

# Cross-border value chains in developing Asia survive trade tensions and the global pandemic

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## Highlights

- Cross-border value chains regionalized in developing Asia as US–PRC trade tensions mounted.
- Value chain linkages with the People’s Republic of China supported the resilience of developing Asia during the COVID-19 pandemic.
- Cross-border value chain linkages weakened in 2020 as global trade was disrupted by the pandemic; but this was mostly reversed in 2021.
- Recent disruptions to cross-border value chains highlight the importance of diversification to ensure resilience in turbulent times.

## Introduction

**Global value chains remain a key driver of exports and growth in Asia.** Asia’s exports doubled from 16% in 1990 to 34% in 2008 relative to gross domestic product (GDP), largely driven by the global fragmentation of production processes. In turn, net exports and associated investment in manufacturing have supported growth in Asia in the last three decades. After 2008, however, exports-to-GDP moderated in Asia to 25% in 2019, reflecting what some have dubbed *slowbalization* ([The Economist, 2019](#)) or even *de-globalization* ([Irwin, 2020](#)). This headline figure, however, conceals large heterogeneity. First, 60% of the decline in global trade-to-GDP after 2008 was due to falling commodity prices—the decline was milder for manufactured trade, and the ratio kept rising for services ([Baldwin, 2022](#)). Then, the slowdown was driven by the People’s Republic of China (PRC) which became more self-reliant. Given their persisting role in Asian economies, understanding the dynamics behind cross-border value chains is crucial to strengthen the resilience of Asian economies to various shocks.

**This Brief highlights how cross-border value chains withstood the disturbances that affected developing Asia since 2016.**<sup>1</sup> During this period, trade tensions mounted between the PRC and the United States (US) and they materialized in 2018 in the form of tariffs and export restrictions imposed by the US. The PRC also imposed retaliatory tariffs. The escalation of tariffs paused in January 2020, with the ‘Phase One’ agreement between the US and the PRC, but cross-border value chains were hit again in 2020 by the COVID-19 pandemic.

**Data from ADB’s Multiregional Input-Output (MRIO) database allows to unpack cross-border value chains.** Analyses of the impact of US–PRC trade tensions and the pandemic mostly rely on gross

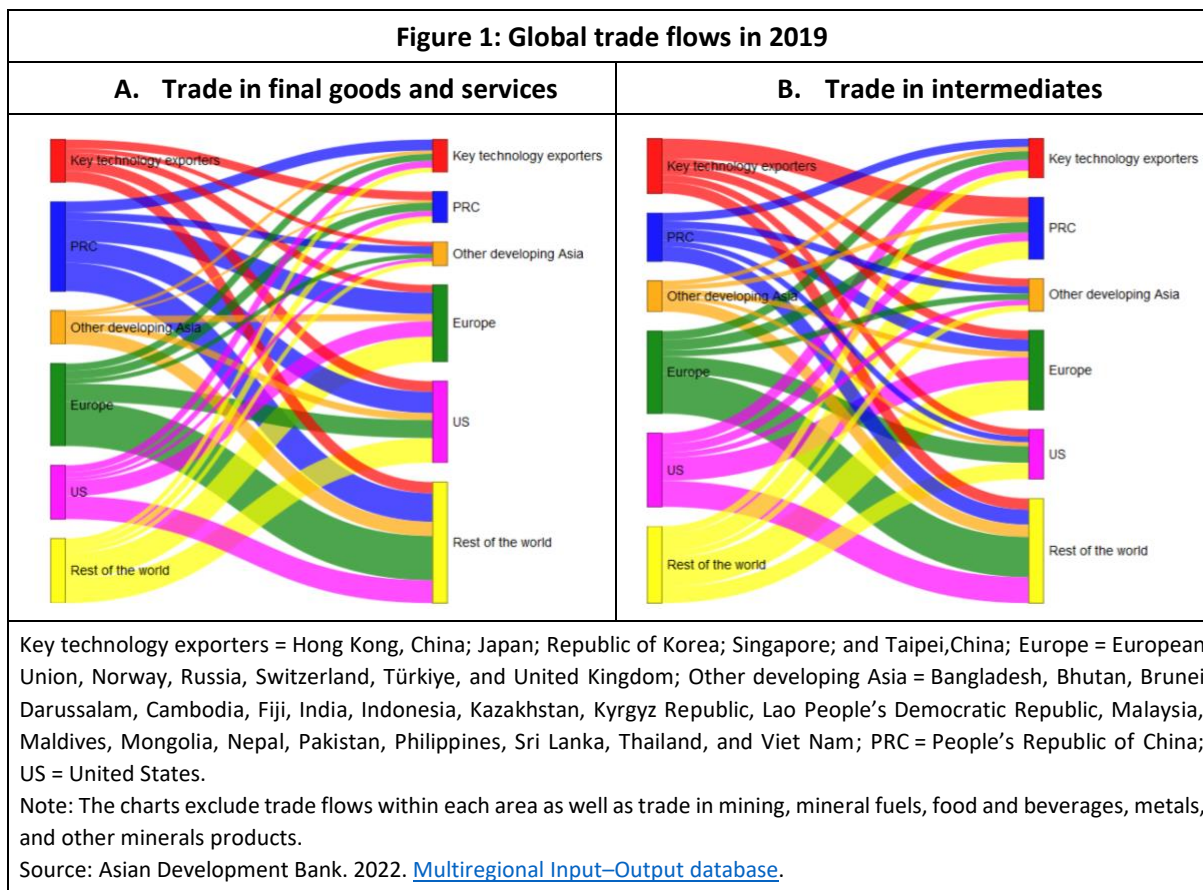
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<sup>1</sup> Developing Asia is as per [ADB’s classification](#).

merchandise trade data. This data is valuable given its wide global coverage, monthly frequency, and timely release. But using it to draw implication for national income can be misleading as gross exports involves double counting of value addition for the input which are imported. In some cases, gross exports even exceed total value addition (i.e., GDP), as in Hong Kong, China; and Singapore. Looking at trends can also be misleading: rising gross exports can reveal increased exports of value addition, but it can also arise from increased fragmentation of production processes across borders. In principle, gross exports can even rise while the domestic value addition content of exports declines. In contrast, the MRIO data allows to assess domestic and cross-border input-output linkages and compute the value addition composition of trade. The data covers 35 sectors and 62 economies, including 24 in developing Asia. It makes it possible to analyze interdependence between economies and positioning along global value chains. Ultimately, this allows to better understand how trade affects income, and to assess risks associated with dependence on specific economies.

## The PRC has been a magnet for Asia's exports of intermediates

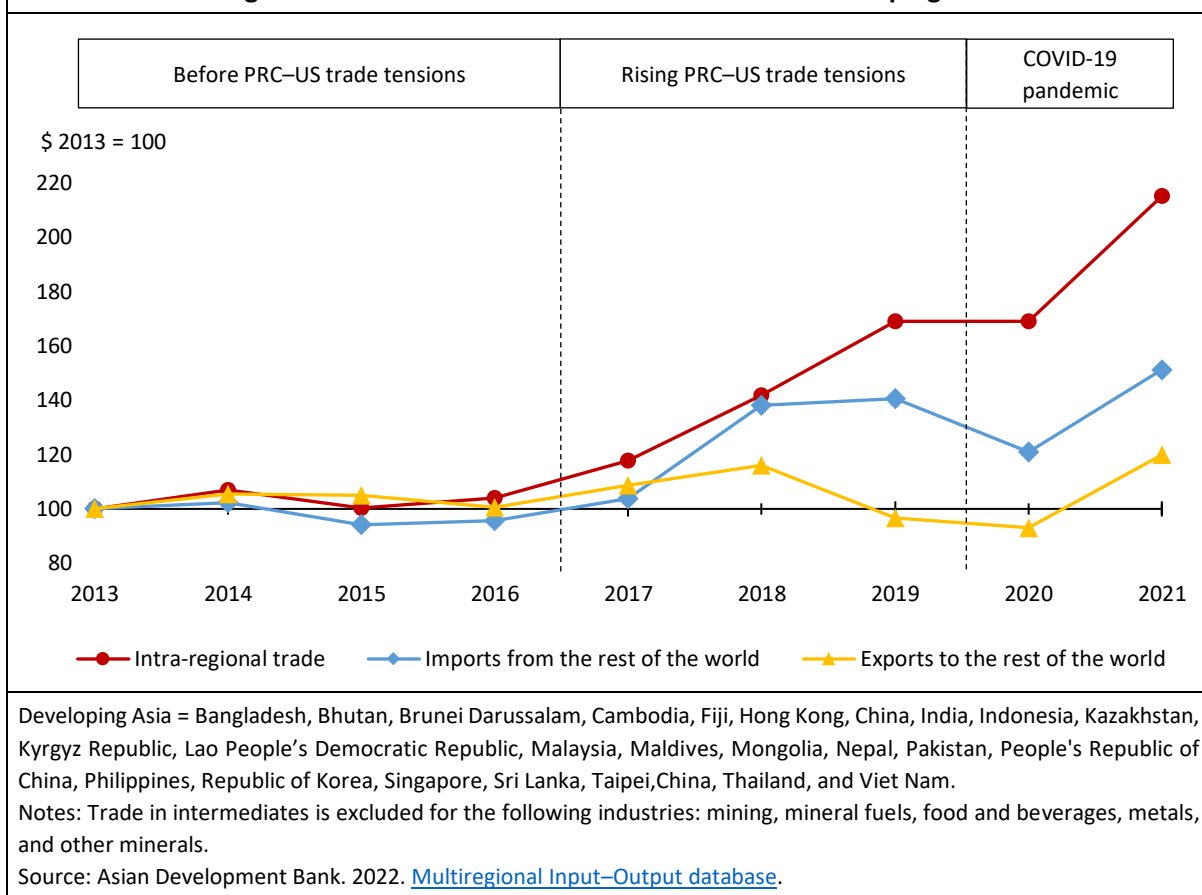
**The PRC sources intermediate inputs globally to assemble and export final goods.** The PRC plays a far greater role globally in supplying final goods and services than intermediates (Figure 1). For example, it supplies 28% of Europe's imports of final goods and services from outside the continent, but only 15% of its imports of intermediates. Asia's key technology exporters—i.e., Hong Kong, China; Japan; Republic of Korea; Singapore; and Taipei,China—supply close to a third of these imports, notably core components in electronic goods such as chips, liquid-crystal display screens, and lenses (Figure 2). Conversely, over a third of exports of intermediates from Asia's key technology exporters are bound to the PRC. Europe and the US are also key suppliers of intermediates to the PRC.



## Regionalization intensified with the US–PRC trade conflict

**Trade in intermediates soared within developing Asia as US–PRC tensions escalated.** There was no sign of regionalization prior to the US–PRC trade conflict: developing Asia’s value-added trade in intermediates was stable in 2013–2016, for both intra- and extra-regional trade (Figure 2). By 2019, however, value-added trade in intermediates within developing Asia had risen by **63%** compared to 2016 (red line). In contrast, developing Asia’s imports of intermediates from the rest of the world had only risen by **47%** (blue line) while exports of intermediates to the rest of the world had fallen by **4%** (yellow line). These patterns reflect increased regionalization as US–PRC tensions were mounting. In fact, regional trade in intermediates increased the fastest in 2018, by **20%**—the year that also recorded the largest increases in tariffs between the US and the PRC. In contrast, developing Asia’s exports of intermediates to Europe, Japan, and the US contracted by **0–12%** in the same year. This largely reflects diversification by PRC manufacturers away from suppliers in the US and its partners, to increasingly rely on regional suppliers.

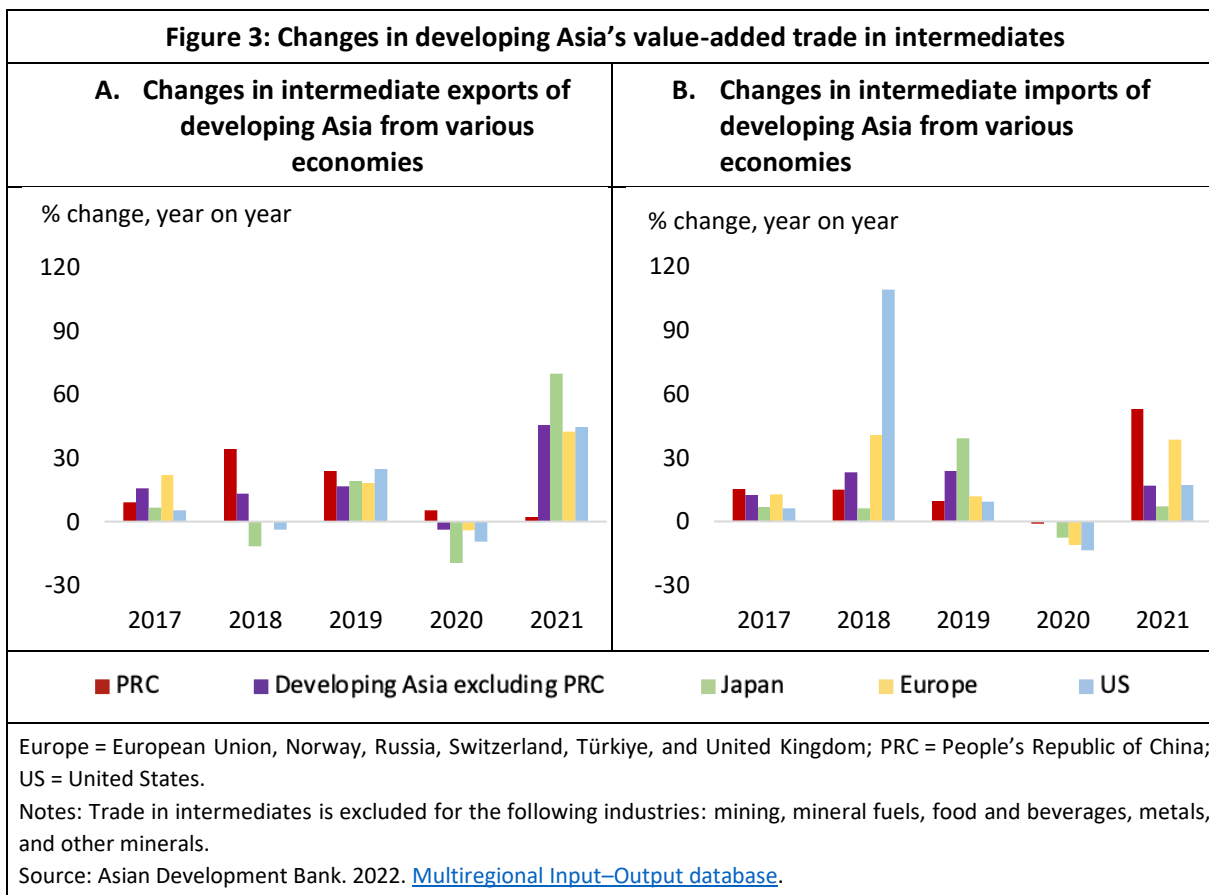
**Figure 2: Value-added trade in intermediates in developing Asia**



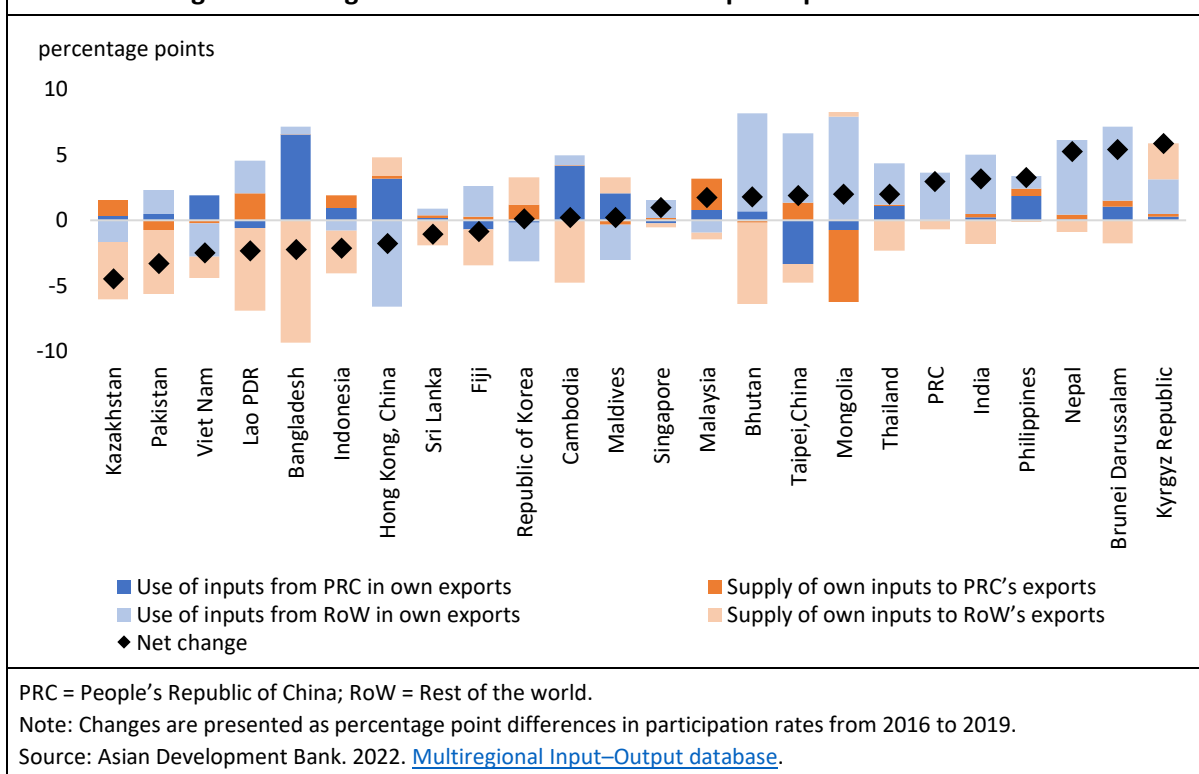
**Sourcing by PRC exporters led regionalization.** The 63% rise in value-added trade in intermediates within developing Asia in 2016–2019 was largely driven by regional exports of intermediates to the PRC, which rose by a staggering 81%. In 2018 alone, these exports rose by 34%—more than twice faster than exports of intermediates to other regional economies (Figure 3.A). This rise in the PRC’s imports of intermediates notably benefited the Republic of Korea, Malaysia, and Taipei,China, which host large semiconductor manufacturing industries (dark orange bars in Figure 4). In parallel, regional exports of intermediates to the rest of the world largely declined, notably in Malaysia, Viet Nam, and Taipei,China (light orange bars). This made the PRC even more critical as an outlet market for producers of intermediate inputs across Asia.

**The role of the PRC as a regional supplier of intermediates declined.** In value added terms, exports of inputs by the PRC to the rest of developing Asia increased by 45% in 2016–2019, but this increase was slower than for exports to developing Asia from Japan (57%), Europe (77%), and the US (143%) (Figure 3.B). The relative role of the PRC in supplying inputs to regional partners thus declined. Across economies, this decreasing regional reliance on inputs from the PRC is illustrated in Figure 4 by the dark blue bars being either shorter than the light blue bars (e.g., Thailand) or even negative (e.g., Taipei,China). In contrast, Hong Kong, China; and Viet Nam stand out as they became more reliant on inputs from the PRC. Reliance on inputs from the PRC also increased in textile exporters such as Bangladesh and Cambodia.

**Imports of intermediates from the US temporarily spiked in 2018.** Developing Asia’s value-added imports of US intermediates **more than doubled** in 2018, led by a **160%** rise in imports of US intermediates in the PRC as businesses secured inventories in anticipation of further tariff increases. Sourcing also rose by **41%** from Europe in 2018—and by the **same percentage** from Japan in 2019. This may reflect efforts to mitigate the risk of these economies also imposing trade restrictions to the PRC, but also longer-term sourcing diversification strategies towards Europe and Japan, rather than the US. Besides the PRC, other regional economies also rushed to secure US intermediates in 2018: these imports increased by **71%** for Asia’s key technology exporters, and by **105%** for other regional economies. This suggests that uncertainty brought about by the trade conflict pushed businesses to increase inventory, even in the economies that were not part in the conflict.



**Figure 4: Changes in cross-border value chain participation in 2016–2019**

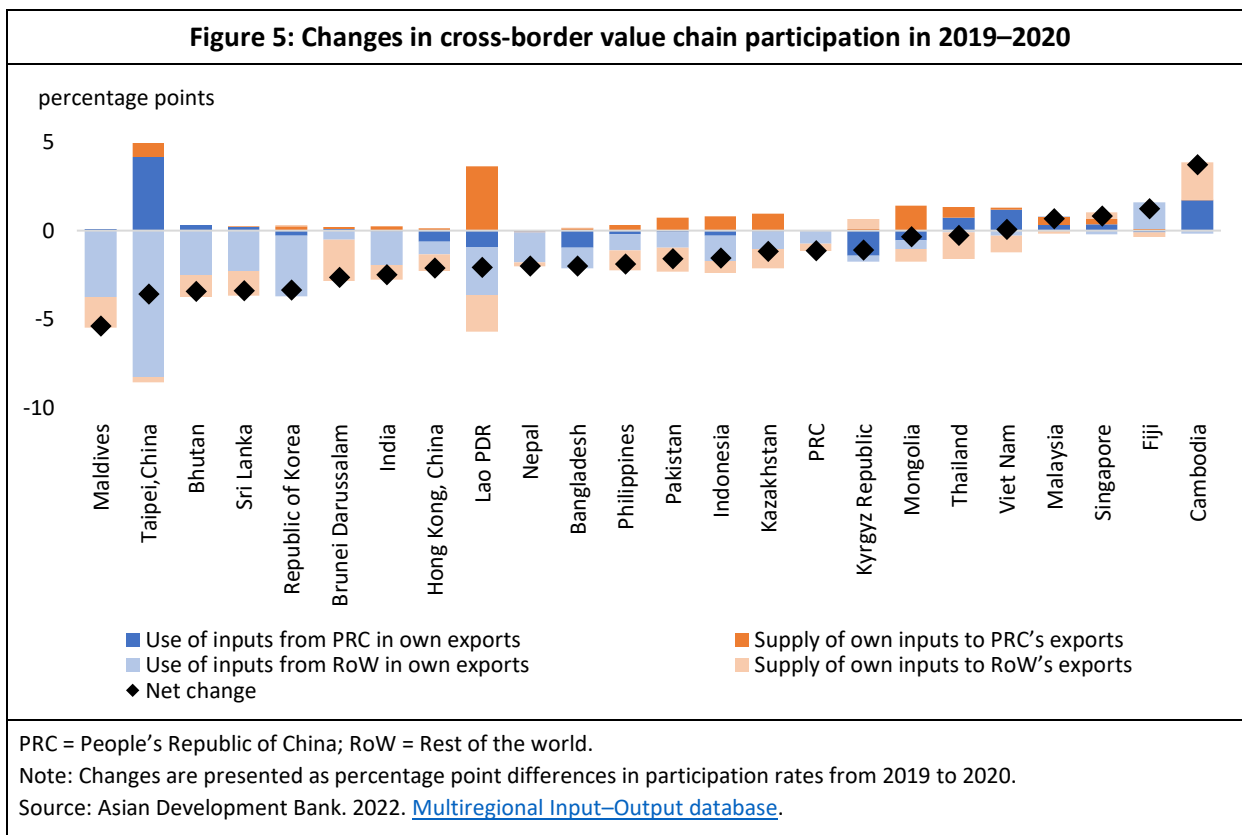


## Regional value chains cushioned the impact of the pandemic

**Resilient regional supply of inputs kept downstream industries afloat in developing Asia during the pandemic.** With the pandemic hitting the global economy in 2020, developing Asia’s imports of inputs declined by 8% from Japan, 11% from Europe, and 14% from the US (Figure 3.B). In contrast, regional imports of inputs from the PRC only declined by 1.0% and they even increased by 0.3% from the rest of developing Asia. The resilience of regional sourcing thus mitigated the decline in imports from non-regional suppliers. The PRC contributed the most to sheltering the region from input shortages. Imports of inputs in the region generally decreased in 2020, as shown by the negative blue bars in Figure 5. Port closures and other disruptions—including the blockage of the Suez Canal in March 202—created supply chains bottlenecks, leaving little time for Asian manufacturers to find alternative suppliers. But imports of inputs from the PRC still increased in Cambodia, Taipei, China, Thailand, and Viet Nam (dark blue bars), helping these economies navigate through shortages in inputs.

**Resilient PRC exports kept upstream industries afloat in the region.** Regional sales of intermediates to the PRC increased by 6% in 2020, while sales to Europe fell by 4%, by 10% to the US, and by 20% to Japan (Figure 3.A). Commodity exporters such as Brunei Darussalam, Lao PDR, Mongolia, and Kazakhstan suffered from declining sales outside the region (negative light orange bars in Figure 5) but rising purchases by the PRC partially offset these declines in Brunei Darussalam and Kazakhstan, and more than offset them in Lao PDR and Mongolia (dark orange bars). The decline in global demand for intermediates was generally milder for exporters of manufactured intermediates such as the Republic

of Korea, Singapore, Taipei, China, Thailand, and Viet Nam, but here also, PRC's exporters mitigated the slowdown by increasing purchases of inputs. The resilience of PRC's demand was due to its early emergence from lockdowns and strong rebound after March 2020, notably to supply electronics for remote working and home leisure globally. Healthy final demand addressed to the PRC thus helped developing Asia's exporters of inputs weather the pandemic.



## Regional value chains drove the recovery from the pandemic in 2021

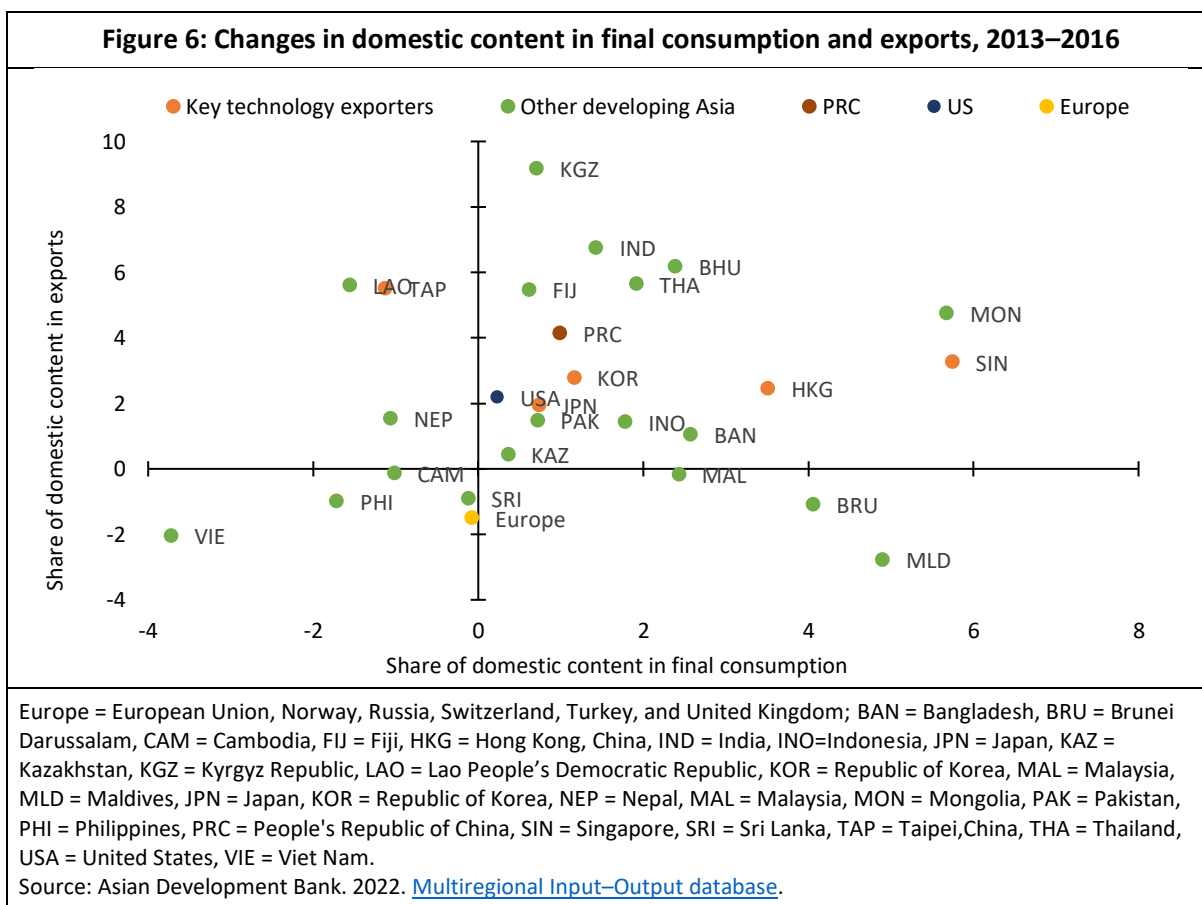
Developing Asia's exports of intermediates grew across all destinations in 2021 (Figure 3.A). Sales of inputs increased the most to Japan (70%) and to the rest of developing Asia (45%), partly reflecting catching up from the previous year's fallout. In contrast, regional exports of intermediates to the PRC only record 2% growth in 2021. This slower growth mostly reflects the resilience of PRC purchases at the height of the pandemic in 2020. PRC sales of intermediates, on the other hand, rose by a staggering 53% in 2021 (Figure 3.B), driven by the recovery of manufacturing sectors in other regional economies.

## De-globalization in 2020, re-globalization in 2021

**This section explores recent patterns of globalization and de-globalization along two dimensions.**

From a *final consumption perspective*, an economy producing a smaller share of its final consumption can be deemed to globalize. This is the case when consumers replace a domestically produced product by an imported one. From a *trade perspective*, globalization can be understood as a decline in the domestic value-added content of exports: a textile exporter that would replace domestic by imported cotton would contribute to globalization.

**Value chains were mostly de-globalizing in Asia prior to 2016.** Domestic value-added content increased in both final consumption and exports for 15 of 25 Asian economies with available data, in 2013–2016 (**Error! Reference source not found.**, top-right corner). And for 6 other economies, value chains de-globalized in terms of rising domestic content in either exports (top-left corner) or final consumption (bottom-right corner). In this period prior to the US–PRC trade conflict, the share of *domestic content in exports* increased the most in India, and the Kyrgyz Republic. This was due to rising exports of information technology services for India, and gold for the Kyrgyz Republic. During the same period, the share of *domestic content in final demand* increased the most in Mongolia and Singapore. In contrast, globalization progressed by both metrics in only four Asian economies. This was most striking in Viet Nam, where electronics assembly grew rapidly—a sector which heavily relies on cross-border value chains, and which development is thus prone to increasing the foreign content in output.





**The US–PRC trade conflict did not trigger de-globalization.** Disruptions arising from the US–PRC trade conflict were expected to cause reshoring, and thus de-globalization. And because it also hampers trade between the PRC and traditional partners of the US in the region, the trade conflict was also expected to curb regionalization in Asia. In fact, only two Asian economy de-globalized along both axes: Hong Kong, China, and Malaysia (Figure 7, top-right corner). For many less developed regional economies, self-reliance increased in domestic consumption but decreased for exports (bottom-right corner). In contrast, self-reliance declined for most regional advanced economies in terms of consumption, but increased for exports, with machinery exports embedding larger shares of domestic content (top-right corner).

**Trade disruptions during the pandemic caused widespread de-globalization in 2020.** Value chains de-globalized in terms of final consumption and exports in most Asian economies (Figure 8, top-right corner). De-globalization was most acute in tourism-dependent economies such as Fiji and the Maldives. This is because tourism collapsed while it largely relies on cross-border value chains, particularly in transport. Cross-border value chains were also hit harder in landlocked countries such as Bhutan, the Kyrgyz Republic, and Mongolia, which were cut from ocean shipping. Cambodia is the only Asian economy where value chains further globalized despite the pandemic. This is because the country increased its reliance on imported inputs for its textile exports, and on imported food for its final consumption.

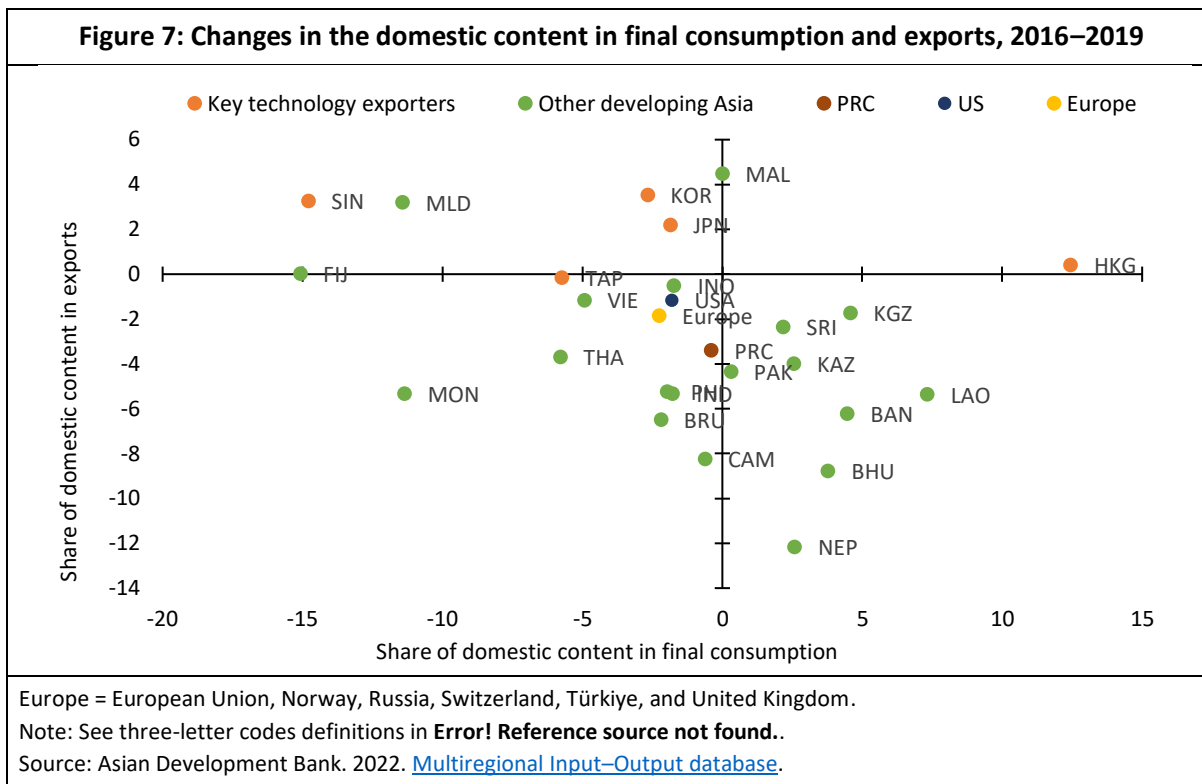
**Cross-border trade in inputs bounced back in 2021, reversing the de-globalization of 2020.** Key technology exporters—Japan, the Republic of Korea, Singapore, and Taipei, China—as well as manufacturers of electrical equipment like Malaysia and Viet Nam returned to importing inputs which then get incorporated in their own exports (Figure 9). The PRC also increased self-reliance to manufacture the goods it exports, although domestic value added in final consumption rose further. Despite this reversal, Hong Kong, China; and Nepal remained less globalized in 2021 than they were in 2019. In contrast, Viet Nam emerged from 2021 more globalized than prior to the pandemic.

## Conclusion

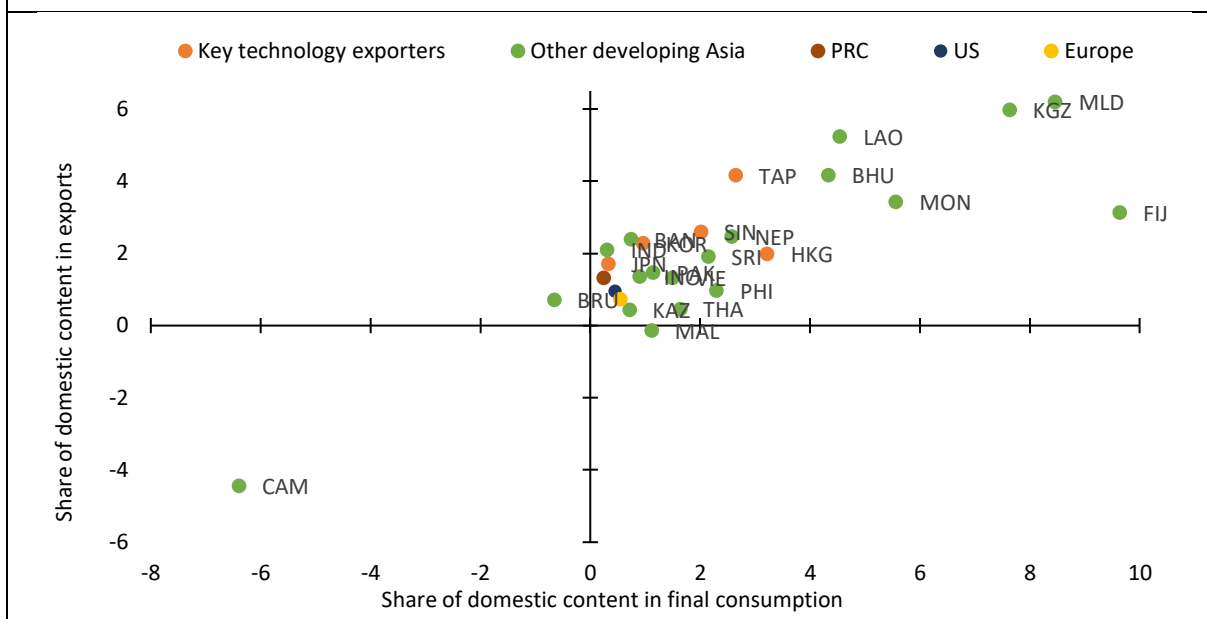
Cross-border value chains regionalized in developing Asia as US–PRC trade tensions mounted in 2017–2019. This reinforced the pivotal role of the PRC in the region as a supplier of intermediates in the region. With the pandemic, value chains further regionalized as trade in inputs with partners outside the region collapsed. The PRC cushioned the impact of these disruptions by providing an outlet market for developing Asia’s exporters of intermediates, but also by ensuring continuous supply of certain inputs for downstream industries. Lastly, value chains in developing Asia were becoming increasingly self-reliant, but contrary to initial expectations, the US–PRC trade conflict did not accelerate this trend towards de-globalization. In all logic, cross-border value chain linkages considerably weakened in 2020 as global trade was disrupted by the pandemic; but this was mostly reversed in 2021.

Both US–PRC tensions and the global pandemic reinforced the centrality of the developing Asia’s value chain linkages. Given the resilience of the PRC across both episodes, these linkages have helped the rest of developing Asia withstand these external shocks. But these linkages would considerably weaken developing Asian economies if a negative shock were to affect the PRC. To mitigate this risk, both investors and policymakers should review the supply chains in which their businesses or countries are

involved, to ensure that they are sufficiently diversified to withstand an adverse shock that may affect any single partner.



**Figure 8: Changes in the domestic content in final consumption and exports, 2019–2020**

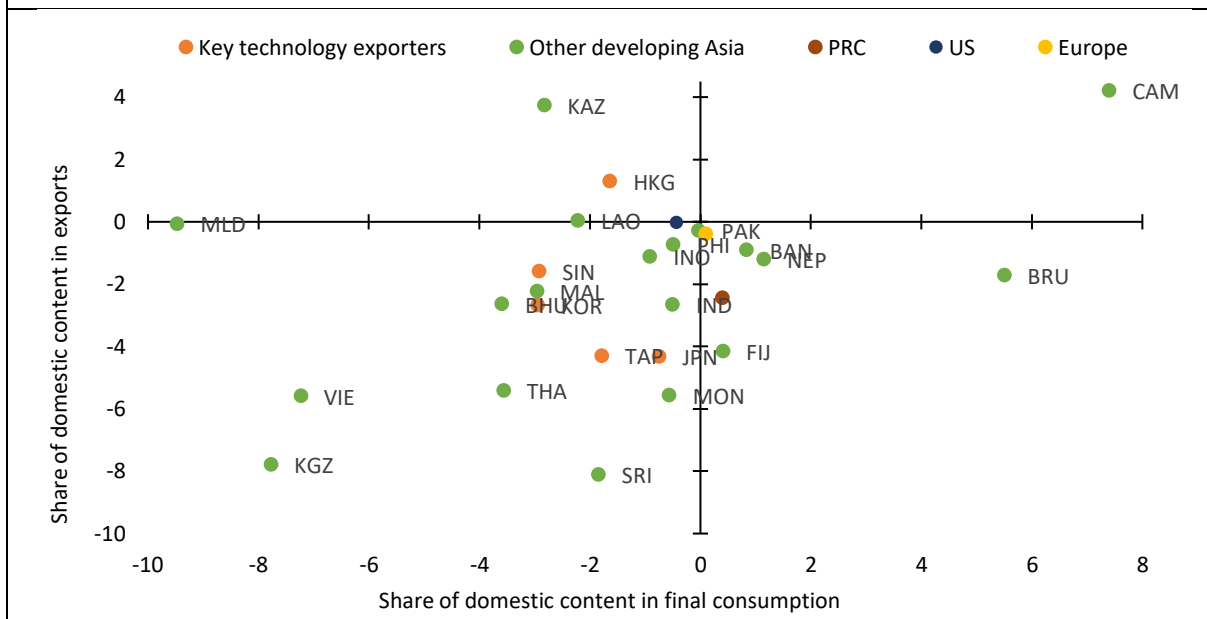


Europe = European Union, Norway, Russia, Switzerland, Türkiye, and United Kingdom.

Note: See three-letter codes definitions in **Error! Reference source not found.**

Source: Asian Development Bank. 2022. [Multiregional Input–Output database](#).

**Figure 9: Changes in the domestic content in final consumption and exports, 2020–2021**



Europe = European Union, Norway, Russia, Switzerland, Türkiye, and United Kingdom.

Note: See three-letter codes definitions in **Error! Reference source not found.**

Source: Asian Development Bank. 2022. [Multiregional Input–Output database](#).

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# Appendix

