INTRODUCTION

COVID-19 has been an unprecedented health and economic crisis, leading, in its initial widespread outbreak in March 2020, to an immediate supply and concomitant demand shock emanating from stalled economic activity in the wake of nation-wide lockdowns imposed by countries across the world. One year later, while merchandise trade has witnessed a rebound, trade in services continues to languish. According to WTO trade data, the value of global services’ exports...
and imports each declined by 20.2% (over USD 1 trillion) during 2020 relative to 2019. At the same time, the pandemic has seen a significant rise in e-commerce and a spurt in digitalisation. Against this background, this paper examines the effects of the COVID-19 outbreak on services trade and greenfield investment of the original group of ASEAN+6 countries that began negotiating the RCEP agreement. While the WTO, amongst others, has examined the likely effect of the pandemic on merchandise trade in different scenarios, detailed analysis has not been undertaken in the context of services trade for countries in the Asia-Pacific. We add value by filling this gap.

The importance of services trade has grown for countries across the world. According to data from the WTO, between 2010 and 2019, trade in commercial services grew by 52% for the G20 and 50% for LDCs, while global trade in commercial services grew by 54%; significantly, exports of commercial services alone witnessed a 108% rise for LDCs over this period. While services matter as a potentially important source of foreign exchange revenue and associated employment and household income, a large body of evidence also confirms the positive role of the services sector on productivity, growth, trade, investment, development and GVC integration. In a nutshell, services are important for economic growth and development by virtue of their role as inputs into production in all sectors of economic activity (‘servicification’). In fact, the share of services in global trade nearly doubles from 25% once we account for services trade in value-added terms (WTO, 2019).

Services trade was shown to be more resilient to the 2008 global financial crisis than merchandise trade (Ariu, 2016; Borchert & Mattoo, 2009) given its low sensitivity to demand shocks and less dependence on supply finance. While COVID-19 resulted in an immediate supply shock followed by a demand shock, what has mattered more this time are the travel bans, social distancing and contagion-related fears that have had a bearing on services transactions requiring physical interaction between buyers and sellers and which cannot be replaced by services traded over the internet (Shingal, 2020a).

There are four different ways in which services trade is transacted across borders and three of these four ‘modes of services delivery’ (in WTO GATS parlance), accounting for three-fourths of total services trade, require proximity between buyers and sellers. More specifically, the adverse effects of travel restrictions and social-distancing practices in the wake of COVID-19 have been the largest for services transacted via Modes 2, 3 and 4 as these require physical interaction between the suppliers and consumers (Shingal, 2021). Illustratively, tourism and related accommodation services which are an example of services delivered via Mode 2 have been amongst the most adversely affected sectors during the pandemic due to travel restrictions and social-distancing practices; travel services exports reported a 63% decline on a YoY basis during 2020. Similarly, restrictions on international travel have meant that professionals cannot cross borders to deliver services abroad, thereby impacting a whole range of Mode 4 services. Likewise, greenfield investment has also been adversely affected by the lockdowns, with UNCTAD estimates suggesting a 40% decline in foreign direct investment on average; this has negative implications for Mode 3 services trade. While Mode

1Australia, China, India, Japan, New Zealand and South Korea.

2See Francois and Hoekman (2010) for an excellent early review and (Arnold et al., 2011, 2016; Beverelli et al., 2017; Fiorini & Hoekman, 2018; Hoekman & Shepherd, 2017; Lodefalk, 2014) for more recent analysis.

3These include Mode 2 (‘consumption abroad, e.g. tourism services), Mode 3 (‘commercial presence’ or FDI in services, e.g. international banking services) and Mode 4 (‘movement of natural persons,’ e.g. IT professionals working onsite abroad and intra-corporate transferees). Mode 1 or ‘cross-border services trade’ includes the entire range of services transacted via the internet, for example medical or legal transcription services.
1 services remain relatively insulated as these are transacted over the Internet and can continue getting delivered in work-from-home scenarios, several Mode 1 services are also complementary inputs to manufacturing and other services, activity in which has been drastically affected, if not completely stalled, by lockdowns and social distancing. Moreover, data security, client confidentiality, access to ICT and related issues are likely to render even some otherwise remotely deliverable Mode 1 services activities infeasible. Thus, the effects of the pandemic on Mode 1 services trade are also far from benign.

Our analysis based on WTO services trade data shows that ASEAN+6 commercial services exports and imports declined by 19.8% and 22.1%, respectively, on a YoY basis during 2020, albeit with considerable heterogeneity across countries and sectors. For instance, the decline in commercial services exports for ASEAN Member states was 32.1% (USD 141.5 bln) against 14.6% (USD 152 bln) for the remaining six countries. Similarly, while ASEAN+6 travel services exports fell by 68.1% (USD 250 bln) during 2020 from their value in 2019, the corresponding decline in exports of other commercial services was only 0.2% (USD 1.35 bln). Meanwhile, ASEAN+6 announced greenfield investment in services fell by a third during 2020, with the intra-ASEAN+6 decline being more severe at 41.8%. Estimates from a structural gravity model using recent MRIO data from the ADB suggest that the stringency of containment measures imposed in the wake of the pandemic may have reduced ASEAN+6 services exports by 61.6%.

The rest of the paper is structured as follows. Section 2 provides a review of recent literature relevant to our analysis. Section 3 provides stylised facts on the importance of the services sector in the economies of the sample countries; looks at the distribution of services trade by sector and mode of supply including the importance of services trade in value-added terms; and examines regulatory barriers to trade in services in the sample countries. Section 4 discusses the decline in ASEAN+6 services trade and greenfield investment during 2020 and its implications given the distribution of services trade by mode of supply and stylised facts presented in the preceding section. Section 5 presents a structural gravity model to examine the effects of COVID-19 incidence and government-imposed stringency measures on ASEAN+6 services trade and discusses findings from this estimation. Section 6 concludes with policy recommendations.

2 RELATED LITERATURE

Shingal (2020a) produced amongst the earliest commentary on the pandemic’s implications for services trade, arguing that while economic lockdowns would be lifted eventually, social distancing (both voluntary and selective) is likely to stay for longer, and this would continue to have a huge adverse impact on services transactions requiring proximity between buyers and sellers. A similar view was subsequently echoed by WTO (2020a), which in its information note on the subject, highlighted the significant adverse effect on tourism, transport and distribution services emanating from mobility restrictions and social-distancing measures imposed for public health reasons; and

4Commercial services are all services except for government services.

5These include charges for the use of intellectual property; construction; distribution; insurance; financial; telecommunications; computer and information; personal, cultural and recreational (audiovisual, health and education); and other business services (a diverse category that includes inter alia accounting, legal, engineering, research and development, management consulting and technical services).
UNCTAD (2020a) that documented massive disruptions to tourism, hospitality and retail sectors. Both Shingal (2020a) and WTO (2020a) also emphasise the knock-on effects on other sectors of economic activity, given increasing ‘servicification’ in countries across the world.

In their updated assessment of the economic impact of the pandemic on global trade, ADB (2020) model the increased cost of trade in services, especially aviation and outbound and inbound tourism, emanating from travel restrictions and travel bans. Complimenting this work and the analysis in Shingal (2020b) examining the relationship between regulatory barriers to Mode 4 and services trade by mode of supply, Benz et al. (2020) examine the impact of regulatory restrictions—implemented on health and safety grounds following the outbreak in March last year—on the movement of people across international borders on services trade costs. They hypothesise scenarios in which countries close their borders to passengers but leave freight trade open and estimate services trade costs to increase by an average of 12% of export values across sectors and countries in the medium term. Their analysis identifies significant heterogeneity in the increase in services-trade costs across sectors and countries, ‘reflecting the stringency of initial regulations and the relative importance of business travel and labour mobility to international services trade’.

In a related assessment, Dingel and Neiman (2020) classify the feasibility of working at home for all occupations and merge this classification with occupational employment counts. They found 37% of US jobs to be amenable to WFH, with significant variation across cities and industries. As expected, these jobs typically pay more than jobs that cannot be done at home and account for 46% of all US wages. Their analysis also suggests that lower-income countries have a lower share of jobs that can be done at home, which is consistent with the level of economic development of these countries.

At the same time, Drake-Brockman et al. (2020), OECD (2020), Stephenson and Sotelo (2020), UNCTAD (2020b), Villafuerte (2020) and WTO (2020a, 2020b) highlight the spurt in online delivery of services in the wake of the pandemic in sectors such as retail, health, education, telecommunications and audiovisual services and the potential of this development for greater use of Mode 1 trade in the future. This work also emphasises the technology and connectivity disparities both within and across countries that impair both the supply and use of digitally delivered services. In their analysis, Stephenson and Sotelo (2020) also focus on three areas of digital services trade at the core of the response during the pandemic—telework, remote education and health care—to document the developments therein following the outbreak and to highlight the measures needed to enable the sector to flourish. Meanwhile, Drake-Brockman et al. (2020) laments the lack of international coordination in approaches to facilitate the provision of essential services during periods of extended lockdown, which was associated with severe adverse effects on services value chains and on the IT/BPO sector in particular.

In other works, Shingal (2020c) has examined the effect of the pandemic on Commonwealth services trade. He suggests that at least 40% of Commonwealth services exports and more than 45% of its imports could be compromised by COVID-19, with tourism-reliant Caribbean and Pacific Commonwealth countries likely to be most severely impacted, while African and Asian Commonwealth countries are likely to be relatively less vulnerable. In more recent work, Shingal (2021) explores the factors underlying the heterogeneity in services trade decline observed during the pandemic.

Overall, the growing literature on services trade during the crisis underscores the importance of services that enable online delivery—telecommunications and computer services, as well as the broader infrastructural role of financial, transport, distribution and logistics services—in facilitating merchandise trade and economic growth. It also highlights the role of the government...
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in addressing infrastructure, institutional and regulatory challenges that exacerbate the digital divide both within and across countries. Finally, all recent work emphasises the vital role that revival of the services sectors and services trade will play in economic recovery in the aftermath of the pandemic.

3 | STYLISED FACTS

3.1 | Importance of services in ASEAN+6

Economic development is associated with structural transformation and change in the concentration of output and employment from agriculture to manufacturing and eventually to services. While most developed countries have witnessed a commensurate change in both the composition of GDP and occupational structure in favour of the services sector, the sector is still not the largest employer in most developing countries, although it accounts for the bulk of their GDP. This has obvious implications for productivity and growth of economic activity in these countries, especially given the increasing trend towards servicification (WTO, 2019).

It turns out that the services sector is far more developed in the Plus-6 countries than in the ASEAN region (Figure 1, left panel). ASEAN Member States had 51% of their total employment in services, on average, in 2018, up from 45.6% in 2010. The Plus-6 countries had 58% of their total employment in services in 2010, and this share increased further to 62% in 2018, making it the most services-intensive grouping in the whole of Asia, Middle-East, Africa and the Pacific.

Within ASEAN, Brunei and Singapore were the most services-intensive economies, with the sector’s share in employment in these countries, at over 80% in 2018, well in excess of the ASEAN+6 average. In contrast, agriculture remained the major employer in Laos and Myanmar accounting for over 60 and half of total employment, respectively. Significantly, both Cambodia and Vietnam (as well as Indonesia and Thailand) seem to have witnessed a structural transformation of their economies over 2010–2018 with labour moving from agriculture and allied sectors to industry and services.

The ASEAN+6 average is driven by its OECD Members, Australia, Japan, Korea and New Zealand—the share of services in total employment was around 70% and more in all these countries in 2018. With a 32% share of services in total employment, India was the least services-intensive economy in this group in 2018 followed by China at 46%, although both countries witnessed a structural transformation of their economies over 2010–2018.

FIGURE 1 Sectoral composition of GDP and employment in ASEAN+6 (% shares, 2018).

Source: World Bank World Development Indicators
The sectoral composition of GDP (Figure 1, right panel) mirrors that of employment in the ASEAN+6 with the exception of Brunei, India and South Korea where the services share in GDP in 2018 was much higher than that in employment in the case of India and relatively lower for Brunei and South Korea. On average, the Plus-6 countries are again far more services-intensive than ASEAN Member States. Only Singapore had a share in GDP exceeding 70%; for most other ASEAN countries, it hovered between 40% and 60% (Malaysia, the Philippines and Thailand had shares exceeding 50%).

The services intensiveness of the economies also translates into the contribution of the sector as inputs in the domestic economy. Table 1 reports domestic value added as a percentage share of gross exports across ASEAN+6 countries and services sectors calculated from the EORA MRIO database. Countries with domestic value-added shares that are significantly higher than the average for ASEAN and the Plus-6 economies across the different sectors are highlighted in red.

Table 1 Domestic value added across services sectors in ASEAN+6 (% share in gross exports, 2015)

| Country | Construction | M&R | Wholesale | Retail | H&R | Transport | P&T | FIBS | Pub_admn | Edu_Health |
|---------|--------------|-----|-----------|--------|-----|-----------|-----|------|----------|------------|
| BRN     | 88.2         | 85.6| 90.2      | 92.7   | 86.8| 87.1      | 92  | 95.6 | 90.4     | 93.4       |
| IDN     | 84.4         | 94.4| 94.4      | 94.4   | 95.3| 85.7      | 96.6| 95.2 | 94.7     | 93.6       |
| KHM     | 83.4         | 83.6| 85.4      | 91.9   | 86.1| 82.9      | 89.7| 92.6 | 79.6     | 88.5       |
| LAO     | 93.8         | 87.1| 94.8      | 97.3   | 95.1| 91.1      | 95.2| 96.9 | 92.1     | 95.2       |
| MMR     | 99.9         | 99.3| 100       | 99.9   | 99.9| 99.9      | 100 | 99.9 | 100      | 100        |
| MYS     | 48.9         | 87.3| 87.3      | 87.3   | 59.8| 57.5      | 71.2| 82.5 | 70.5     | 76.1       |
| PHL     | 85.6         | 94.4| 94.4      | 94.4   | 90.6| 81.2      | 94  | 94.6 | 59.3     | 88         |
| SGP     | 60           | 69.2| 69.2      | 69.2   | 72.4| 48.2      | 34.1| 74.5 | 59.5     | 81.6       |
| THA     | 74           | 96.1| 95.9      | 96.2   | 88.7| 83.4      | 95.1| 87.2 | 100      | 89.7       |
| VNM     | 50.1         | 79.2| 79.7      | 71.7   | 77  | 66.9      | 77  | 82.6 | 80.1     | 79.9       |
| ASEAN   | 76.8         | 87.6| 89.1      | 89.5   | 85.3| 78.4      | 84.5| 90.2 | 82.6     | 88.6       |
| AUS     | 90.0         | 76.1| 65.2      | 86.0   | 84.6| 83.9      | 85.8| 91.5 | 86.6     | 92.7       |
| CHN     | 84.6         | 93.5| 93.5      | 95.4   | 94.4| 92.2      | 93.3| 93.9 | 94.1     | 92         |
| IND     | 88.1         | 97.4| 97.4      | 97.4   | 94.6| 89.8      | 95.2| 97.0 | 99.8     | 92.8       |
| JPN     | 88.6         | 93.7| 91.2      | 96.3   | 87.3| 85.6      | 95.9| 95.8 | 95.3     | 93.9       |
| KOR     | 85           | 93.1| 93.1      | 93.1   | 88  | 63.7      | 89.8| 90.7 | 70.2     | 89.3       |
| NZL     | 84.4         | 79.8| 80.9      | 78.6   | 90.1| 82.3      | 82.8| 94.4 | 90.9     | 89.9       |
| Plus-6  | 86.8         | 88.9| 86.9      | 90.8   | 90.5| 82.9      | 90.5| 93.9 | 89.5     | 91.8       |

Abbreviations: FIBS, financial intermediation and business services; H&R, hotels and restaurants; M&R, maintenance and repair; P&T, post and telecommunications.

Countries with domestic value-added shares that are significantly higher than the average for ASEAN and the Plus-6 economies across the different sectors are highlighted in red.

Source: EORA MRIO database; own calculations.

The sectoral composition of GDP (Figure 1, right panel) mirrors that of employment in the ASEAN+6 with the exception of Brunei, India and South Korea where the services share in GDP in 2018 was much higher than that in employment in the case of India and relatively lower for Brunei and South Korea. On average, the Plus-6 countries are again far more services-intensive than ASEAN Member States. Only Singapore had a share in GDP exceeding 70%; for most other ASEAN countries, it hovered between 40% and 60% (Malaysia, the Philippines and Thailand had shares exceeding 50%).

The services intensiveness of the economies also translates into the contribution of the sector as inputs in the domestic economy. Table 1 reports domestic value added as a percentage share of gross exports across ASEAN+6 countries and services sectors calculated from the EORA MRIO database. Countries with domestic value-added shares that are significantly higher than the average for ASEAN and the Plus-6 economies across the different sectors are highlighted in red. The table illustrates the importance of all services as inputs in the domestic economy for countries across the region, but especially for Myanmar in ASEAN and India amongst the Plus-6 countries. Meanwhile, Malaysia, Singapore and Vietnam in ASEAN report share that are significantly lower than the respective averages. The financial intermediation and business services, retail
and wholesale trade sectors contribute the maximum to the domestic economy across ASEAN Member States; for the Plus-6, education and health services are the second-largest contributors behind financial intermediation and business services. With the exception of wholesale trade, domestic value-added shares are lower on average in ASEAN compared with the Plus-6 economies in all other services sectors.

### 3.2 Services trade in ASEAN+6

Gross global trade in services more than doubled in value over 2005–2019. The share of ASEAN member countries in average services trade increased over time from 4.8% to 7.0% and that of the Plus-six from 13.4% to 16.6% (Figure 2, left panel).

However, the overall growth over 2005–2019 masks significant differences. Global exports and imports of services grew most rapidly in the pre-GFC years (2005–2008) at 15.2% per annum, on average. Growth slumped to −10.5% during the GFC, followed by a 7.5% recovery in the post-GFC period (2009–2010) and then plummeted to 0.6% in the years from 2013 to 2016, with a rebound in the last 3 years at 5.1%. ASEAN+6 services trade registered phenomenal growth in the post-GFC years, but has fallen significantly thereafter, hovering around the global growth rates, but with ASEAN growth rates exceeding those for Plus-6 (Figure 2, right panel).

Singapore is ASEAN's largest services trading economy, by far, with exports and imports of $200 bln in 2019. These values are roughly similar to those of Japanese and Indian services trade, but well-behind what China exported ($280 bln) and imported ($500 bln) in that year. Notably, just the size of China's services trade deficit is larger than the services exports or imports of any other economy in our country sample. However, as a share of GDP, Singapore is by far the largest services trading economy in the region and drives the positive relationship between services intensiveness and per capita income observed in Figure 3. Notably, all ASEAN countries (barring Brunei and Indonesia) are more services-trade-intensive than countries at a comparable level of economic development.

According to data from the ASEAN Secretariat, 15% of ASEAN services trade in 2019 was intragroup and another 7% was with Japan (according to data from the OECD International Trade in Services Statistics). Thus, close to 40% of ASEAN services trade may be with the ASEAN+6. Similarly, according to OECD data, over 7% of East Asian services trade in 2019 was with Japan alone. Thus, most of these countries' major services trading partners are located within the

![Figure 2](image-url)  
**Figure 2** Global services trade (USD trillion), share of ASEAN+6 (%) and growth rates (%).  
*Source:* Author's calculations using WTO Services Trade data
region, emphasising the role of geographical factors, both physical and cultural, as determinants of their bilateral services trade.

At the sector level, services exports are dominated by travel (mostly personal), transport and other business services across ASEAN+6 (Figure 4), with a few notable exceptions: manufacturing services in Myanmar and Vietnam; construction services in Brunei, China and Korea; computer services in the Philippines, India and China; financial services in Singapore and Hong Kong; and charges for the use of intellectual property in Japan and Korea. On average, services exports of ASEAN Member States (barring Singapore) are less diversified sectorally compared with the distribution for Plus-6 countries.

The contribution of services exports in value-added terms is examined in Table 2 which reports backward (BP) and foreign participation (FP) as a percentage share of gross exports across ASEAN+6 and services sectors for the year 2015, based on the EORA MRIO database. Countries with GVC participation higher than the average for ASEAN and the Plus-6 across the different sectors are highlighted in red in this table. The table illustrates the importance of all services as inputs into exports across ASEAN+6 countries, but especially for Malaysia, Singapore and Vietnam in terms of backward linkages and for Myanmar, Philippines and China in terms of forward linkages.

At the sector level across ASEAN member states, Malaysia reports the maximum use of imported inputs in its gross exports (backward linkages) in construction, health and education, and hotels and restaurants; Singapore does the same in financial intermediation and business, post and telecoms, distribution and transport services. Similarly, the Philippines reports the maximum use of its exports used as inputs in gross exports of other countries (forward linkages) in maintenance and repair services, retail trade, post and telecoms, and

![Figure 3](https://example.com/figure3.png)

**Figure 3** Richer economies are also the largest services traders in ASEAN+6.

*Source: Author’s calculations using WTO Services Trade data and GDP data from World Bank, WDI*
On average, everything else being constant, the richer economies in the sample also tend to be more upstream\(^6\) in their services participation in GVCs, although the relationship is only weakly positive (Figure 5). On the whole, the services sector is relatively more downstream in ASEAN Member States and relatively more upstream in the other countries, although the difference is marginal. India, Myanmar, Brunei and Philippines export more services value-added as inputs into production and exports of other countries, while Malaysia, Cambodia and Laos import more services as inputs from the rest of the world.

3.3 | Services trade barriers in the region

Analysis of services trade barriers in the region is undertaken on the basis of data on services trade restrictiveness indices (STRI) compiled by the World Bank (Borchert et al., 2014; Gootiz & Mattoo, 2015). Unfortunately, STRI data are neither available for all ASEAN+6 countries, nor for all covered countries over time. This said, some economies in the sample for which comparable STRI data are available over time seem to have become more restrictive in their services trade restrictiveness.

\(^{6}\)GVC position is calculated as \(\ln(1 + FP_{Ser}) - \ln(1 + Bp_{Ser})\); the higher the value, the more ‘upstream’ is the country’s services sector in GVCs.
### Table 2: ASEAN+6 participation in global value chains across services sectors (% share in gross exports, 2015)

| Sector | Construction | M&R | Wholesale | Retail | H&R | Transport | P&T | FIBS | Pub_admn | Edu_Health |
|--------|--------------|-----|-----------|--------|-----|-----------|-----|------|---------|-----------|
| Country | BP | FP | BP | FP | BP | FP | BP | FP | BP | FP | BP | FP | BP | FP | BP | FP | BP | FP |
| BRN    | 11.8 | 4.0 | 14.4 | 18.2 | 9.8 | 22.1 | 7.3 | 6.2 | 13.2 | 3.6 | 12.9 | 16.7 | 8.0 | 18.7 | 4.4 | 26.6 | 9.6 | 19.9 | 6.6 | 5.9 |
| IDN    | 15.6 | 7.4 | 5.6 | 22.3 | 5.6 | 22.3 | 5.6 | 22.3 | 4.7 | 8.2 | 14.3 | 20.1 | 3.4 | 27.2 | 4.8 | 23.3 | 5.3 | 8.9 | 6.4 | 24.3 |
| KHM    | 16.6 | 14.6 | 16.4 | 19.7 | 14.6 | 24.0 | 8.1 | 20.1 | 13.9 | 15.7 | 17.1 | 16.6 | 10.3 | 25.3 | 7.4 | 25.9 | 20.4 | 17.5 | 11.5 | 11.3 |
| LAO    | 6.2 | 20.5 | 12.9 | 19.6 | 5.2 | 13.0 | 2.7 | 22.2 | 4.9 | 12.8 | 8.9 | 20.5 | 4.8 | 22.7 | 3.1 | 26.9 | 7.9 | 21.7 | 4.8 | 6.1 |
| MMR    | 0.1 | 19.0 | 0.7 | 25.8 | 0.0 | 38.4 | 0.0 | 23.8 | 0.1 | 14.3 | 0.1 | 21.3 | 0.1 | 26.2 | 0.0 | 27.7 | 0.1 | 25.2 | 0.0 | 13.5 |
| MYS    | 51.1 | 3.8 | 12.7 | 24.1 | 12.7 | 24.1 | 12.7 | 24.1 | 40.2 | 6.6 | 42.5 | 13.1 | 28.8 | 24.4 | 17.5 | 28.6 | 29.5 | 5.8 | 23.9 | 8.2 |
| PHL    | 14.4 | 13.5 | 5.6 | 28.9 | 5.6 | 28.9 | 5.6 | 28.9 | 9.4 | 10.9 | 18.8 | 19.8 | 6.0 | 29.1 | 5.4 | 26.4 | 40.7 | 8.8 | 12.0 | 28.5 |
| SGP    | 40.0 | 7.6 | 30.8 | 18.6 | 30.8 | 18.6 | 30.8 | 18.6 | 27.6 | 7.8 | 51.8 | 10.1 | 65.9 | 9.7 | 25.5 | 20.8 | 40.5 | 5.4 | 18.4 | 8.0 |
| THA    | 26.0 | 7.6 | 3.9 | 23.2 | 4.1 | 25.5 | 3.8 | 15.6 | 11.3 | 7.5 | 16.6 | 16.6 | 4.9 | 27.2 | 12.8 | 22.2 | 0.0 | 8.0 | 10.3 | 6.3 |
| VNM    | 49.9 | 3.2 | 20.8 | 23.2 | 20.3 | 25.4 | 28.3 | 4.8 | 22.1 | 6.9 | 33.1 | 13.3 | 23.0 | 19.8 | 17.4 | 18.3 | 19.9 | 12.7 | 20.1 | 5.6 |
| ASEAN  | 23.2 | 10.1 | 12.4 | 22.3 | 10.9 | 24.2 | 10.5 | 18.7 | 14.7 | 9.4 | 21.6 | 16.8 | 15.5 | 23.0 | 9.8 | 24.7 | 17.4 | 13.4 | 11.4 | 11.8 |
| AUS    | 10.0 | 8.6 | 23.9 | 20.1 | 34.8 | 18.6 | 14.0 | 21.1 | 11.4 | 5.7 | 16.1 | 16.2 | 14.2 | 19.5 | 8.5 | 22.6 | 13.4 | 9.5 | 7.3 | 9.7 |
| CHN    | 15.4 | 12.7 | 6.5 | 23.5 | 6.5 | 23.5 | 6.5 | 23.5 | 5.6 | 11.5 | 7.8 | 19.3 | 6.7 | 23.2 | 6.1 | 24.7 | 5.9 | 24.7 | 8.0 | 13.6 |
| IND    | 11.9 | 10.0 | 2.6 | 25.7 | 2.6 | 25.7 | 2.6 | 25.7 | 5.4 | 9.8 | 10.2 | 15.4 | 4.8 | 23.1 | 3.0 | 20.0 | 0.2 | 4.5 | 7.2 | 14.3 |
| JPN    | 11.4 | 7.4 | 6.3 | 27.3 | 8.8 | 27.2 | 3.7 | 18.0 | 12.7 | 12.7 | 14.4 | 17.1 | 4.1 | 26.4 | 4.2 | 26.3 | 4.7 | 7.3 | 6.1 | 9.5 |
| KOR    | 15.0 | 5.3 | 6.9 | 24.6 | 6.9 | 24.6 | 6.9 | 24.6 | 12.0 | 6.7 | 36.3 | 11.6 | 10.2 | 19.6 | 9.3 | 19.9 | 29.8 | 4.4 | 10.7 | 6.7 |
| NZL    | 15.6 | 3.4 | 20.2 | 10.6 | 19.1 | 20.7 | 21.4 | 3.7 | 9.9 | 8.0 | 17.7 | 13.2 | 17.2 | 14.9 | 5.6 | 15.6 | 9.1 | 13.4 | 10.1 | 6.5 |
| Plus-6 | 13.2 | 7.9 | 11.0 | 22.0 | 13.1 | 23.4 | 9.2 | 19.4 | 9.5 | 9.1 | 17.1 | 15.5 | 9.5 | 21.1 | 6.1 | 21.5 | 10.5 | 10.6 | 8.2 | 10.1 |

Abbreviations: FIBS, financial intermediation and business services; H&R, hotels and restaurants; M&R, maintenance and repair; P&T, post and telecommunications. Countries with GVC participation higher than the average for ASEAN and the Plus-6 across the different sectors are highlighted in red.

Source: EORA MRIO database; own calculations.
policies while others have become less restrictive (Figure 6, top panel). Looking at the available data for 2016, ASEAN Member States (53.3) are relatively more restrictive than the Plus-6 countries (43.6) on average including by modes of delivery (Figure 6, bottom left panel), although in the case of telecom services (Figure 6, bottom right panel) the ASEAN average (42.0) is lower than that for the other six countries (42.8).

The bottom panels in Figure 6 also highlight the considerable heterogeneity in the restrictiveness of applied services trade policy regimes across modes of delivery and sectors. With the exception of Japan and New Zealand, Modes 1 and 3 seem to be more restrictive for countries in the sample, on average. Significantly, some of the ASEAN Member States seem to have more liberal Mode 4 regimes than the Plus-6 countries, although Korea is by far the least restrictive towards the movement of services suppliers. The ex-ante restrictiveness of Mode1 services trade in the sample is likely to have significant implications for the associated countries in the wake of the pandemic, given that this is the one mode of delivery that is relatively insulated from the adverse effects of social-distancing and related practices.

At the sector level, professional and transport services are more restrictive across countries in the sample followed by finance and distribution services, while telecoms are the least restrictive. The ex-ante restrictiveness of professional, transport and distribution services in particular again poses challenges for countries in the region given their importance in these countries’ total services trade (Figure 4) and reliance of these sectors on modes of services delivery that require physical interaction between buyers and sellers (see the following section for details).
One immediate policy implication from the analysis in this section is the pressing need for countries to liberalise their services trade regimes, especially for Mode 1 (given that such services can continue being delivered remotely and do not require any physical interaction between buyers and sellers) and the more restrictive sectors (given the importance of these sectors in these countries' total services trade), to minimise the adverse effects of the pandemic and to accelerate the path to recovery in the aftermath of COVID-19.

4 ASEAN+6 SERVICES TRADE AND GREENFIELD INVESTMENT DURING 2020

WTO services trade data show that ASEAN+6 commercial services exports and imports declined by 19.8% and 22.1%, respectively, on a YoY basis during 2020, albeit with considerable heterogeneity across countries and sectors (see Table 3). For instance, the decline in commercial services exports for ASEAN Member states was 32.1% (USD 141.5 bln) against 14.6% (USD 152 bln) for the remaining six countries. Similarly, while ASEAN+6 travel services exports fell by 68.1% (USD 250 bln) during 2020 from their value in 2019, the corresponding decline in exports of other commercial services was only 0.2% (USD 1.35 bln).
### Table 3  YoY (%) changes in ASEAN+6 services exports during 2020

| EBOPS code and sector description | BRN | KHM | IDN | LAO | MYS | MMR | PHL | SGP | THA | VNM | AUS | CHN | IND | JPN | KOR | NZL |
|-----------------------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| **SBX4 - Goods-related services** |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| SA - Manufacturing services       | 7.9 | 4.9 | -25.2 | -6.8 | -12.2 |    | -11.5 | 6.1 | 37.6 | 9.5 |    |    |    |    |    |    |
| SB - Maintenance and repair services n.i.e. | 2.2 | -19.1 | 76.2 | -40.9 | -28.3 |    | -38.7 | -23.2 | -24.7 | 10.6 | -36.2 |    |    |    |    |    |
| **SC - Transport**               | -47.8 | -41.6 | -38.2 | -38.8 | -6.6 | -41.8 | -15.0 | -53.1 | -42.4 | 25.4 | -1.6 | -20.4 | -7.1 | -45.0 |    |
| SC1 - Sea transport              | 16.0 | 7.9 | 4.9 | 19.3 | -12.2 | -6.2 |    | 1.8 | -10.3 | -3.3 |    |    |    |    |    |    |
| SC2 - Air transport              | -71.6 | -49.3 | -73.0 | -27.7 | -50.9 | -68.7 |    | -15.2 | -46.9 | -19.2 |    |    |    |    |    |    |
| SC3 - Other modes of transport   | 0.0 | 26.1 | 27.9 | -42.6 | -25.9 |    |    | 53.2 | 13.8 |    |    |    |    |    |    |    |
| SC4 - Postal and courier services | 50.0 | -82.4 | -30.4 |    |    |    |    | -3.5 | 27.0 | 22.5 |    |    |    |    |    |    |
| **SD - Travel**                  | -82.5 | -78.6 | -80.4 | -84.9 | -78.3 | -79.4 | -74.4 | -76.3 | -44.2 | -50.5 | -57.6 | -77.0 | -49.5 | -40.9 |    |
| SOX1 - Other commercial services | 42.9 | 12.5 | -17.0 | -2.4 | 13.2 | -2.2 | -2.4 | 0.5 | 1.6 | 4.0 | 4.0 | -4.8 | -2.5 | -5.7 |    |    |
| **SE - Construction**            | 44.7 | 31.4 | -24.3 | 20.4 | 140.4 | 28.8 | -36.6 | -26.7 | -23.8 | -14.4 | -3.9 | -29.8 | -29.3 |    |    |    |
| SF - Insurance and pension services | 0.0 | -42.9 | 15.8 | 13.0 | -167 | 1.9 | -19.2 | 0.0 | 14.2 | -6.9 | -5.7 | 10.0 | 4.9 |    |    |    |
| SG - Financial services          | 108.0 | 26.1 | 0.5 | 181.8 | -62.8 | 2.5 | 8.0 | -12.9 | 9.3 | -14.9 | 10.2 | 23.7 | -17.4 |    |    |    |
| SH - Charges for the use of intellectual property n.i.e. | -25.0 | 42.4 | 5.0 | -35.3 | -46.4 | -2.5 | 14.2 | -8.6 | 33.6 | 43.8 | -8.7 | -11.6 | 0.6 |    |    |    |
| **SI - Telecommunications, computer, and information services** | 600.0 | -4.6 | -3.4 | 6.5 | -60.0 | -8.7 | -1.0 | -17.7 | 0.4 | 9.8 | 5.1 | 39.3 | 7.5 | 5.6 |    |    |
| SI1 - Telecommunications services | -1.7 | -16.3 | 23.2 | -76.7 | -20.7 | -10.8 | -35.0 | 5.7 | -4.0 | -32.8 | 0.6 |    |    |    |    |    |
| SI2 - Computer services          | -11.1 | 28.1 | -0.3 | 41.7 | -6.5 | 0.7 |    | 4.5 | 5.6 | 61.6 | 14.1 |    |    |    |    |    |
| SI3 - Information services       | 20.8 | 44.4 | -94.9 | -13.7 |    |    |    | -32.5 | -14.1 | -1.5 | 1.8 |    |    |    |    |    |
| **BOP6 - SI - Other business services** | -37.5 | 15.4 | -22.5 | -9.3 | 6.4 | 1.0 | -4.8 | 2.6 | -9.1 | 3.0 | 5.5 | -5.9 | 4.8 | -2.0 |    |    |
| SJ1 - Research and development services | 20.3 | -24.6 | -2.6 | 8.7 | 3.5 | -17.2 | -3.0 | -6.8 |    |    |    |    |    |    |    |    |
| SJ2 - Professional and management consulting services | 0.0 | -2.4 | -48.4 | -2.8 | -7.6 | 8.3 | 8.1 | 11.1 | -3.4 |    |    |    |    |    |    |    |
| SJ3 - Technical, trade-related, and other business services | -42.9 | 15.4 | -19.3 | 1.5 | -9.7 | 2.6 | -13.7 | -4.4 | -7.1 | 4.4 | -1.2 |    |    |    |    |    |
| SK - Personal, cultural, and recreational services | -72.7 | -46.8 | -5.8 | 65.2 | -15.5 | -3.7 | -68.7 | 196.3 | 8.4 | 6.2 | -34.1 | -10.7 | -40.4 |    |    |    |
| **SOX - Commercial services**    | -44.4 | -69.0 | -53.9 | -70.6 | -46.8 | -32.9 | -23.9 | -13.7 | -61.1 | -31.9 | -31.7 | -1.3 | -5.4 | -22.9 | -12.0 | -32.8 |

**Note:** Missing cells indicate non-availability of data for 2019 or 2020. The values for the aggregate EBOPS services sectors have been italicized. Large YoY declines in ASEAN+6 services exports in 2020 are marked in red. Large YoY increases in ASEAN+6 services exports in 2020 are marked in green. **Source:** WTO Trade in Services database; own calculations.
Travel and transport services exports declined across ASEAN+6, with the magnitudes of the decline in each sector again being greater for ASEAN Member States. Despite the pandemic, a few ASEAN countries also reported huge increases in their services exports at the sector level. For instance, Brunei reported a 42.9% increase in its exports of other commercial services (OCS) driven by a 600% rise in its ICT exports; Cambodia witnessed a 108% rise in its exports of financial services; and Myanmar saw its construction and financial services exports go up by 140.4% and 181.8%, respectively. Amongst the Plus-6 countries, Japan reported a 23.1% rise in its exports of goods-related services (driven by a 37.6% increase in its manufacturing services exports); China witnessed a 25.4% increase in its transport services exports; Japanese ICT services exports went up by 39.3% (driven by a 61.6% rise in exports of computer services); and Australia saw a 196.3% rise in its personal, cultural and recreational (PCR) services exports.

Additional analysis based on bilateral data on announced greenfield investment in the services sectors during 2019 and 2020 from fDI Markets, a private database maintained by the Financial Times, reveals that announced greenfield investment in these sectors for ASEAN+6 declined by 33.2% from USD 133.8 bln in 2019 to USD 89.2 bln in 2020. Meanwhile, the intra-ASEAN+6 decline was even more severe—announced greenfield investment fell from USD 28.8 bln in 2019 to USD 16.8 bln in 2020, registering a 41.8% decline.

The COVID-19 outbreak has been a shock for ASEAN+6 countries much like the rest of the world. We would thus expect the magnitude of the YOY decline in ASEAN+6 services trade to be positively correlated with COVID-19-incidence (measured by the share of the number of COVID-19 cases in the population of these countries or by the share of COVID-19-related deaths in the number of COVID-19 cases) and the stringency of government measures imposed in response to the virus outbreak. It turns out, however, that the expected associations are counterintuitive (see Figure 7, left and right panel, respectively), which suggests that other underlying factors may be more determining. One such factor is the different ways in which services trade is transacted.

FIGURE 7 Decline in ASEAN+6 services trade is found to be negatively correlated with the incidence of COVID-19 cases and the stringency of government response measures.

Source: WTO Trade in Services database; World Bank, World Development Indicators; and European Centre for Disease Prevention and Control; own calculations

We consider the following 11 sectors in the fDI Markets database as services for the purpose of analysis in this paper: real estate, hotels and tourism, leisure and entertainment, health care, communications, renewable energy, software and IT services, transportation and warehousing, financial services, business services and biotechnology.
At least 75% of exports in other commercial services (except for construction and heritage and recreation services) across ASEAN+6 countries are transacted remotely via Mode 1 (see Table 4), which explains why such trade was relatively insulated from the adverse effects of travel restrictions and social-distancing imposed during 2020. However, since the combined

| Sector code | Description                          | ASEAN        | Plus-6       |
|-------------|--------------------------------------|--------------|--------------|
| SA          | Manufacturing                        | 0 100 0 0    | 0 100 0 0    |
| SB          | M&R                                  | 0 90 0 10    | 0 90 0 10    |
| SC          | Transport                            | 57 17 27 0   | 53 14 33 0   |
| SC1         | Sea                                  | 78 22 0 0    | 77 23 0 0    |
| SC2         | Air                                  | 76 24 0 0    | 82 18 0 0    |
| SC3         | Road                                 | 56 44 0 0    | 79 21 0 0    |
| SDA         | Business Travel                      | 0 100 0 0    | 0 100 0 0    |
| SDB1        | Health-related Travel                | 0 100 0 0    | 0 100 0 0    |
| SDB2        | Education-related Travel             | 0 100 0 0    | 0 100 0 0    |
| SDB3        | Other Personal Travel                | 0 100 0 0    | 0 100 0 0    |
| SE          | Construction                         | 0 0 82 18    | 0 0 92 8     |
| SF          | Insurance                            | 100 0 0 0    | 100 0 0 0    |
| SG          | Finance                              | 100 0 0 0    | 100 0 0 0    |
| SH          | IP charges                            | 100 0 0 0    | 100 0 0 0    |
| SI1         | Communications                       | 100 0 0 0    | 100 0 0 0    |
| SI2         | Computer                             | 75 0 0 25    | 79 0 0 21    |
| SI3         | Information                          | 100 0 0 0    | 100 0 0 0    |
| SJ1         | R&D                                  | 75 0 0 25    | 76 0 0 24    |
| SJ2         | Professional and MC                  | 75 0 0 25    | 85 0 0 15    |
| SJ3         | Tech, trade-related and OBS          | 85 0 0 15    | 79 1 0 20    |
| SK1         | Audiovisual                          | 70 10 0 20   | 70 10 0 20   |
| SK21        | Health                               | 75 0 0 25    | 75 0 0 25    |
| SK22        | Education                            | 75 0 0 25    | 88 0 0 12    |
| SK23        | Heritage and recreation              | 13 0 82 4    | 2 0 97 1     |
| SK24        | Other personal                       | 73 0 3 25    | 9 0 89 3     |
| SWSJ34      | Distribution                         | 42 0 58 0    | 33 0 67 0    |
| SOXSW       | TOTAL                                | 40 22 34 4   | 25 7 65 3    |

**Source:** WTO TiSMoS; own calculations.

**Abbreviations:** MC, management consulting; OBS, other business services.
shares of travel services (wholly supplied via Mode 2) and transport services (Mode 2 has a considerable share; see Table 4) in total commercial services exports is greater than that of other commercial services exports across several ASEAN+6 countries (see Figure 4), the adverse effects of travel bans and social-distancing measures are strongly felt on services trade as a whole. Thus, the way in which services trade is transacted across sectors in these countries explains the decline in the aftermath of the COVID-19 outbreak together with the sectoral composition of services trade.

These inferences are corroborated by Figure 8, which shows the relationship between the decline in total services trade observed in 2020 relative to 2019 and the share of services trade delivered by Modes 1 and Modes 2–4, respectively, in total services trade in 2017. These figures show that the decline in the value of services trade in 2020 was less pronounced for countries that had a larger share of their services trade transacted online via Mode 1 and more pronounced for countries where the share of Modes 2–4 in total services trade was large before the crisis.

Heterogeneity in the sectoral and modal distribution of services trade amongst ASEAN+6 also translates into differences in impact and recovery times. For instance, financial services account for roughly 15% of the services exports of Singapore (see Figure 4), but these services are delivered exclusively via Mode 1. Thus, despite their sectoral importance, the impact on these services was limited as they could continue being delivered remotely. In contrast, Cambodia, Laos and Thailand amongst ASEAN Member States and Australia-New Zealand amongst the Plus-6 countries are hugely reliant on tourism services exports (see Figure 4), which are exclusively delivered by Mode 2; their loss has thus severely impacted these economies as international tourist flows to these countries remained subdued for precautionary reasons, thereby impacting ‘consumption abroad’. Given mandatory and voluntary travel restrictions in the wake of the pandemic, they are also likely to take much longer to recover. Meanwhile, exports of other business services account for nearly 35% and 45%, respectively, of India’s and the Philippines’ total services exports (see Figure 4) and only up to a quarter of these services are delivered by Mode 4 and the rest via Mode 1. This resulted in a relatively modest pandemic-related impact on the Indian and Filipino economies via effects on business services exports.

This said, while remotely deliverable Mode 1 services seem theoretically tradable during these times as these can be transacted online and do not require the need for physical proximity between the buyer and seller for the transaction to be made, there are several circumstances

![Figure 8: Modal share of services trade explains the decline in the value of services trade in 2020.](source: WTO Trade in Services database and TiSMoS; own calculations)
which may render even such trade infeasible. The first and foremost is lack of access to ICT, the digital divide and infrastructure-related issues which are more likely to affect the ASEAN least developed countries (LDCs). Other challenges associated with digitalisation include cybersecurity and data privacy concerns; exposure to digital fraud; online misinformation; asymmetric market power; and platform dominance. Moreover, several BPM services are linked to economic activity in other sectors such as manufacturing, transport and tourism, which are directly impacted by intermittent partial/complete lockdowns. In contrast, other Mode 1 health-related services like telemedicine and medical transcription services have witnessed a spurt during the pandemic.

This crisis has also witnessed a proliferation in online shopping, social media use, Internet telephony and teleconferencing, and streaming of videos and films, resulting in spikes in business-to-consumer (B2C) sales (especially of medical supplies, household essentials and food products) and an increase in B2B e-commerce, although again international travel restrictions mean that this rise is more within economies than cross-border. Demand has also increased for internet and mobile data services (WTO, 2020b). The pandemic has also incentivised governments and the private sector to come up with innovative solutions for moving businesses online to sustain economic activity during the pandemic, and lay the groundwork for eventual recovery (details of such initiatives for some ASEAN+6 countries can be found in APEC, 2021; Shepherd & Shingal, 2021). In the education sector, for instance, several Universities have moved to online classes, substituting Mode 2 by Mode 1. For countries like India and the Philippines, with an established capacity in IT-enabled services, the pandemic

| (1) SX_INT_ijt | (2) SX_FNL_ijt | (3) SX_TOT_ijt | (4) SX_INT_ijt | (5) SX_FNL_ijt | (6) SX_TOT_ijt |
|--------------|--------------|--------------|--------------|--------------|--------------|
| INTL_i*ln(CI_i) | 0.026*** | 0.033*** | 0.029*** | 0.026*** | 0.033*** | 0.029*** |
|              | (0.004) | (0.004) | (0.004) | (0.004) | (0.004) | (0.004) |
| INTL_i*OSI_i | −0.900*** | −1.09*** | −0.958*** | −0.900*** | −1.09*** | −0.958*** |
|              | (0.075) | (0.086) | (0.073) | (0.075) | (0.086) | (0.073) |
| INTL_i*ln(CI_i) |              |              |              |              |              |              |
|              |              |              |              |              |              |              |
| INTL_i*OSI_i |              |              |              |              |              |              |
|              |              |              |              |              |              |              |
| PTA_i | 0.049*** | 0.059*** | 0.054*** | 0.049*** | 0.059*** | 0.054*** |
|              | (0.0144) | (0.016) | (0.014) | (0.0144) | (0.016) | (0.014) |
| Observations | 2826 | 2926 | 2954 | 2826 | 2926 | 2954 |
| Pseudo-R-squared | .999 | .999 | .999 | .999 | .999 | .999 |

Fixed effects:
- Exporter-Year: YES
- Importer-Year: NO
- Exporter-Importer: YES

Note: Robust standard errors are clustered by dyad-year in all specifications. Significance levels: *10%, **5%, ***1%.

TABLE 5 Impact of COVID-19-induced stringency on ASEAN+6 services exports
has provided them with an opportunity to capitalise on their comparative advantage as more and more services activities move online. In the case of professional services, like architecture, where Mode 4 is important, anecdotal evidence again points to the move towards digital platforms.\(^8\)

For other modes of delivery, the adaptation of transport services—for example refitting airplanes so they can transport cargo rather than passengers—is another important example of rapid and flexible responses. One sector that has been particularly hard hit by the crisis has been tourism and its ancillary services as they rely almost exclusively on Mode 2 trade. In response, ASEAN+6 countries have implemented a battery of policy measures and collaborated with the private sector to promote tourism as well as help businesses remain open. Several countries including Australia, Japan, New Zealand, Singapore and Thailand began promoting domestic tourism to revive their tourism and related support sectors. Australia and New Zealand also opened up their borders to each other to create a travel corridor.

## 5 | ESTIMATING THE EFFECT OF THE PANDEMIC ON THE DECLINE IN ASEAN+6 SERVICES TRADE

Estimating the effect of the pandemic on services trade using real-time data on COVID-19 incidence would require the availability of bilateral data on services trade for the sample countries in 2020, which, unfortunately, are still not available. We thus resort to estimating an augmented structural gravity model based on bilateral services trade data for the sample of ASEAN+6 countries for 2019 and 2020 from the recently released ADB MRIO dataset (Consing et al. 2020). The estimating equation takes the following form:

\[
X_{ijt} = \exp[\beta_1 \ln(Covid_{it}) \cdot INTL_{ij} + \beta_2 \ln(Covid_{jt}) \cdot INTL_{ij} + \beta_3 PTA_{ijt} + \mu_i + \alpha_t + \gamma_j + \epsilon_{ijt}]
\] (1)

where \(X_{ijt}\) is the value of bilateral services exports from country \(i\) to \(j\) at time \(t\) (years include 2019 and 2020); the \(Covid_{it}, Covid_{jt}\) vector includes both the (log of) number of reported cases and the Oxford stringency index in the exporting and importing countries, respectively (with all respective values set to zero during 2019); and \(PTA_{ijt}\) is a binary dummy denoting membership of preferential trade agreements (including those notified under Article V of the WTO’s General Agreement on Trade in Services) constructed using information on trade agreements notified to the WTO in its RTA-IS database. \(\mu_i, \alpha_t\) and \(\gamma_j\) are the dyadic and time-varying source and destination country fixed effects; and \(\epsilon_{ijt}\) is the error term.

Recent advancements in the estimation of structural gravity advocate the use of three-way fixed effects to mitigate endogeneity-induced biases in estimation (for instance see Baier et al., 2014; Piermartini & Yotov, 2016). Note that the time-varying source and destination country fixed effects also account for multilateral resistance terms (MRT) in estimation, while the dyadic fixed effects subsume the bilateral gravity determinants of bilateral trade (contiguity, common language and colonial antecedents). Equation (1) is estimated using the Poisson Pseudo-Maximum Likelihood (PPML; Silva & Tenreyro, 2006), which also accounts for heteroskedasticity-related concerns in estimation.

Recent advancements in the estimation of structural gravity also advocate the inclusion of data on intra-national trade flows in the dependent variable, which are directly available in the

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\(^8\)https://www.g2.com/articles/architectural-design-remote-work-processes
A DB MRIO dataset. This not only makes the model theory consistent (Fally, 2015) but in the context of our analysis also enables us to directly estimate the effect of the COVID-19-induced shock and its heterogeneity in the exporting and importing countries (the respective variables are otherwise collinear with the time-varying exporter and importer fixed effects) using interaction terms with a binary dummy \( \text{INTL}_{ij} \) that takes the value one for cross-border trade flows (see Anderson et al., 2018; Benz & Jaax, 2020 for similar applications).

The reported coefficient estimates in Table 5 suggest that while the quantitative impact of the number of COVID-19 cases on services exports may have been small in magnitude, the stringency of lockdowns imposed in response to the pandemic may have decreased intermediate, final and total bilateral services exports by 59.3%, 66.4% and 61.6%, respectively. Given the way in which MRIO databases are constructed, the effect of these variables at the importing-country level could not be estimated in combined regressions as the variables were dropped due to collinearity. However, when the covariates at the exporting- and importing-country levels were estimated in distinct regressions, then the estimated effects were found to be identical. In other results, PTA-membership was found to increase intermediate services exports by 5.0% and final services exports by 6.1%, ceteris paribus and on average.

6 | CONCLUSION

This paper examines the implications of COVID-19 for services trade in the Asia-Pacific. An assessment of the implications of the pandemic for services trade is important for policy design to reduce service link costs for overcoming the economic and health challenges emanating from the crisis. Stylised facts show that ASEAN+6 commercial services exports and imports declined by 19.8% and 22.1%, respectively, on a YoY basis during 2020, albeit with considerable heterogeneity across countries and sectors, which is found to be correlated with the different ways in which the sample countries transact services trade across sectors. Corroborating the decline in services trade, announced greenfield investment in 11 services sectors also fell by a third for ASEAN+6 in 2020 relative to 2019, with the intra-ASEAN+6 decline being more severe at 41.8%. Finally, structural gravity estimates suggest that the stringency of containment measures imposed in the wake of the pandemic may have reduced ASEAN+6 services exports by 61.6%. Thus, until the SARS-CoV-2 vaccine can effectively immunise people across the world, COVID-19 will continue to affect countries in multiple ways. It is thus imperative that countries in the region undertake measures to ensure that adverse effects on services trade are mitigated and economic recovery expedited.

To begin with, countries in the region must refrain from imposing restrictive barriers on services trade. The ASEAN member states are already more restrictive in their applied services trade policy than the Plus-6 countries, and all countries in the sample are particularly restrictive vis-à-vis Mode 1 trade and in professional services. Existing literature already demonstrates the adverse effects of regulatory incidence and heterogeneity in regulation on services trade (Kox & Nordås, 2007; Nordås, 2016; Nordås & Rouzet, 2017; Rouzet et al., 2017), especially that delivered by commercial presence (Andrenelli et al., 2018; Backer et al., 2018; Kox & Nordås, 2009) and movement of services suppliers (Benz et al., 2020; Shingal, 2020c), and on services value added in GVCs (Miroudot & Cadenat, 2017).

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\[ \text{This is computed as [exp(coeff.est)-1]*100.} \]
Ideally, ASEAN+6 countries should use the pandemic as an opportunity to liberalise prevailing barriers to services trade; at the very least, they should not impose new barriers. The need for social-distancing and continued fear of the pandemic may result in all countries imposing additional barriers. Thus, while business and leisure travel will eventually be permitted, there are likely to be significant checks on the ground for health reasons, and mandatory quarantine periods. ASEAN+6 countries would do well to ensure that such restrictions, while necessary in these times, do not become prohibitive. This would be a crucial determinant of economic recovery in these countries in the pandemic's aftermath.

The increasing use of digital trade and e-commerce also points to the need to unshackle and incentivise the e-commerce sector. Existing literature suggests that data restrictiveness has adverse effects both on the productivity of domestic firms (Ferracane et al., 2018) and on imports of services (Ferracane & van der Marel, 2018) in countries imposing the data-restrictive policies. Governments across the world have already adopted new measures and the private sector has also co-operated to facilitate e-commerce by ‘increasing network capacity, offering expanded data services at little or no cost, lowering or scrapping transaction costs on digital payments and mobile money transfers, improving delivery services and other logistics, using digital tools to enforce measures and disseminate information, promoting telehealth services, and leveraging ICT for surveillance’ (WTO, 2020b). But new and practical e-commerce solutions are needed to enable fast and secure cross-border movement of goods and services. One suggestion would be to implement a common e-commerce and digital trade policy across the region and liberalise barriers to digital trade.

In one sense, the pandemic has highlighted the significance of the digital economy, including the pressing need to bridge the digital divide, both within and across countries. Many traditional obstacles have been accentuated and have continued to hamper greater participation of small producers, sellers and consumers in e-commerce activities in developing countries, especially LDCs. This reinforces the need for efficient and affordable ICT services and related emerging technologies in the sample countries to facilitate e-commerce during this period. Thus, investment in ICT infrastructure is essential to provide digital access and bridge the digital divide both within and across ASEAN+6 countries.

**DATA AVAILABILITY STATEMENT**
The data that support the findings of this study are available from the corresponding author upon reasonable request.

**DATA CITATION**
*Aggregate and sectoral services trade*: WTO Services Trade Data. https://data.wto.org/
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