund of electricity and water provider deposits; reduction of electricity and water bills; reduction of required contributions to the Social Security Fund; and reduction of fees, rental fees, and charges for state property. Loan measures include soft loans for businesses and SMEs to support production and employment. Most of the loan measures are still not effective because they burden commercial banks, discouraging their participation in the project.

Viet Nam has implemented many measures to support production and business, promote economic growth, and limit the impact of the COVID-19 pandemic. Specific solutions include interest rate cuts and debt restructuring; implementation of incentive programs; extension or delay of enterprises' payable taxes and land rents; and cutting of electricity, petrol, and service prices. In May, the government issued a resolution to continue supporting production and businesses, accelerating the disbursement of public investment, ensuring social order and safety to improve the business investment environment, and supporting businesses and people affected by the disease.

ASEAN governments have been careful not to cause irreparable harm to internationally integrated sectors even whilst restricting economic activity. Important industries have been exempted from the most severe economic restrictions, albeit with enhanced health protocols. In Cambodia, automotive factories could, in principle, operate as usual with public health guidance and certain precautions. In Malaysia, electrical and electronics firms were allowed to resume operations earlier during the period of movement control. The Philippine government allowed companies in export processing zones (EPZs) to continue scaled-down operations.

Some AMS have tried to reduce trade-related administrative procedures to reduce the burden on businesses. To expedite firms' use of preferential tariff margins, the issuance of certificates of origin (Cos) has been eased, including by extending the deadline for submission of Cos, accepting Cos with electronic signatures or seals, and accepting copies or scanned Cos to submit to customs offices. Other import–export procedures have been streamlined by, for example, digitalising essential government services in some AMS. In Malaysia, regulators have used the pandemic as a steppingstone to compel industry and approving officers to switch to digital platforms. In the Philippines, incentives have accelerated online services. Viet Nam is piloting licenses that allow using mobile money (telecommunication accounts) to pay for goods and services of small value.

Countries are trying to diversify export markets and promote trade and to seek new markets for goods cancelled or delayed. The pandemic has resulted in many firms rethinking their supply chains to make them more resilient, which AMS view as an opportunity to further attract investment. Malaysia and Viet Nam have introduced incentives to attract foreign investors, such as easing the approval process and reducing taxes. These measures could prove attractive to investors that are making strategic decisions about the future of their supply chains.

3. Data Gathering and Methodology

How have ASEAN-based firms with supply chain linkages to China, Japan, and the Republic of Korea fared during this pandemic? To find out, in July–October we conducted 70 qualitative interviews with private sector firms across seven AMS, covering various sectors, and held focus group discussions. Not all AMS could be included because of resource constraints. In each country, firms with linkages to China, Japan, or the Republic of Korea were selected for interviews. Qualitative data were collected in Cambodia (5 firms), Indonesia (7), Malaysia (24), Philippines (11), Singapore (7), Thailand (8), and Viet Nam (8). Focus group discussions were conducted in Indonesia, Malaysia, and Viet Nam.

In selecting the firms, we varied the coverage of sectors to provide a representative picture of ASEAN. The Cambodia report is based on in-depth interviews with different types of foreign firms directly investing in automobile parts, logistics, microfinance, special economic zone management companies, and services. In Indonesia, in-depth interviews were conducted with people from the food and beverage, textile and textile product, footwear, and automotive industries that export and/or import raw materials or end products to and/or from ASEAN+3. In the Philippines, the 11 companies are in the automotive (2), electronics (2), electrical appliances and equipment (2), machinery (1), and other manufacturing (4) industries. In Malaysia, 19 electrical and electronics manufacturers, 3 logistic companies serving that sector, and 2 associations met the country consultant in person and virtually. Of these, 16 are medium-sized and large multinational corporations (more than 500 employees), 2 are local, and 1 is small; 15 of the 19 manufacturing firms interviewed serve at least one China, Japan, or Republic of Korea market. In Singapore, the companies are in the logistics (1), construction (3), hospitality (1), amusement (1), and investment and trade consultancy (1) industries. In Thailand, interviewed companies are in the automotive, electronics, and logistics industries. In Viet Nam, the companies are in the garment and textile, automotive, and electronics industries. All the firms are headquartered in China, Japan, or the Republic of Korea.

Country consultants carried out qualitative interviews (either in person or online, depending on the situation) with the firms, based on a questionnaire developed by the four research institutes and the ASEAN Secretariat. The interviews were designed to generate insights on the status of supply chains in the face of uncertainties such as COVID-19. Practical policy suggestions on improving the resilience of supply chains and connectivity of the ASEAN Plus Three are detailed below.

4. Empirical Analysis

The qualitative interviews with firms and the focus group discussions provide a picture of the impact of COVID-19 on firms' operations and business plans. The extent of the impact on firms depends on the degree to which they rely on exports and imports, and the extent to which they can adjust their supply chains in response to the pandemic. Policies and measures in partner countries affect firms along the entire supply chain. Firms raised procedural problems along the supply chain that persist despite efforts by governments to improve import–export procedures. Certain strategic issues on supply chain management and outlook have emerged. The study's insights are detailed below.

4.1 Cost increased because of COVID-19–related measures

Even though firms in some priority sectors could operate during strict lockdown, the protocols to respond to the pandemic increased operating costs. Reduced external demand has increased storage costs as firms build up inventory. Firms in Malaysia reported difficulty operating because of travel restrictions that varied across states. In the Philippines, companies that were allowed to continue had to operate at less than 100% capacity, bear the cost of ensuring the health and safety of employees reporting for work as a condition to be allowed to operate, and provide accommodation for them at or near the workplace. In Thailand, firms faced additional costs from following preventive guidelines of the Department of Disease Control.

Costs also increased because of the need to source inputs at a higher cost due to logistics challenges. In Indonesia, slow dwelling times and high terminal handling charges made supply chain operation more difficult for firms. As the COVID-19 outbreak disrupted supply chains, Malaysian manufacturers paid exorbitant rates to fly in their goods and materials due to limited air cargo space and high prices during the pandemic. For example, the cost of shipping products and materials by air from China became extremely expensive at those times when the incidence of blank sailings (cancellations of sailing by ship) had increased during the peak of the pandemic, resulting in an almost 40% increase in one electronics and electrical sector company's production cost. Blank sailings create storage issues at ports, rising demurrage and detention charges quickly accrue into hefty amounts in a short time, and planning and scheduling are difficult.

Logistics firms are affected by the pandemic. Closing borders delays shipments by land. Suspending or delaying flights to transport goods raises freight cost. As maritime transport operators reduce the number of containers and trips, sea transport is slowed.

The additional time taken to complete import–export formalities increases costs. In Malaysia, limiting staff working hours during the restriction period delayed feedback and approval from the authorities. On several occasions, the system temporarily shut down. Companies faced difficulty transporting goods from ports to their sites. Companies faced delays in getting import permits from the authorities for items imported from China and other countries during the restriction period. The process usually takes about 2 weeks, but during movement

restriction it took much longer and the items could not, therefore, be released from ports, adding to the cost of port charges.

Supply chain firms were affected by measures not only in their own countries but also in the countries of their suppliers or export markets. Port lockdowns in other countries and the slowdown of regional partners' operations slowed down operations of some respondents. For instance, although Cambodia has managed to control the pandemic through strong early measures, it faced temporary disruptions due to the closure of fabric manufacturers in China and the rescheduling of shipping lines in the early stage of the pandemic, which contributed to the closure of garment factories. Respondents in the Philippines reported that they were indirectly affected by restrictions imposed in other countries and by the closure of ports in New Zealand, where they source intermediate inputs. In Thailand, the shutdown of ports and customs in China and other ASEAN countries affected the transport of goods and supply chains, particularly in the automotive industry, where some parts such as hi-tech components are imported from the parent company or an overseas supplier.

Restrictions on international travel increased difficulties. According to firms in Malaysia, transport operators and runners delivering goods across borders need to undergo various procedures and meet certain conditions (for example, drivers must self-quarantine for 14 days), which affected connectivity. Firms were unable to bring in foreign experts and technicians, who are important in supply chain management. Automotive parts manufacturers in Cambodia reported that engineers from Japan or Thailand could not come to train staff or supervise operations. The expansion of the third plant was delayed as engineers were not available to help install the machinery. Pandemic-related restrictions made business difficult in services that rely on foreign workers.

The restriction on the entry and participation of foreign workers in the Philippines increased the cost of and reduced the operations of the respondent companies. One company mentioned that it needed foreign engineers to install machines to produce personal protective equipment, but the restrictions hampered its operations. Another company that utilised foreign engineers in its operations was affected by immigration policies; during the lockdown, the entry of foreigners was highly regulated. For instance, the company invested in a US$400,000 automatic powder-coating production line, but the absence of its foreign engineers delayed the installation of important parts, resulting in unproductive and costly monthly rental costs. A Singapore construction company felt the impact of the labour shortage as it relies on workers from Asia.

Another source of increased cost was the reduced ability of businesses to plan. A predictable economic environment is crucial for firms that rely on foreign inputs because they must manage their inventory cost-efficiently. Their ability to do so was severely curtailed. Being able to plan and to inform their suppliers of prospective demand 3–6 months ahead allows companies to reduce costs and efficiently organise production. Interviews in Cambodia with an automotive parts firm revealed that the impact of COVID-19 is that demand cannot be forecast 3 months ahead. Vietnamese engineering enterprises' orders are mainly long term (planned annually), so they are only delayed and not often cancelled, unlike those of other enterprises.

4.2 Regulatory and procedural inefficiency burdens businesses

Even though ASEAN governments attempted to relieve some of the regulatory and procedural burden, firms still reported facing issues – communication failure and the prevalence of traditional procedures – that have exacerbated their difficulties.

4.2.1 Communication failure

Given the confusion and the fast-changing regulatory environment during the pandemic, an effective system of communication between policymakers and implementers is needed. However, communication along the chain of command may have broken down due to ineffective systems. Lack of regulatory clarity compounded the impact of the pandemic in Malaysia. Many businesses reported that customs officers at different ports had different requirements. Additional customs requirements imposed at borders were not stated in the customs orders or director general's circulars. Products with the same Harmonized System (HS) code but imported by different agents received different treatment by customs. The importer believed that the issue arose because customs officers' knowledge of the products varies. In the Philippines, some of the companies interviewed mentioned that customs officers' inconsistency in applying the rules of origin and interpretating customs rules could discourage the utilization of free trade agreements.

Some of these issues existed before the pandemic but their impact was felt acutely during the pandemic. For instance, in Malaysia an application for a customs advance ruling takes about 1 year to get a decision. Products might be a mix of two or more products (e.g. a book with a compass, a pen with laser pointer, amongst others), the HS code classification of which might not be easily ascertained. Such grey areas might need to be examined or identified to ease the burdens of importers or exporters. Inefficiencies are caused by lack of coordination across government agencies. In Indonesia, a food and beverage firm reported that the regulations issued by the ministries are not aligned and tend to be uncertain, leading to the export–import bottleneck.

4.2.2 Traditional procedures

The regulatory burden of manually processing trade-related documents was exacerbated by the pandemic. In Indonesia, challenges in regulations and their implementation hamper the import of raw materials, and ministries do not fully coordinate with each other. During the pandemic, firms reported that logistics became more difficult and dwelling time increased, and COVID-19 slowed down the issuing of import quota permits for raw materials.

Malaysia provides a good example of how traditional trade-related procedures had to be quickly reformed to deal with the pandemic. At the onset of the pandemic, businesses were required to obtain manual endorsement of the CO from the Ministry of International Trade and Industry (MITI). The procedure was burdensome, especially for applicants outside Kuala Lumpur as they had to travel to MITI. Mismatched signatures between the approval and endorsement of the CO have caused exported products to be rejected by the importing countries. In such cases, the exporter has to bear the cost of rejection and reapply for a CO so the products can be cleared by the importing country. To rectify this issue, on 12 April,

MITI announced that it would electronically endorse the CO with an electronic signature and official seal so that exporters would no longer need to be physically present for manual endorsement.

Another example of the burden imposed by traditional procedures is that firms within special economic zones fared better than those outside. For example, Indonesian textile companies consider the flow of supply chain within ASEAN Plus Three to be relatively good as they are in the bonded zone, where they enjoy green lane facilities. A footwear manufacturer reported that a challenge faced by the footwear industry is counterproductive regulation from the Ministry of Agriculture on quarantine of leather and from the Ministry of Finance on textile industry safeguards, particularly for companies outside bonded industrial zones. A manufacturer of wood-based products in the Philippines indicated that being in an EPZ allowed the company to operate with little disruption because of the trade facilitation services and the full operation of the ports in the EPZ. A lighting equipment manufacturer and a manufacturer of electronics parts and components mentioned the faster customs clearance time for companies in the EPZ.

4.3 Supply chains need to be diversified

Our study shows that the COVID-19 pandemic has different degrees of impact on the supply chain. Companies that had established a regional complementation system recorded little change in availability of supply. The system allows the presence of multiple manufacturers of key parts and components within the region; companies can source key parts from other affiliates should they encounter problems with their regular suppliers. Companies that have multiple sources of inputs and supplies are able to shift some of their demand to other suppliers in other countries, while those that rely on only one supplier have no choice but to adapt to its situation.

Textile and garment enterprises were generally more affected by the COVID-19 pandemic as they were impacted by both supply and demand shocks. In Viet Nam, the supply of raw materials and auxiliary materials imported by road, sea, and air was interrupted by delay in delivery (for example in some cases, 2–3 weeks by sea and 2–3 months by road through the Viet Nam–China border national gate), and the absence of air carriers or of supply (especially from China). The output market of companies is significantly affected by the lack of raw materials and auxiliary materials for production or the cancellation of orders from the main markets, such as the Republic of Korea, Japan, China, and the United States (US); orders from the US declined by 30%–70%.

Some companies in Thailand were able to withstand the input shortages for a few months. Many firms found that the shortages in intermediate products had only a short-term effect. While firms still had some stocks left for production for at least 2 months, they looked for alternative supply sources even if these were higher priced. Companies that relied on domestic supply chains did not suffer as much. The electrical appliance industry was likely to be less affected since it uses mostly domestically produced parts; companies in the cooling appliance segment (air conditioners) use more than 80% domestically produced parts. In Viet

Nam, the input supply chains of textile and garment enterprises using domestically produced raw materials are less affected than firms that rely heavily on inputs from abroad.

Production networks are continuously being reshaped, and COVID-19 could catalyse the relocation of production. Even before the pandemic, Cambodia's automotive and electronics parts industries were rising, mostly through investments by Japanese firms, which have been agglomerated in Thailand since the 1980s. However, the rising production cost, ageing population structure, and natural disasters (such as the 2011 flood) have accelerated Japanese firms' diversification of the production base. The combination of geographical proximity and wage and skill differential with Thailand make Cambodia a perfect choice for investment. Geographical proximity allows firms to transport product in a shorter time and for lower cost. Thailand produces higher value-added goods but at higher cost, and Cambodia produces lower value-added goods but at lower cost.

The crisis has made it clear to many firms that production processes that are too dependent on a single production base are vulnerable, whether in the automotive or electrical and electronics industries. Firms agree that manufacturing must become more flexible by diversifying the risk of procuring parts and raw materials.

Plant relocation is not easy, however, because some products have a complex supply chain structure, and relocating the production base is expensive and not, therefore, suitable in the current situation. The interviewees said that the factor a firm pays the most attention to is the cost of production, which includes the price and transport cost. Firms are likely to seek suppliers with high economy of scale. The location of suppliers determines transport cost. Lead time is important, especially for firms that use a just-in-time supply chain strategy. Finally, product quality guarantees customer satisfaction. After COVID-19, firms will still consider cost as the main factor while considering risks of supply chain disruption to avoid discontinuity in production. The location of suppliers will still be important, depending on how well the supplier countries deal with the pandemic.

Regulatory barriers impinge on supply chain diversification. In the Philippines, some businesses reported facing difficulty in diversifying their supply chain because product certification is required for every variant (often multiple certifications from other government agencies) and some agencies have no definitive list of requirements for imports.

4.4 Firms' coping strategies and post–COVID-19 plans

COVID-19 has affected supply chains, especially downstream links. Most interviewed businesses expect to operate moderately, relying on old orders and trying to maintain the number of employees without expansion. Production growth will be significant although lower than planned. The supply chain has not been broken despite a decrease in transaction volume.

Some textile and garment firms were able to move to production of high-demand items. In Indonesia, textile production capacity increased, particularly for clothing and medical equipment (personal protective equipment, masks, amongst others), in Q2–Q3 2020. Many Vietnamese enterprises have flexibly adjusted their production and business activities.

Technological enterprises have produced medical equipment, and garment enterprises have manufactured and exported medical masks. In the first 4 months of 2020, Viet Nam exported more than 415 million masks worth $63.19 million. Integrated data-sharing platforms have been launched to support medical declarations, remote consultation, medical treatment, online conferences, and cloud computing platforms, amongst others.

Some textile and apparel businesses plan to enter markets that are more secure and that controlled the pandemic early on (including market segments in China); innovate business practices (online platforms, e-commerce); search for domestically produced raw materials and auxiliary materials and more reputable logistic partners; and ensure uninterrupted freight transport.

Automotive domestic and export sales have slowed since the outbreak, with the greatest decline in car sales in 10 years. Some firms expect that sales in 2020, of mostly passenger cars, could fall 50% from the previous year. In the electrical and electronic industry, however, the impact depends on the segment. Electronics related to automotive industries are slowing down. Some electrical and electronics products, however, have benefitted from the pandemic, such as home electrical appliances, computers and connecting devices, and electronics products related to medical devices. The electrical and electronics industry in Thailand is benefiting from foreign investors diversifying supply chains because of the US–China trade conflict.

Some firms are looking for alternate sourcing in many countries in Southeast Asia and are starting to negotiate with backup suppliers. Electronics companies using vendor-managed inventory systems to manage stocks must increase buffer stock for production to reduce the risks of another outbreak. Electrical firms launched new products, including air conditioners, refrigerators, and fans, to stimulate consumer spending. The firms are upgrading after-sales service to be efficient and meet the needs of more customers domestically and internationally. Some automotive firms plan to produce more eco cars or small cars to serve higher demand for personal cars when purchasing power is lower.

COVID-19 has changed supply chains. Textile companies have generally become more flexible in developing their supply chains. Some textile and apparel businesses plan to enter markets that are more secure and that controlled the pandemic early on (including in China); innovate their business practices (online platforms, e-commerce); search for domestically produced raw materials and auxiliary materials and more reputable logistic partners; and ensure uninterrupted freight transport.

Regular business operations have transformed. Some firms have slightly modified their businesses using digital solutions, mostly for communication. Firms turned to digital technology to continue operations during the pandemic. Some companies have adopted electronic cashless payments, automatic approval systems, and social media to contact clients and remote work platforms. One company in the Philippines started using an app to track stocks and inventory; reduce interaction with customs; and minimise misinterpretation in the application of tariffs on imported goods, including informal payments. The use of information communication and technology (ICT) will reduce the cost of importation and

strengthen the supply chain. Key infrastructure must, therefore, be built quickly to expand the internet and mobile service coverage. In Indonesia, the pandemic accelerated the digitalisation of automotive supply chain management and significantly shifted intermediaries' mode of operation in the supply chain to online shopping and ordering platforms.

COVID-19 is the latest catalyst for relocating production, which is, however, complex and expensive. Yet, some electronics firms see an opportunity and propose to move back some volume of production for electrical and electronics that moved from Thailand during the flood to other ASEAN countries such as the Philippines or Malaysia.

Free trade areas proved to be beneficial to the firms, which may influence supply chain decisions. Some respondents in the Philippines noted that a free trade area influenced them to change suppliers, as the lower import duty reduced cost. A number of companies said they benefitted from reduced cost of importation through free trade agreements signed by the Philippines with ASEAN, ASEAN–China, ASEAN–Japan, and ASEAN–Republic of Korea, and the bilateral Philippines–Japan Economic Partnership Agreement.

5. Summary of Key Findings

Almost all firms interviewed were affected by the pandemic, which restricted economic activity and movement of people. ASEAN governments exempted important sectors from lockdowns, usually including internationally integrated firms, such those operating in special economic zones. The firms, however, faced increased costs due to restrictions on supporting industries, the need to adhere to heath protocols, and the higher cost of procuring inputs. Firms were forced to operate at reduced capacity due to reduced global demand, which resulted in cancellation of orders. Governments have implemented several relief measures to help businesses, including tax measures, expenditure reduction, soft loans, and debt restructuring.

The level of impact varies by sector and firm type. Some firms were able to switch to production of goods that became more in demand during the pandemic. Electronics and electrical manufacturers produced parts for home electronics, while textile manufacturers produced masks and health equipment. Firms that sourced inputs domestically did not suffer much disruption in supply. Finding alternative sources of inputs, especially in highly specialised sectors, is challenging. Even when the impact of COVID-19 on public health was limited within a country and domestic economic activity could resume, firms along the supply chain were affected as they were interconnected with the regional and global supply chain.

Many firms resorted to more expensive means of procuring supplies due reduced logistics linkages, which substantially increased their production cost. While high value-added sectors such as electronics can afford these costs, low value-added sectors such as garments and textiles cannot. Companies that relied on domestic suppliers continued operating, while those that could not had to cease production. The restrictions on the movement of people had a negative impact on firms relying on foreign workers. Many high-skilled industries could not bring in their foreign experts and technicians, thus delaying maintenance. Firms in Singapore that rely on foreign workers faced shortages.

Additional costs were incurred due to regulatory inefficiencies caused by communication failure and traditional import–export formalities. In the initial stages of the pandemic, many manual procedures prevalent in some ASEAN countries, such as obtaining trade-related documents (permits, licenses, COs), took longer. Many ASEAN governments, therefore, allowed electronic processing where possible. However, since the system was new, traders and government officers found it difficult to navigate. Communication breakdown in the fast-changing policy environment led to additional confusion, which increased the cost of doing business. Where regulatory barriers were already low – for example, firms with authorized economic operator status or firms in special economic zones – the impact of regulatory inefficiency was less. There is room, however, for improvement.

Firms have used various strategies to adapt to the pandemic. Adoption of digital technology has risen in response to work-from-home requirements and travel restrictions, thus accelerating the pre-pandemic trend of digitalisation. Some of these changes are likely to

persist beyond the pandemic, increasing demand for connectivity infrastructure such as telecommunications. Technology will continue to play a critical role in the post–COVID-19 economy. The pandemic changed connections between business and consumers. The disruption of many traditional economic activities forced businesses to be bolder in applying digital platforms to strengthen management and production and to employ online delivery, electronic payment, and online teaching.

Large companies are in a good position to be strategic partners in a supply chain, but that is not the case for SMEs. Most local suppliers are SMEs. They need more support for automation and digital transformation, and new capital. Most SMEs are not aware of grants and incentive packages or allowances and do not know how to apply for assistance.

Firms are rethinking their supply chain strategy while they recover and focusing on diversification and enabling greater flexibility in operations to avoid the risk of disruption. Diversification geographically and across companies will enable companies to meet demand, reduce costs, and reduce dependence. Many ASEAN governments are seeking to use the pandemic to attract investment by offering incentives and expediting the regulatory process. The decision about sourcing, however, largely depends on cost, quality, and logistics infrastructure. AMS that already possess these advantages may see a greater influx of investment.

6. Policy Recommendations

6.1 Continued fiscal support

Governments should continue to support firms that face increased costs due to the COVID-19 pandemic. The cost of adhering to health protocols could be subsidised. Long-term support policies for businesses to restore production after the pandemic could include reducing electricity and water prices, social insurance costs, and bank interest rates. When business resumes, some firms might face capacity constraints since some demand might have been postponed during the pandemic. Thus, the government must give industries opportunities to improve production capacity. Providing fiscal support through tax reductions for restructuring by retiring of old technology and capital machinery, installation of new technology and capital machinery, and the exit of less competitive components and the entry of new investment into the more competitive domestic components of supply chain would help with the recovery.

6.2 Upgrade logistics

Efforts to increase facilities and the quality of logistics infrastructure should be continuous and include expanding the capacity of ports and increasing cross-border facilitation measures for firms engaged in international production networks.

6.3 Resume movement of people

Measures to support cross-border movement are beginning, and coordinated sharing of management measures across countries is critical. Countries need to ensure the movement of professionals to sustain production and the smooth flow of goods between value chains across countries, with additional safety precautions, as necessary. Supply chain connectivity involves not only movement of goods and final services but also intermediate services – i.e. services required by firms to maintain the equipment. Restricting the movement of professionals is understandable as disease is transmitted by movement of people across borders. Creating a mechanism and system or innovative measures such as a 'travel bubble' need to be in place if professionals and technical persons are to cross borders. Countries need to invest more in their ability to safely welcome foreigners by increasing testing capacity.

6.4 Reform import and export formalities

To energize the supply chain, measures to simplify and expedite border formalities are needed to make cross-border trade faster, cheaper, and more predictable. Policy needs to ensure the seamless flow of imports by improving the performance of trade facilitation regimes, ensure the timely of release goods at the border, and minimise import restrictions due to regulations and non-tariff measures. The steps include streamlining administrative procedures for trade-related documents and maximising the role of EPZs, as firms in the zones have a higher chance of surviving the adverse impact of the pandemic. The firms enjoy a competitive edge from reduced regulatory burden and an open trade import regime. Countries should explore ways of extending such benefits to more firms, first temporarily during recovery and then permanently by using an advanced risk management approach to regulation and some form of 'approve now, audit later' approach.

ASEAN has already adopted an ambitious trade facilitation agenda in the ASEAN Economic Community (AEC) Blueprint. Existing trade facilitation initiatives such as the authorised economic operator programme could be improved to benefit businesses. ASEAN recently adopted an ASEAN-wide self-certification scheme that allows certified exporters in all AMS to self-declare the origin of their exports under ASEAN Trade in Goods Agreement, thereby easing the application of preferential tariffs to eligible goods. Firms in Malaysia, however, reported that the scheme's implementation varies by country. ASEAN must ensure that AMS implement the agreed scheme. AMS need to engage with each other periodically to reduce the information gap and explore risk-based methods. AMS must redouble their efforts to achieve the trade facilitation goals in concert and make them part of their exit strategy.

6.5 Support development of local input sources and exploration of new markets

To restore production and expand after the COVID-19 pandemic, the enterprises surveyed and the experts who participated in discussions advocated developing domestic supporting industries to ensure the supply of reasonably priced raw materials of stable quality. This goal could be achieved by providing incentives for investment in downstream and upstream sectors, attracting foreign investment to them, and developing local human capital.

6.6 Expand the use of digital technology

The use of ICT is an important element that allowed companies to continue operations, as all transactions (including facilitating export and import permits) are done electronically. Applying ICT in supply chain management should be accelerated in companies and governments to increase efficiency.

Cooperation between countries in the electronic exchange of customs declaration documents and other trade-related data should be accelerated and cover a wider set of data. The use of digital technology can be viewed in the context of greater adoption of IR 4.0 technology. This will complement supply chain firms' investing in digital technology and should improve the chance of increasing production rapidly as demand picks up.

6.7 Liberalise trade and promote international coordination

Regional recovery depends on economic cooperation, which will be highly important to ASEAN countries and businesses. China, Japan, and the Republic of Korea play an important role in ASEAN supply chains, so further economic integration would be beneficial to all ASEAN Plus Three countries. A coordinated plan is needed for the quick recovery of supply chains. More intensive and better dialogue amongst ASEAN Plus Three countries is needed to reach agreement on lowering tariff and non-tariff barriers to create a seamless supply chain that will expand trade. The ASEAN Plus Three countries should cooperate within the framework of existing trade agreements while working to conclude the Regional Comprehensive Economic Partnership (RCEP), and remaining relevant countries to implement the Comprehensive and Progressive Agreement for Trans-Pacific Partnership. Unilateral liberalisation might improve the position of supply chain firms in some countries.

7. Conclusion

ASEAN economies are closely linked with China, Japan, and the Republic of Korea in international production networks, mainly in the automotive, electronics and electrical, and textile and garment sectors. ASEAN countries have benefited from participation in global value chains involving firms from China, Japan, and the Republic of Korea, and from the inflow of investments and the stable supply chains of raw materials, intermediate goods, and final products that have greatly contributed to the rapid growth of the region.

The emergence of COVID-19 in early 2020 disrupted the functioning of the supply chain. As a result of restrictions imposed to fight the pandemic, ASEAN-based firms experienced decline in demand for their output from downstream firms, and faced difficulty procuring raw materials and inputs from upstream firms. Even when domestic economic activity resumed, therefore, firms with inflexible supply chains had difficulty restarting operations or faced higher production costs. Additional production costs were imposed by poor logistics and inefficient regulations and procedures that were already in place before the pandemic. Continued decline in world demand, especially for low value-added products, could potentially inflict serious damage on ASEAN's export sector. Given that these supply chains are crucial for ASEAN's growth, they must be revived quickly if ASEAN economies are to remain healthy.

AMS governments are developing exit strategies to accelerate the recovery of their economies, and they will be relying heavily on returning to a 'new normal' in international trade. Due to the strong linkages across countries, unilateral domestic policies will not be sufficient for full recovery of trade-dependent sectors. As supply chains are interrelated, individual countries' policy responses could have far-reaching results if coordinated and if countries act in concert. The pandemic shines a spotlight on supply chain inefficiencies that have exacerbated the already difficult situation for internationally integrated businesses. Mitigating the inefficiencies should be part of AMS exit strategies, which require cooperation and partnership amongst ASEAN Plus Three countries.

The role of governments is important in ensuring that the region's supply chain activity remains economically efficient so that ASEAN Plus Three firms can remain globally competitive. Governments must create a fertile climate and economic structures that give rise to competition and enhance firms' responsiveness to supply chain disruptions, by reducing the level of protection, restrictions, and regulations. Governments need to create a conducive investment environment and promote exports. The governance and management of technology and data will be important in the post-pandemic era as technology adoption becomes widespread.

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