1 Trade and Global Value Chains

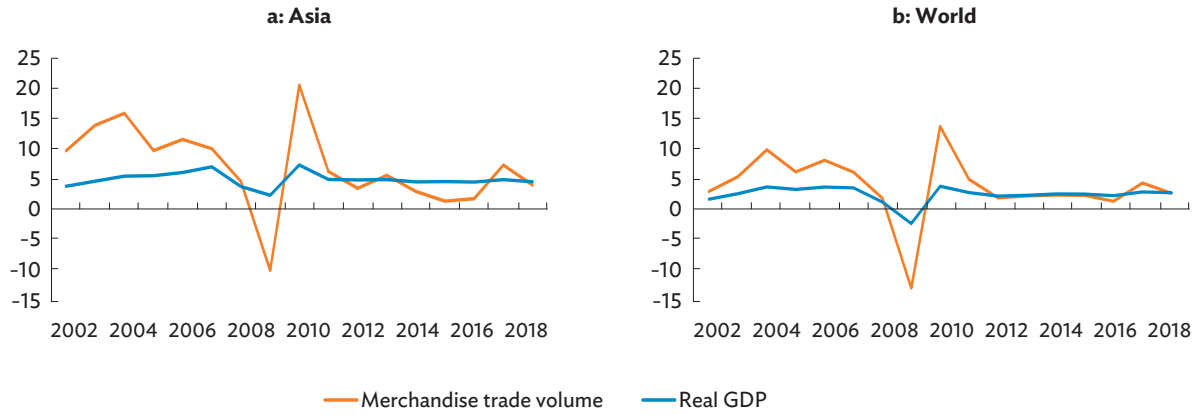
Recent Trends in Asia's Trade

Asia's trade growth moderated in 2018 amid persistent trade tensions and moderation in global economic growth momentum.[1]

After a strong 7.3% growth recovery in 2017, Asia's merchandise trade volume grew a slower 4.0% in 2018 (Figure 1.1a). Ongoing trade tensions between the United States (US) and the People's Republic of China (PRC), along with slowing global economic growth, curbed the upward trajectory of the region's trade growth, which fell below the 4.6% output growth. The expansion of global trade volume also slowed from 4.6% in 2017 to 3.0% in 2018, falling slightly below the 3.1% global economic growth (Figure 1.1b). Other regions also saw trade growth decelerating: the European Union (EU) (1.6% in 2018 from 3.1% in 2017), Latin America and the Caribbean (3.5% from 4.1%), and the Middle East (0.6% from 2.9%). In contrast, trade growth accelerated in North America (4.7% from 4.1%) and Africa (3.5% from 2.1%).

Several Asian economies recorded slower export growth due to weaker external demand from developed countries and the potential negative effect from persisting trade tensions, which largely offset gains in commodity-exporting countries from higher global commodity prices. The region's export volume growth declined to 3.5% in 2018 from 6.8% in 2017. Meanwhile, import volume expanded at 4.7% in 2018, down from 8.1% in 2017. Strong

Figure 1.1: Merchandise Trade Volume and Real GDP Growth—Asia and World (%, year-on-year)



GDP = gross domestic product.

Note: Real GDP growth is weighted using market-exchange rates.

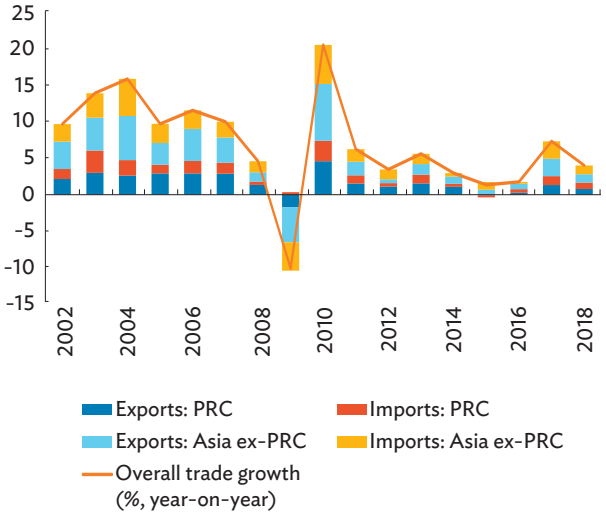
Sources: ADB calculations using data from International Monetary Fund. World Economic Outlook April 2019 Database. https://www.imf.org/external/pubs/ft/weo/2019/01/weodata/index.aspx (accessed October 2019); and World Trade Organization. Statistics Database. http://stat.wto.org/Home/WSDBHome.aspx (accessed April 2019).

[1] Asia refers to the 49 Asia and Pacific members of the Asian Development Bank (ADB), which includes Japan and Oceania (Australia and New Zealand) in addition to the 46 developing Asian economies.

domestic demand, mostly from net-importing countries, continued to support import, even if growth was slightly restrained by the commodity price increase.

As in previous years, the PRC remained the key driver of Asia's trade expansion, accounting for 41.3% of trade growth (Figure 1.2). Other top contributors to export growth were Japan; the Republic of Korea; Viet Nam; and Taipei,China. On the other hand, top contributors on import growth were Hong Kong, China; Viet Nam; Indonesia; and Singapore.

Figure 1.2: Sources of Trade Volume Growth—Asia
(percentage points)



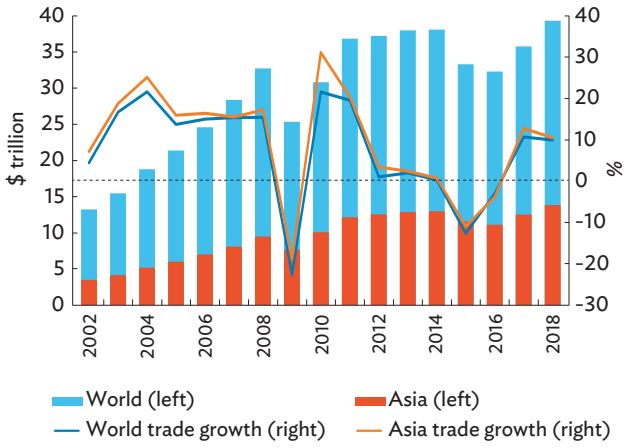
PRC = People's Republic of China.

Source: ADB calculations using data from World Trade Organization. Statistics Database. http://stat.wto.org/Home/WSDBHome.aspx (accessed April 2019).

Asia's trade value growth also decelerated, albeit marginally.

In contrast to trade volume, Asia's trade value growth remained strong at 10.5% in 2018, comparable to the 12.8% recorded in 2017 (Figure 1.3). The increase in global commodity prices largely offset the slow growth in trade volume. Oil prices, in particular, rose by about 30%, contributing to higher commodity prices. This helped augment trade revenues of commodity-exporting countries such as Mongolia and some Central Asian economies.

Figure 1.3: Trade Value—Asia and World



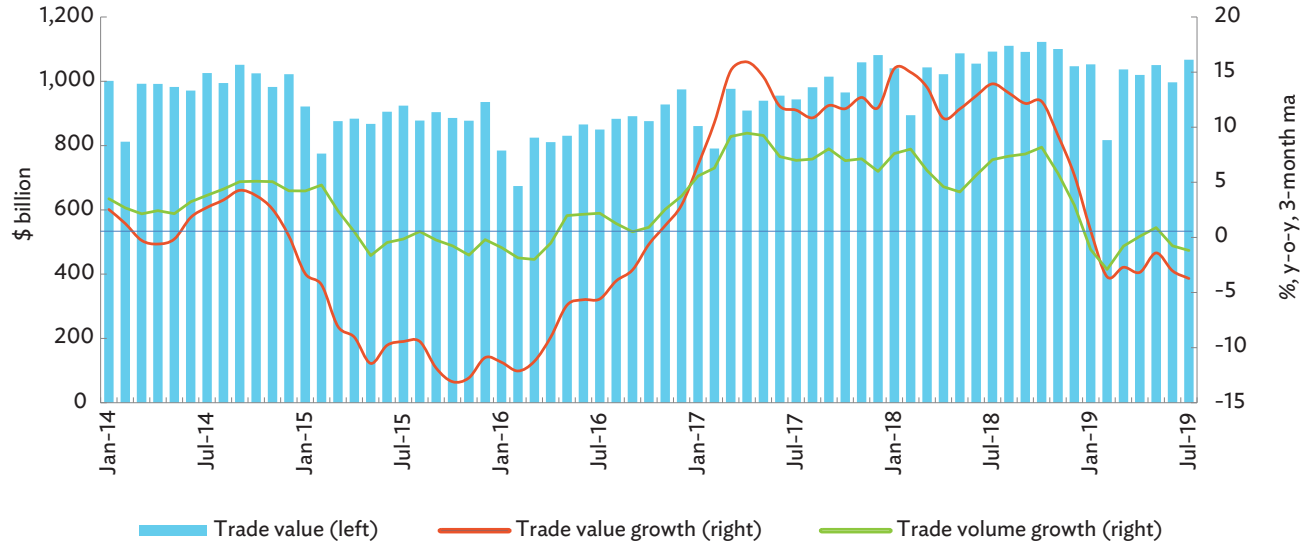
Source: ADB calculations using data from World Trade Organization. Statistics Database. http://stat.wto.org/Home/WSDBHome.aspx (accessed April 2019).

Asia's trade growth in recent months has faltered as trade policy uncertainties in key economies weigh in.

The region's trade volume growth peaked in early 2017 during the global trade recovery, and continued until the first half of 2018 (Figure 1.4). In tandem with the escalating US–PRC trade tensions and the softening of global industrial activity, however, trade growth began moderating in Q3 2018. Despite a temporary pause in tariff hikes in December 2018 (as agreed by the US and the PRC), the first 7 months of 2019 saw both the volume and value of trade growth decrease—affected by declining business and investment confidence. Asia's export and import volume growth trend largely follows the trajectory of global business confidence (Figure 1.5).

The slowdown in trade growth is projected to continue through the rest of 2019 and stabilize in 2020 (Box 1.1). Downside risks remain as trade frictions among major economies might not be resolved in the foreseeable future. The implemented US and PRC tariffs against each other, as of September 2019, equal to about $491.8 billion of bilateral imports (ADB 2019)—equivalent to 2.5% of total global imports. Global output is estimated to decline by 0.19%, and could further decrease by up to 0.55% if the trade conflict further escalates (ADB 2019). This could affect economic growth of Asian economies, as most are closely integrated

Figure 1.4: Monthly Trade by Value and Volume—Asia

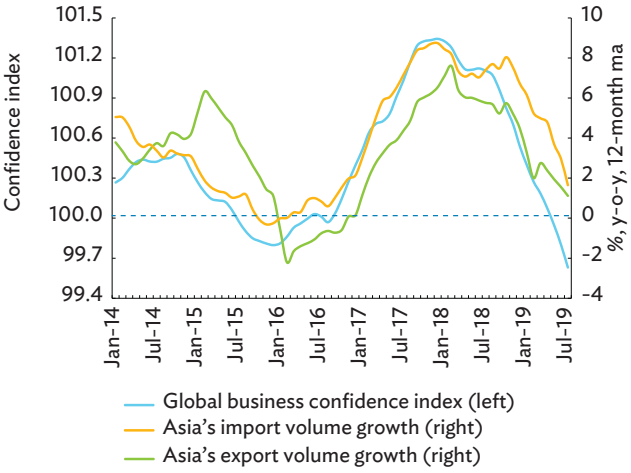


ma = moving average, y-o-y = year-on-year.

Notes: Trade volume growth rates were computed using volume indexes. For each period and trade flow type (i.e., imports and exports), available data include indexes for Japan and the People's Republic of China, and an aggregate index for selected Asian economies, which include Hong Kong, China; India; Indonesia; Malaysia; Pakistan; the Philippines; the Republic of Korea; Singapore; Taipei,China; Thailand; and Viet Nam. To come up with an index for Asia, trade values were used as weights. Trade value levels and growth rates were computed by aggregating import and export values of the same Asian economies.

Sources: ADB calculations using data from CEIC; and CPB Netherlands Bureau for Economic Policy Analysis. World Trade Monitor. https://www.cpb.nl/en/worldtrademonitor (both accessed October 2019).

Figure 1.5: Global Business Confidence and Asia's Trade Volume Growth



ma = moving average, y-o-y = year-on-year.

Notes: Export and import volume growth rates were computed using volume indexes. For each period and trade flow type, available data include indexes for Japan and the People's Republic of China, and an aggregate index for selected Asian economies, which include Hong Kong, China; India; Indonesia; Malaysia; Pakistan; the Philippines; the Republic of Korea; Singapore; Taipei,China; Thailand; and Viet Nam. To come up with an index for Asia, export and import values were used as weights. Global business confidence index represents Organisation for Economic Co-operation and Development economies.

Sources: ADB calculations using data from CEIC; CPB Netherlands Bureau for Economic Policy Analysis. World Trade Monitor. https://www.cpb.nl/en/data; and Organisation for Economic Co-Operation and Development. Database. https://data.oecd.org/ (all accessed October 2019).

into global value chains (GVCs) across various industries. Although some Asian economies may benefit from trade diversion in the near term as the US and the PRC may resort to trade with other countries that offer close substitutes of the goods targeted, no country would be immune eventually from the negative impact of trade tensions.

Asia's Intraregional Trade

Despite ongoing trade tensions, Asia sustained its strong intraregional trade linkages.

The region's intraregional trade share by value remained at 57.5% in 2018, above the 56.3% average during 2012–2017 (Figure 1.6). Asia's intraregional trade remained higher than North America (40.5%), while lower than the EU (63.8%). The stronger trade linkages of Asian economies can be a buffer for the potential trade growth slowdown due to the persistent trade conflict. Asia's intraregional trade expanded by 10.4% in 2018—slightly below the 14.0% recorded in 2017, but far higher than the 5-year average of 1.5% from 2012 to 2017. Growth of Asia's extraregional trade accelerated further to 11.7% in 2018.

Box 1.1: Trade Outlook for Asia

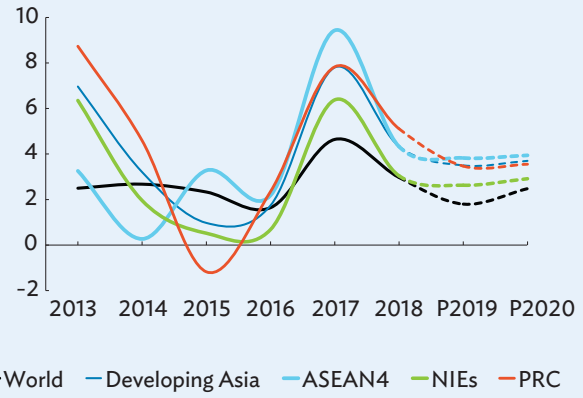
World trade growth (by volume) is expected to slow—from 3.0% in 2018 to 1.8% in 2019—as a result of the persistent trade conflict between the United States (US) and the People's Republic of China (PRC).

Since January 2018, export growth by volume eased across the board, reflecting the combined effects of the US–PRC trade tensions, slowing global economic activity, and moderating PRC growth. Export volume growth recovered briefly midyear, possibly due to more anticipated tariff hikes, but moderated again in October 2018. There was some recovery in early 2019 as a temporary truce in the US–PRC trade tensions offered some respite to trade policy uncertainty. The deceleration in export volume growth was more evident in developing Asia.

Developing Asia's trade growth is expected to decelerate further. Trade growth (by volume) will likely decline from the 4.3% estimate in 2018 to 3.5% in 2019 (Box Figure).[a]

Notwithstanding the less favorable prospect for 2019, the PRC continues to lead developing Asia's trade growth, with the four newly industrialized economies (NIEs) (Hong Kong, China; the Republic of Korea; Singapore; and Taipei,China) and the four middle-income Association of Southeast Asian Nations (ASEAN) economies (Indonesia, Malaysia, the Philippines, and Thailand) providing a boost.

Trade Volume Growth (%, year-on-year)



ASEAN = Association of Southeast Asian Nations, NIEs = newly industrialized economies, P = projected, PRC = People's Republic of China.

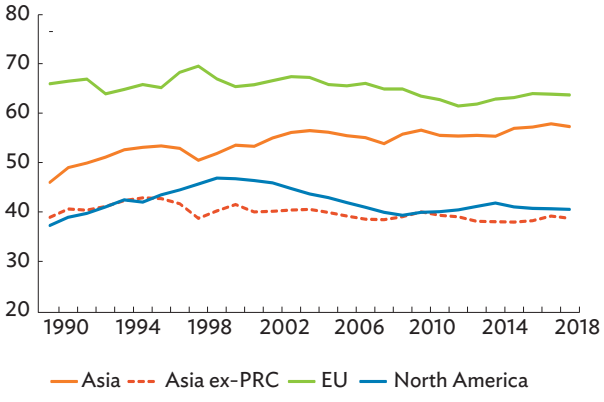
Notes: ASEAN4 includes Indonesia, Malaysia, the Philippines, and Thailand. NIEs include Hong Kong, China; the Republic of Korea; Singapore; and Taipei,China. Trade volume growth projections are calculated using trade volume growth rates of all economies generated using each economy's elasticity-to-real gross domestic product (GDP) (for imports) and elasticity-to-real GDP of top trading partners (for exports).

Sources: ADB calculations using data from International Monetary Fund (IMF). Direction of Trade Database. https://www.imf.org/en/Data (accessed September 2019); IMF. World Economic Outlook April 2019 database. https://www.imf.org/external/pubs/ft/weo/2017/01/weodata/index.aspx (accessed October 2019).

[a] Developing Asia refers to the 46 developing member economies of ADB. Asia refers to developing Asia plus Australia, Japan, and New Zealand.

Source: ADB staff.

Figure 1.6: Intraregional Trade Share—Asia, EU, and North America (%)



EU = European Union, PRC = People's Republic of China.

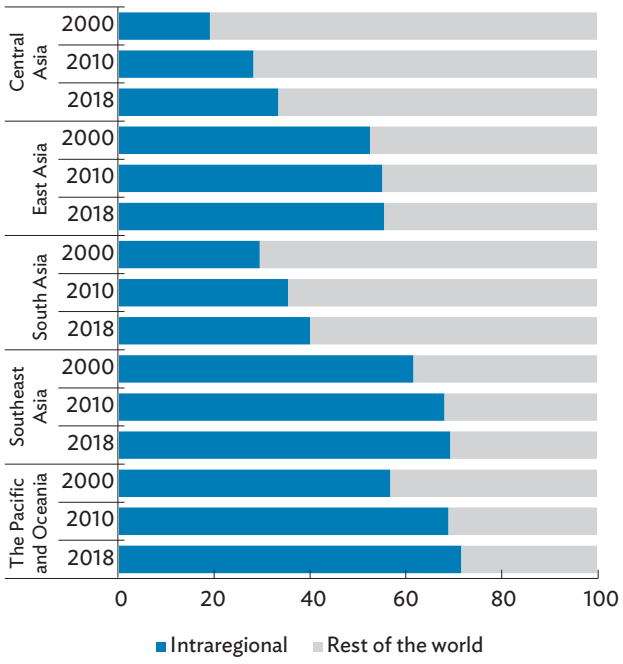
Notes: Values expressed as percentage of the region's total merchandise trade (sum of exports and imports). EU refers to the aggregate of 28 members. North America covers Canada, Mexico, and the United States.

Source: ADB calculations using data from International Monetary Fund. Direction of Trade Statistics. https://www.imf.org/en/Data (accessed September 2019).

Intraregional trade linkages continued to deepen across subregions.

Intraregional trade shares increased across all subregions in 2018 from 2010. The Pacific and Oceania continues to hold the highest intraregional trade share (71.7%) in 2018, followed by Southeast Asia (69.3%) and East Asia (55.5%) (Figure 1.7). Central Asia's intraregional trade share increased the most (33.3% in 2018 from 28.1% in 2010), followed by South Asia (40% from 35.4%). Moreover, East Asia still holds the highest intra-subregional trade share (35.5%) in 2018. Trade intensities of subregions estimated using gravity models show the same results (Box 1.2).

Figure 1.7: Intraregional Trade Shares by Asian Subregions
(%)



Source: ADB calculations using data from International Monetary Fund. Direction of Trade Statistics. https://www.imf.org/en/Data (accessed September 2019).

Progress of Global and Regional Value Chains

Trade ties within Asia have considerably increased due to growing regional value chain linkages.

A new framework for understanding GVC and regional value chain (RVC) participation is introduced here to better track Asia's progress in its global and regional trade linkages. The world's gross exports can be divided into two: (i) exports that cross border once as final goods (represented by the blue area in Figure 1.8a); and (ii) exports that go through two or more economies for further production or "GVC exports" (yellow area in Figure 1.8a). World GVC is the share of the world's total GVC exports to its gross exports. Asia-to-world GVC is the share of Asia's total GVC exports to its gross exports. Asia-to-Asia gross RVC is the share of Asia's intraregional GVC exports to its intraregional gross exports, excluding all non-Asian third economies.[2] Asia-to-Asia net RVC is similar to gross RVC, except that its denominator, total intraregional exports, includes non-Asian third economies.

Box 1.2: Gravity Model Estimation of Bilateral Exports

The progress in Asia's regional trade integration can also be tracked using gravity model estimation of bilateral exports. An advantage of using this method is that factors such as multilateral trade resistances (cost of trading), and unobserved trade frictions are controlled. Intraregional trade intensity in Asia can be measured by the estimated coefficient of a dummy variable for "both in Asia" (if both pair of countries belong to the region) in the gravity models. The estimation is done using 5-year rolling panel regression on annual data covering 2014–2018 and 2013–2017.

Results show that intensity in intraregional trade in Asia continued to be higher on capital goods, followed by consumption goods (although the coefficients are not significant) (Box Table 1, columns 2 and 4). On the other hand, Asia's trade of intermediate goods has higher intensity outside the region (Box Table 1, column 3). This implies that Asia is an important supplier of intermediate goods to the countries outside the region.

Among subregions, East Asia's intra-subregional trade intensity remained the highest, albeit slightly declining (Box Table 2). Southeast Asia follows with a similar declining trend, while intra-subregional trade intensity increased in Central Asia. South Asia continues to trade significantly more with other subregions within Asia, although its inter-subregional bias weakened slightly.

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[2] Third economies are those that indirectly participate in a GVC transaction. For example, Singapore exports intermediate goods used by the PRC to produce and export final goods to Malaysia. From Singapore's point of view, the PRC is the direct partner, while Malaysia is the third economy.

Box 1.2: Gravity Model Estimation of Bilateral Exports *(continued)*

1: Gravity Model Estimation Results, 2014–2018
Dependent Variable: Log(Bilateral Exports)

Variables	All Goods	Capital Goods	Consumption Goods	Intermediate Goods
	(1)	(2)	(3)	(4)
Log(distance)	-1.65***	-1.62***	-1.74***	-1.71***
	(0.02)	(0.02)	(0.02)	(0.02)
Colonial relationship dummy	0.82***	0.85***	0.95***	0.85***
	(0.04)	(0.09)	(0.10)	(0.10)
Common language dummy	1.00***	0.91***	1.05***	0.90***
	(0.10)	(0.04)	(0.04)	(0.04)
Contiguity dummy	1.03***	1.23***	1.22***	1.11***
	(0.10)	(0.10)	(0.11)	(0.11)
Regional dummies (base: Asia to ROW)				
Both in Asia dummy	0.04 [0.47]	0.14 [0.22]	0.04 [0.44]	-0.42 [-0.11]
	(0.33)	(0.32)	(0.42)	(0.35)
Importer in Asia dummy	0.70	-1.32**	0.01	0.64
	(0.57)	(0.65)	(0.42)	(0.66)
Both in ROW dummy	0.31	-1.80***	-0.51	0.71
	(0.40)	(0.52)	(0.44)	(0.49)
Rho (sample selection term)	0.13***	0.41***	0.21***	0.21***
Sample size	260,970	212,447	239,491	243,020
Censored observations	151,052	106,842	129,573	133,102
Uncensored observations	109,917	105,605	109,918	109,918

*** = significant at 1%, ** = significant at 5%, * = significant at 10%, ROW = rest of the world. Estimates for 2013–2017 are in brackets. Robust standard errors in parentheses.

Notes: Time-varying economy dummies are included but not shown for brevity. Heckman sample selection estimation was used to account for missing bilateral economy-pair data and zero bilateral trade. Data cover 229 economies, of which 46 are from Asia. Trade data are based on Broad Economic Categories.

Sources: ADB calculations using data from Centre d'Études Prospectives et d'Informations Internationales (the French Research Center in International Economics). GeoDist Database. http://www.cepii.fr/CEPII/en/cepii/cepii.asp; and United Nations. Commodity Trade Database. https://comtrade.un.org (both accessed August 2019).

2: Gravity Model Estimation Results, 2014–2018: Intra- and Inter-Subregional Trade (All Goods)

Variables	Central Asia	East Asia	South Asia	Southeast Asia	The Pacific and Oceania
Intra-subregional trade dummy	4.45*** [4.10***]	6.03*** [6.59***]	0.06 [0.52]	4.82*** [5.21***]	0.92 [1.42*]
Inter-subregional trade dummy	-0.47 [-0.07]	-0.09 [0.32]	3.71*** [4.60***]	0.22*** [-0.15]	-0.15 [-0.41]

*** = significant at 1%, ** = significant at 5%, * = significant at 10%. Estimates for 2013–2017 are in brackets.

Notes: Base category (benchmark) is the subregion's trade with economies outside Asia. The usual gravity model variables and time-varying economy dummies are included but not shown for brevity. Heckman sample selection estimation was used to account for missing bilateral economy-pair data and zero bilateral trade. Data cover 229 economies, of which 46 are from Asia. Trade data are based on Broad Economic Categories.

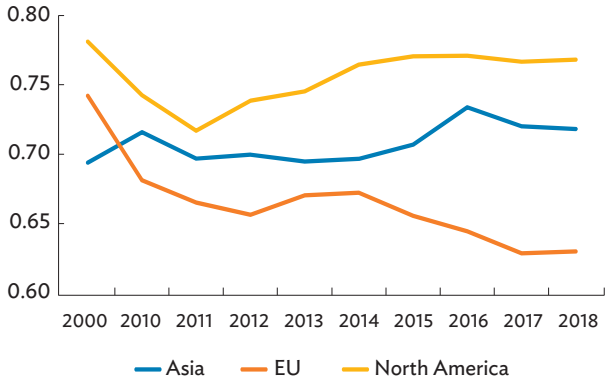
Sources: ADB calculations using data from Centre d'Études Prospectives et d'Informations Internationales (the French Research Center in International Economics). GeoDist Database. http://www.cepii.fr/CEPII/en/cepii/cepii.asp; and United Nations. Commodity Trade Database. https://comtrade.un.org (both accessed August 2019).

Source: ADB staff.

Using the framework shows that at the global level, participation to cross-border production networks have increased since 2000 (Figure 1.8b). Asia's participation in GVCs continued to be strong. Measured by the share of value-added content in gross exports used for further processing through cross-border production networks, the region's GVC participation rate was 68.1% in 2018 (Figure 1.8b).

Asian economies' participation in RVCs—which only involves production networks within the region—increased from 46.6% in 2000 to 49.4% in 2010 and hovered around 48.3%–49.5% since (Figure 1.8b). GVC participation appears higher than RVC participation. Nonetheless, the region's intensity of participation in RVC with respect to GVC participation (the ratio of the two rates) has been increasing in general over the past decades (Figure 1.9). This implies that a relatively larger portion of production is being finalized within the loop of the regional production networks.

Figure 1.9: RVC–GVC Intensity—Asia, EU, and North America



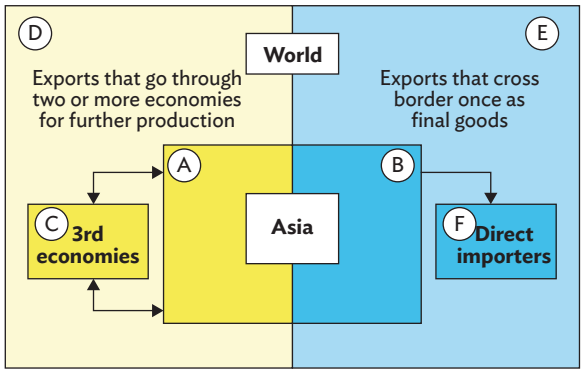
EU = European Union, GVC = global value chain, RVC = regional value chain.

Note: RVC–GVC intensity is the ratio of RVC participation and GVC participation rates.

Sources: ADB calculations using data from ADB. Multi-Regional Input-Output Tables; and methodology by Wang, Wei, and Zhu (2014).

Figure 1.8: Analytical Framework of GVC and RVC Participation

a: Analytical Framework



Participation Rates:

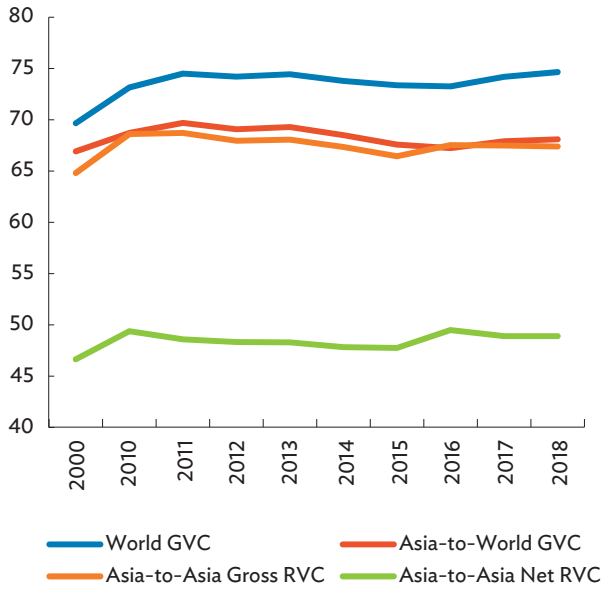
(1) World GVC $= \frac{A + C + D}{A + B + C + D + E + F}$

(2) Asia-to-World GVC $= \frac{A + C}{A + B + C + F}$

(3) Asia-to-Asia Gross RVC $= \frac{A}{A + B}$

(4) Asia-to-Asia Net RVC $= \frac{A}{A + B + C}$

b: GVC and RVC Participation Rates *(%)*



GVC = global value chain, RVC = regional value chain.

Notes: The GVC participation rate is the share of gross exports that involves production in at least two countries using cross-border production networks. The RVC participation rate, on the other hand, is the same as that of GVC, except that it only involves countries of the same region.

Sources: ADB calculations using data from ADB. Multi-Regional Input–Output Tables; and methodology by Wang, Wei, and Zhu (2014).

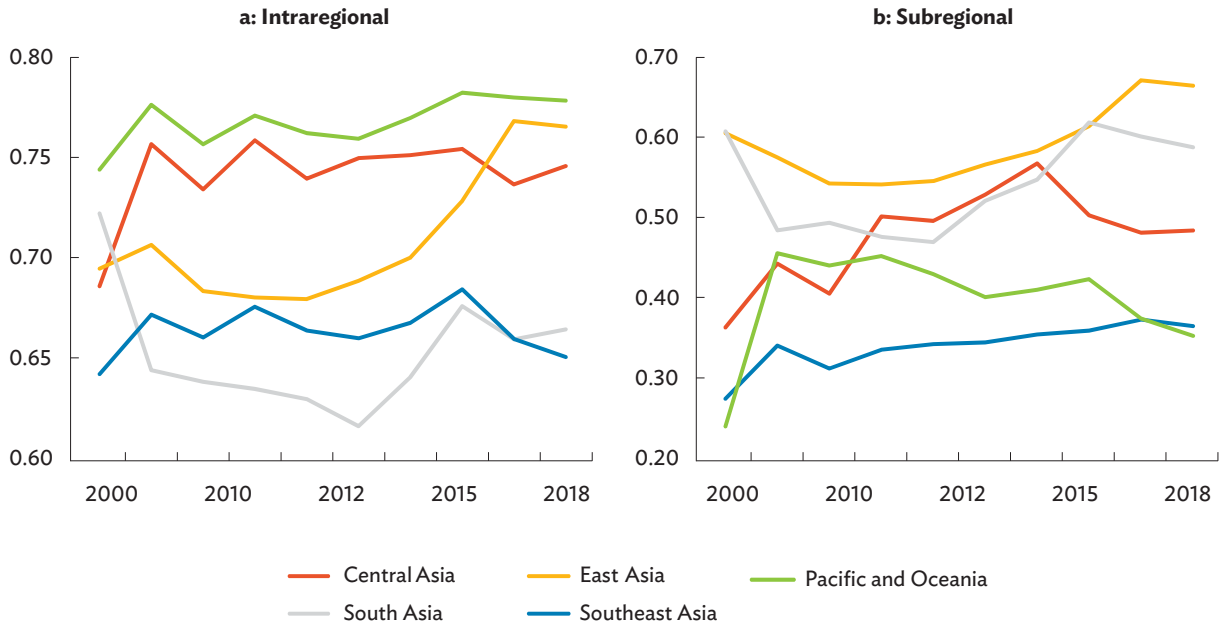
Asia's RVC-to-GVC participation was higher than the EU beginning in 2010, but remained lower than North America (Figure 1.9). The EU's RVC–GVC intensity is generally declining as the region's trade networks expand outside the region. On the other hand, its GVC participation rate became stronger, gradually increasing from 72.1% in 2010 to 74.8% in 2018. In North America, the RVC linkage between the US and Canada continued to strengthen. The RVC participation in North America has been increasing gradually: from 52.5% in 2010 to 55.4% in 2018, while its GVC participation also increased from 70.6% to 72.1% during the same period.

Inter-subregional value chain linkages are stronger than intra-subregional linkages.

Meanwhile, RVCs of Asia subregions showed signs of deepening (Figure 1.10a). The Pacific and Oceania has consistently shown strong integration with the region, both in terms of trade value shares and RVC–GVC partipation intensity, which generally increased from 2011 to 2017. Central Asia was second, recording higher intesity scores than East Asia and Southeast Asia from 2010 to 2016. However, in 2017 to 2018, East Asia overtook Central Asia, given a rapid increase in the intensity ratio. The Pacific and Oceania and Central Asia are deeply involved in the regional production network (especially with East Asia) through exports of raw materials, metals, and minerals than outside of the region.

The relative importance of trade linkages within subregions vary considerably across subregions. The intensity ratio of subregional value chain participation rate and GVC participation rate varies from 0.24 to 0.62 (Figure 1.10b). East Asia has the highest intensity scores, reflecting the strong production networks in manufacturing within the subregion. On the other hand, Southeast Asia recorded low levels of intensity, reflecing its deep value chain linkage with East Asia in manufacturing product assembly, such as electrical machineries and transport equipment. Although South Asia has shown lower scores in intraregional value chain and GVC intensity, its trade linkages within the subregion

Figure 1.10: RVC–GVC Intensity—Asian Subregions



GVC = global value chain, RVC = regional value chain.

Notes: RVC–GVC intensity is the ratio of RVC participation and GVC participation rates. Central Asia only includes Kazakhstan and the Kyrgyz Republic. Southeast Asia excludes Myanmar. South Asia excludes Afghanistan. The Pacific and Oceania only includes Australia and Fiji.

Sources: ADB calculations using data from ADB. Multi-Regional Input-Output Tables; and methodology by Wang, Wei, and Zhu (2014).

is stronger compared with other subregions. Central Asia saw increasing instensity scores from 2000 to 2014, reflecting their faster increase in subregional value chain linkages than GVC linkages.

Asia still has much room to enhance RVC linkages in top tier sectors.

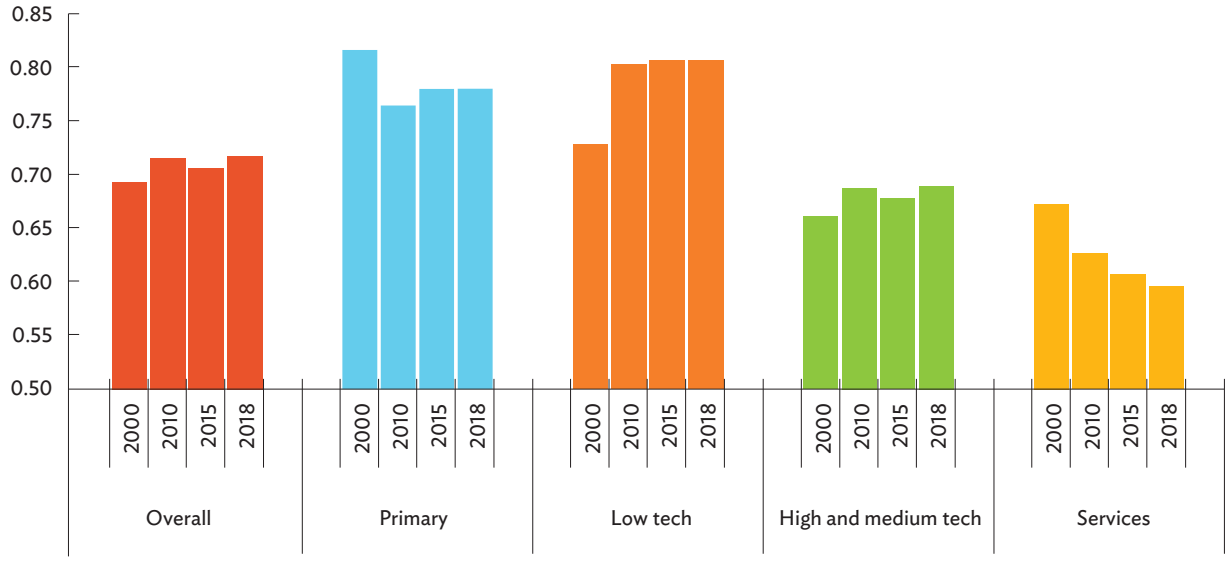
Across sectors in Asia, the primary sector—which includes agriculture along with mining and quarrying—had the highest RVC participation rate in 2018 (72.1%). It also had the highest GVC participation rate (92.4%) (Figure 1.11). This gives the primary sector one of the highest intensity scores. Although the low technology sector held the highest RVC–GVC intensity ratio across sectors, it merely reflects a faster increase in the RVC participation rate than GVC participation rate. In absolute terms, it had one of the lowest RVC (41.2% in 2018) and GVC (51.1%) participation rates.

In contrast, the region's trade linkage was slow to rise in medium and high technology, and business services. In these sectors, GVC participation rates were around 69% to 70% in 2017, while RVC participation rates were only from 41% to 49%. This implies that some Asian economies likely have more room to move up in the RVC by increasing their value chain linkages within the region. Policies that can strengthen capacities and relax trade and investment restrictions would help to further deepen an economy's participation in GVCs and RVCs.

Across Asian economies, the degree of RVC and GVC participation varies considerably.

Across Asian economies, Bangladesh has the highest intensity ratio, exceeding 1 which indicates stronger trade linkages with RVCs than GVCs (Figure 1.12). It was followed by Nepal with an intensity score of 0.88 and Pakistan at 0.87. These countries highly specialize in the textiles and textile products sector, and leather and footwear sector. Their production networks are mostly linked subregionally with India and intraregionally with the PRC. Despite higher intensities, these countries have relatively lower RVC and GVC participation rates, indicating a large portion of their exports of final goods are purely domestically produced. For instance, Bangladesh's RVC participation rate was only 44% in 2018, while its GVC participation was 40.6%.

Figure 1.11: RVC–GVC Intensity by Major Sector—Asia

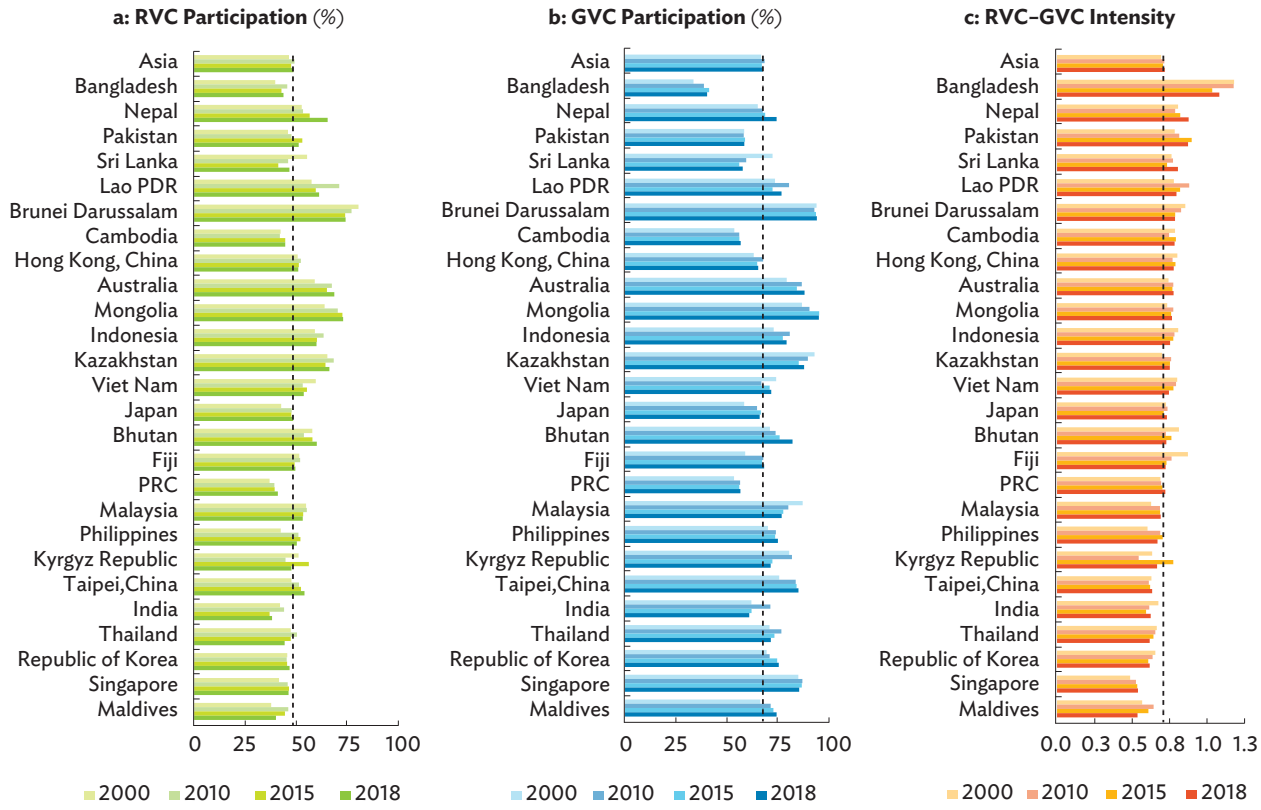


GVC = global value chain, RVC = regional value chain.

Notes: RVC–GVC intensity is the ratio of RVC participation and GVC participation rates. Sectoral classification is based on ADB (2015).

Sources: ADB calculations using data from ADB. Multi-Regional Input-Output Tables; and methodology by Wang, Wei, and Zhu (2014).

Figure 1.12: Overall RVC and GVC Participation—Selected Asian Economies



GVC = global value chain, Lao PDR = Lao People's Democratic Republic, PRC = People's Republic of China, RVC = regional value chain.

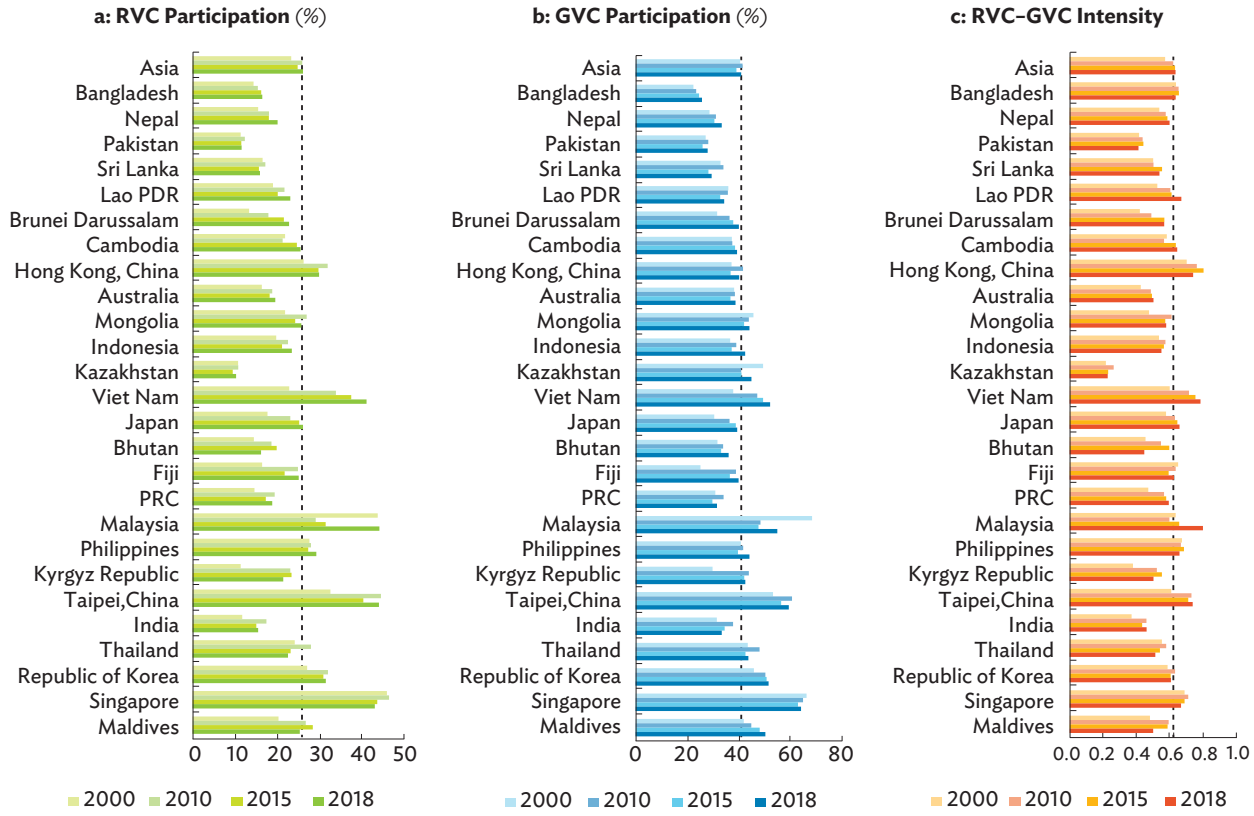
Notes: RVC–GVC intensity is the ratio of RVC participation and GVC participation rates. The overall GVC participation rate is the share of gross exports that involves production in at least two economies using cross-border production networks. The overall RVC participation rate is the same as that of GVC, except that it only involves economies of the same region.

Sources: ADB calculations using data from ADB. Multi-Regional Input-Output Tables; and methodology by Wang, Wei, and Zhu (2014).

Commodity-exporting economies—such as Indonesia, the Lao People's Democratic Republic (Lao PDR), Brunei Darussalam, Kazakhstan, Mongolia, and Australia—tend to have both high GVC and RVC participation rates. Most of the commodity-exports are used as raw materials for the production of intermediate and final goods, which translates into these countries' high value chain participation at upstream. For example, Brunei Darussalam exports most of its fuel and natural gas to Malaysia and Singapore, which are used by these countries in export production. This also applies to Mongolia, which exports minerals to the PRC; the Lao PDR, which exports electricity to Thailand; and Kazakhstan, which exports fuel and metals to the PRC.

Looking at the complex RVC and GVC participation rates, and RVC–GVC intensity ratios show a different picture. Complex value chain linkages include part of the gross exports for which the production entails border-crossing twice or more. Economies like Hong Kong, China; Taipei,China; Japan; the Republic of Korea; Malaysia; Singapore; and Viet Nam have relatively high RVC–GVC intensity scores (Figure 1.13). These economies are highly embedded into the deeper manufacturing production networks in electrical and optical equipment, and transport and equipment, which involve complex GVCs and RVCs.

Figure 1.13: Complex RVC and GVC Participation—Selected Asian Economies



GVC = global value chain, Lao PDR = Lao People's Democratic Republic, PRC = People's Republic of China, RVC = regional value chain.

Notes: RVC–GVC intensity is the ratio of RVC participation and GVC participation rates. The complex GVC participation rate is the share of gross exports that involves production in at least two economies using cross-border production networks. The complex RVC participation rate, on the other hand, is the same as that of GVC, except that it only involves economies of the same region. Both complex GVC and RVC participation includes only part of the gross exports for which the production entails border crossing twice or more. The straight vertical lines indicate the value for Asia in 2018.

Sources: ADB calculations using data from ADB. Multi-Regional Input-Output Tables; and methodology by Wang, Wei, and Zhu (2014).

Trade Conflict and Its Potential Impact

Protracted trade tensions between the US and the PRC will likely affect the trade landscape globally as well as regionally.

The recovery from the global trade slowdown in 2017 is losing momentum in tandem with protracted US–PRC trade tensions. This poses a constant risk to Asia's trade performance. Aside from being the two largest economies in the world, the US and the PRC are also top traders—accounting for a quarter of global trade. They are also major, if not the main, trading partners for most Asian economies—in 2018, the US had a 9.8% share of Asia's total trade (excluding the PRC), while the PRC accounted for 24%.

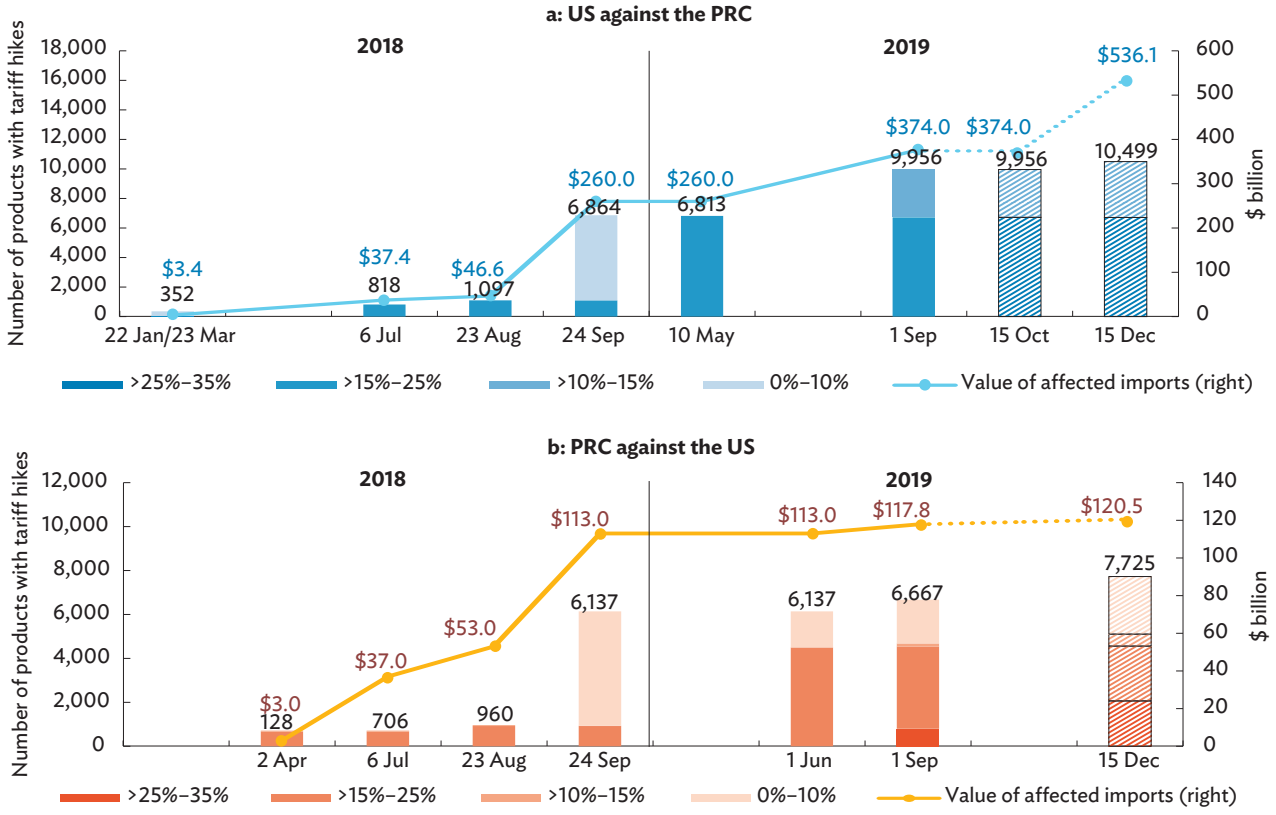
Beginning January 2018, the US implemented higher tariffs on all imports (regardless of country source, but with some exceptions) on solar panel imports, washing machines, steel, and aluminum (Office of the US Trade Representative 2018). The PRC retaliated by imposing higher tariffs on 128 products (Ministry of Commerce of the PRC 2018). The two countries then released initial tariff plans against each other with lists of products covered. As one adjusts their lists, the other party answers with a revised list of their own. The tariff plan implementation in 2018 occurred in three rounds—July 2018, August 2018, and September 2018—with the US initiating and the PRC retaliating. By September 2018, it is estimated that $260 billion worth of imports from the PRC and $113 billion worth of imports from the US were affected by the tariff hikes (Figure 1.14).

The number of tariff hikes and the value of affected imports continue to grow as the US and the PRC recently revived plans to hike rates. Both countries have implemented the first batch of the fourth round of tariff hikes in in September 2019. The PRC plans to implement its second batch in December 2019, while the US plans to raise tariffs on $250 billion worth of imported goods from the PRC to 30% on 15 October 2019 and then implement its second batch in December 2019. However, on 11 October 2019, the US announced its delay of the 15 October 2019 tariff hikes, amid the crafting of the "Phase 1" trade deal between the US and the PRC (Ching 2019). As of September 2019, the US had imposed higher tariffs on 9,956 PRC products at Harmonized System (HS) 8-digit code, while the PRC raised tariffs on 6,667 US products (Figure 1.14). The basic metal, minerals, and chemicals sector has the most number of products with tariff hikes (Figure 1.15). By the end of 2019, affected imports from the PRC would reach about $536.1 billion, while around $120.5 billion worth of imports from the US will be affected.

By industry, the import growth of many subsectors, particularly in the PRC, softened in the second half of 2018.

After the July 2018 first round, bilateral trade growth in both countries began moderating. The PRC import sectors targeted by tariff hikes experienced slowing import growth. Figure 1.16 plots the ratios of growth rates (year-on-year) of the subsector at HS 4-digit code to the growth rate of the total bilateral imports between

Figure 1.14: Chronology of Tariffs Filed by the PRC and the US

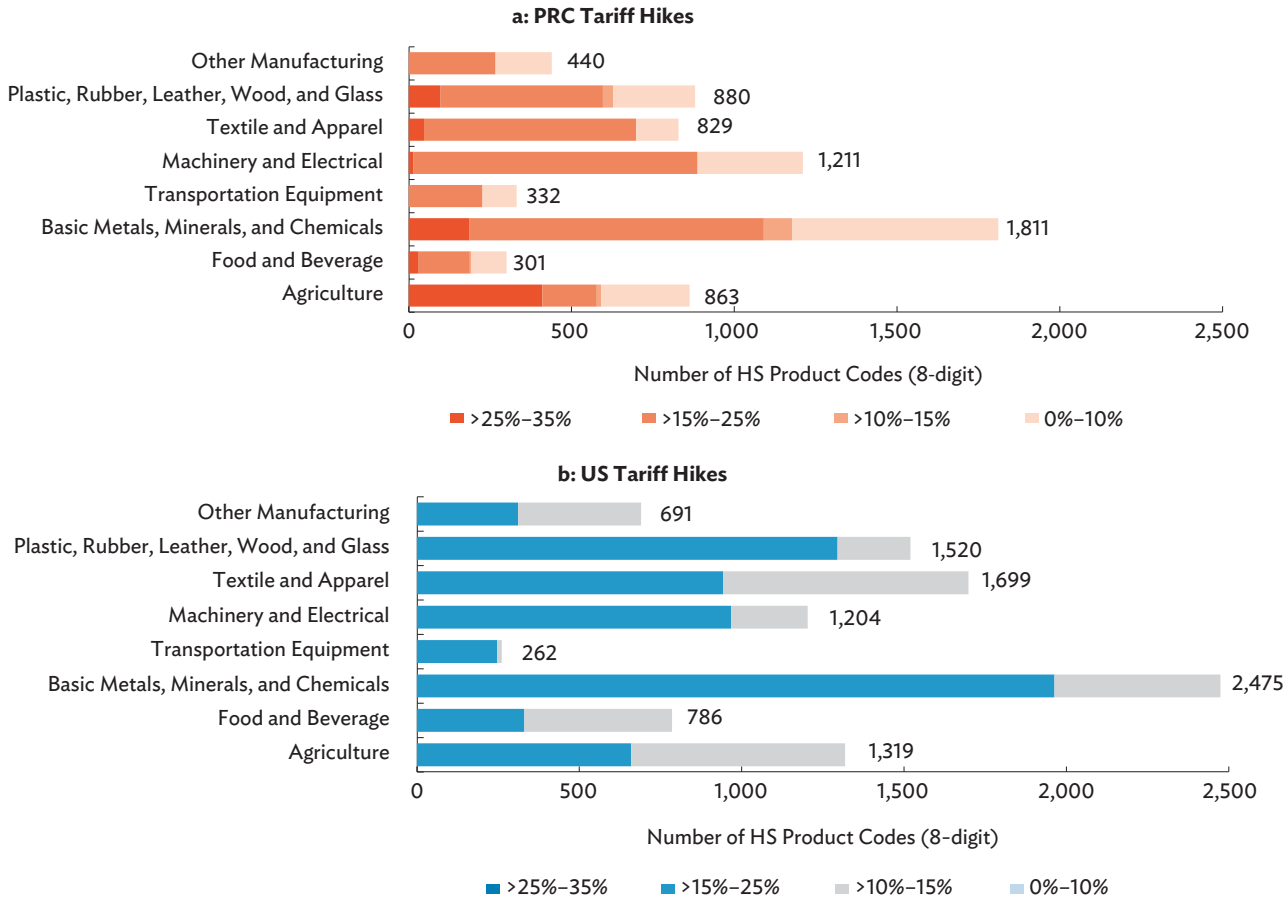


PRC = People's Republic of China, US = United States.

Notes: The number of products is based on the number of Harmonized System 8-digit codes with tariff lines. The broken lines and bars with striped colors refer to tariffs that are announced but not yet implemented. The plans of the US to raise tariffs on 15 October 2019 were not implemented after the US announced its delay on 11 October 2019, while the "Phase 1" trade deal between the US and the PRC is under negotiation.

Sources: ADB calculations using data from ADB (2019); Federal Register. The Daily Journal of the US Government. https://www.federalregister.gov; Ministry of Finance of the PRC. Policy Release. http://gss.mof.gov.cn; Office of the US Trade Representative. PRC Section 301—Tariff Actions and Exclusion Process. https://ustr.gov/issue-areas/enforcement/section-301-investigations/tariff-actions; and World Trade Organization. Tariff Download Facility. http://tariffdata.wto.org (all accessed September 2019).

Figure 1.15: Number of Products with Tariffs Filed by the PRC and the US by Major Category



HS = Harmonized System, PRC = People's Republic of China, US = United States.

Note: The number of products is based on the number of HS 8-digit codes with tariff lines, which have been implemented as of September 2019.

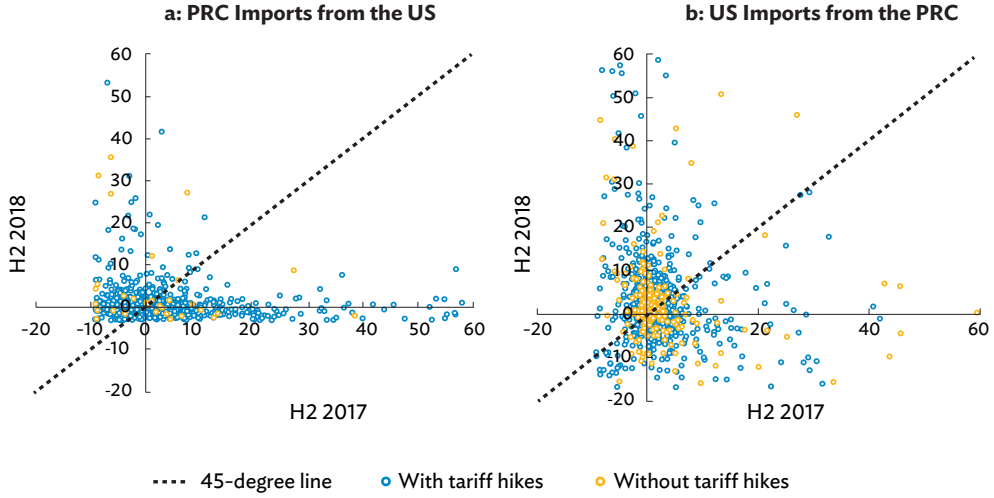
Sources: ADB calculations using data from Federal Register. The Daily Journal of the US Government. https://www.federalregister.gov; Ministry of Finance of the PRC. Policy Release. http://gss.mof.gov.cn; Office of the US Trade Representative. PRC Section 301—Tariff Actions and Exclusion Process. https://ustr.gov/issue-areas/enforcement/section-301-investigations/tariff-actions; and World Trade Organization. Tariff Download Facility. http://tariffdata.wto.org (all accessed September 2019).

the US and the PRC, comparing H2 2018 with H2 2017. A great number of points fall below the 45-degree line, indicating slower expansion or a decrease in imports. Sectors subject to tariffs are the most affected. For instance, the PRC tariff hikes on US products have affected 1,046 out of 1,087 US sectors at the HS 4-digit level codes, leaving only 41 sectors unaffected. Among the affected sectors, 615 experienced lower export growth rates to the PRC in H2 2018. Concurrently, out of 1,104 PRC sectors at the HS 4-digit level codes, the US tariff hikes have affected 864 sectors in which 368 have incurred decreasing export growth rates to the US in H2 2018.

An analysis of bilateral imports and exports of the US and the PRC on selected sectors provides a snapshot of how trade directions are adjusting.

One of the direct effects is trade diversion, which in general refers to shifting trade from one trade partner to another. It is usually a response to increasing trade costs. In the case of the US and the PRC, rising tariffs increases the cost of importing targeted goods, inducing the two countries to find trade partners that produce or import close substitute goods. This trade diversion effect could benefit some Asian economies in the short run through an increase in exports.

Figure 1.16: Bilateral Import Growth Rate Ratio by Sector and Semester—US and PRC



H2 = second half, PRC = People's Republic of China, US = United States.

Note: Each point in the figure represents the ratio of the growth rate of the subsector at Harmonized System 4-digit code to the growth rate of total bilateral imports between the US and the PRC, comparing the second half of 2018 to the same period of 2017.

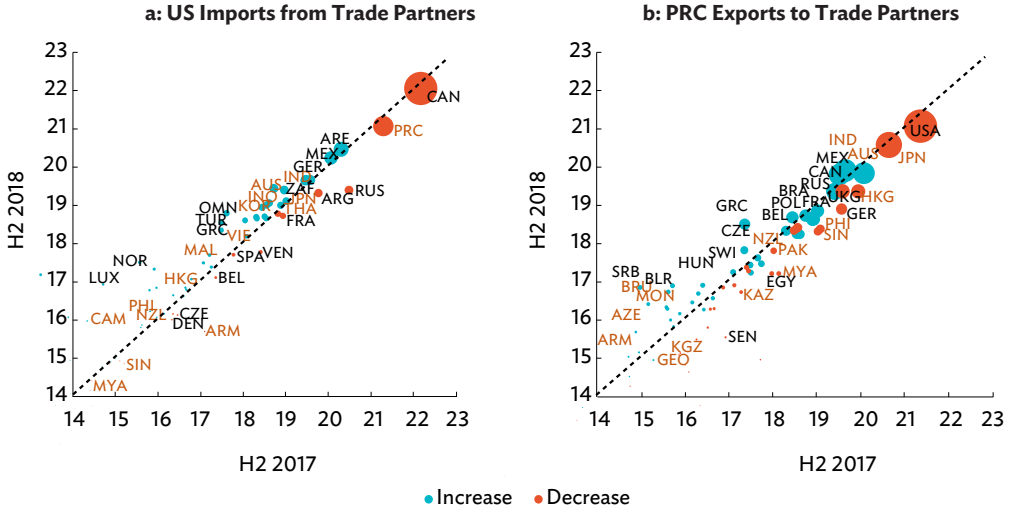
Sources: ADB calculations using data from Ministry of Finance of the PRC. Policy Release. http://gss.mof.gov.cn/; Office of the US Trade Representative. PRC Section 301—Tariff Actions and Exclusion Process. https://ustr.gov/issue-areas/enforcement/section-301-investigations/tariff-actions; and United Nations. Commodity Trade Database. https://comtrade.un.org (all accessed July 2019).

For instance, as the US imposed higher tariffs on aluminum (beginning the first round), the country's imports from the PRC declined by 19.8% in H2 2018—equivalent to $347.9 million. Moreover, with the PRC as the second top supplier of aluminum to the US (next to Canada), its share of US aluminum imports decreased from 13.6% in H2 2017 to 10.9% in H2 2018 (Figure 1.17a). Despite the large decline, the sector still saw an expansion of imports, albeit very minimal at 0.4% in H2 2018 compared with the twofold increase in H2 2017. The US has imported aluminum products from other countries. Australia, India, Indonesia, Japan, the Republic of Korea, and Viet Nam increased their aluminum product exports to the US (Figure 1.17a). In the meantime, the PRC increased its exports of aluminum to other European and Latin American countries (Figure 1.17b).

US imports of transmission apparatus were also affected by the tariff hike increase in August 2018. The products under this sector are the top 86th most traded globally (according to Observatory of Economic Complexity) and are produced through a wide cross-border production network. They are usually components necessary for radios, cellphones, wireless computers, and Bluetooth-enabled devices. Around the world, the PRC is the top exporter in this sector, while the US is one of its key trading partners. The US implementation of the second round tariff list caused a large decline on US transmission apparatus imports from the PRC of about $116.4 million in H2 2018 (or 24.3%). However, some US imports moved to Mexico, some to EU countries (Germany, France, and Belgium), and some to Asian countries (Thailand, the Philippines, Viet Nam, and Malaysia) (Figure 1.18a). Nonetheless, this trade shift generated only around $68 million and was unable to offset the decline from the PRC. The PRC, on the other hand, diverted its exports to other countries such as Mexico, Brazil, the Russian Federation, some EU countries, Japan, the Philippines, and Myanmar (Figure 1.18b).

Beginning July 2018, the PRC discouraged buying soybeans from the US, as a retaliation to US tariff hikes. The PRC tapped other countries to sustain its soybean imports. Brazil, for example, saw a large increase in share of PRC soybean imports (from 49% in H2 2017 to 74.8% in H2 2018), and Canada's share also increased (from 5.8% to 13.5%) (Figure 1.19a).

Figure 1.17: Impact of US Tariff Hikes on PRC Aluminum

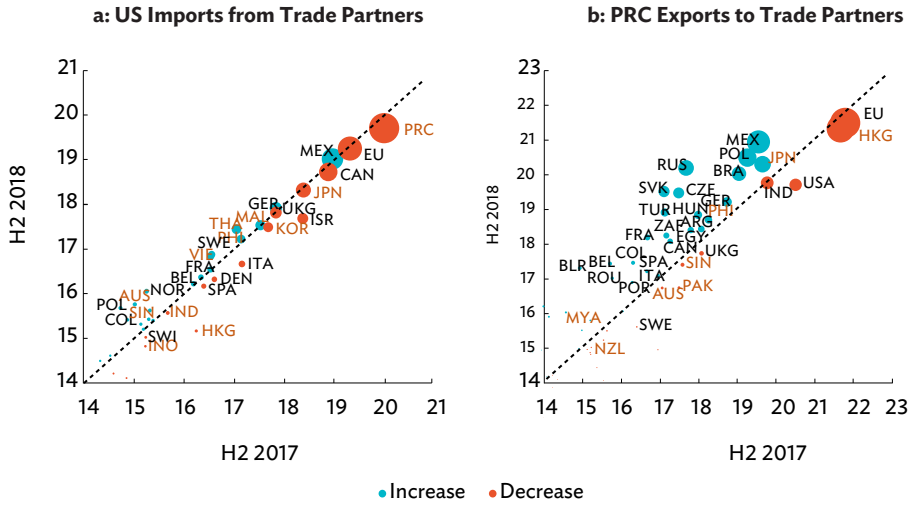


H2 = second semester; ARE = United Arab Emirates; ARG = Argentina; ARM = Armenia; AUS = Australia; AZE = Azerbaijan; BEL = Belgium; BLR = Belarus; BRA = Brazil; BRU = Brunei Darussalam; CAM = Cambodia; CAN = Canada; CZE = Czech Republic; DEN = Denmark; EGY = Egypt; FRA = France; GEO = Georgia; GER = Germany; GRC = Greece; HKG = Hong Kong, China; HUN = Hungary; IND = India; INO = Indonesia; JPN = Japan; KAZ = Kazakhstan; KGZ = Kyrgyz Republic; KOR = Republic of Korea; LUX = Luxembourg; MAL = Malaysia; MEX = Mexico; MON = Mongolia; MYA = Myanmar; NOR = Norway; NZL = New Zealand; OMN = Oman; PAK = Pakistan; PHI = Philippines; POL = Poland; PRC = People's Republic of China; RUS = Russian Federation; SEN = Senegal; SIN = Singapore; SPA = Spain; SRB = Serbia; SWI = Switzerland; THA = Thailand; TUR = Turkey; UKG = United Kingdom; US or USA = United States; VEN = Venezuela; VIE = Viet Nam; ZAF = South Africa.

Notes: Asian economy codes are marked in orange. The figures compare the natural log of the import values from second half of 2017 to the same period in 2018. Each point represents a trade partner. The size of the points indicates the share to PRC imports or US exports. The line in each figure is the 45-degree line, which separates the economies experiencing a decline or increase in trade. Red points below the line indicate decline in trade in 2018, while blue points indicate increase in trade.

Source: ADB calculations using data from United Nations. Commodity Trade Database. https://comtrade.un.org (accessed July 2019).

Figure 1.18: Impact of US Tariff Hikes on PRC Transmission Apparatus



H2 = second semester; ARG = Argentina; AUS = Australia; BEL = Belgium; BLR = Belarus; BRA = Brazil; CAN = Canada; COL = Colombia; CZE = Czech Republic; DEN = Denmark; EGY = Egypt; EU = European Union; FRA = France; GER = Germany; HKG = Hong Kong, China; HUN = Hungary; IND = India; INO = Indonesia; ISR = Israel; ITA = Italy; JPN = Japan; KOR = Republic of Korea; MAL = Malaysia; MEX = Mexico; MYA = Myanmar; NOR = Norway; NZL = New Zealand; PAK = Pakistan; PHI = Philippines; POL = Poland; POR = Portugal; PRC = People's Republic of China; ROU = Romania; RUS = Russian Federation; SIN = Singapore; SPA = Spain; SVK = Slovak Republic; SWE = Sweden; SWI = Switzerland; THA = Thailand; TUR = Turkey; UKG = United Kingdom; US or USA = United States; VIE = Viet Nam; ZAF = South Africa.

Notes: Asian economy codes are marked in orange. The figures compare the natural log of the import values from second half of 2017 to the same period in 2018. Each point represents a trade partner. The size of the points indicates the share to PRC imports or US exports. The line in each figure is the 45-degree line, which separates the economies experiencing a decline or increase in trade. Red points below the line indicate decline in trade in 2018, while blue points indicate increase in trade.

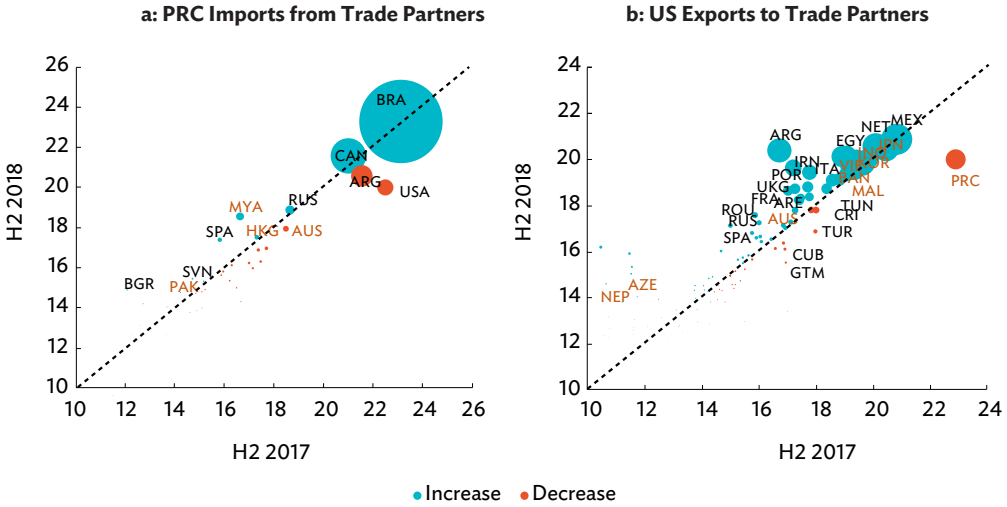
Source: ADB calculations using data from United Nations. Commodity Trade Database. https://comtrade.un.org (accessed July 2019).

Among Asian economies, Myanmar saw its soybean exports to the PRC grow fivefold (from $16.9 million to $115.7 million), while Pakistan (52.6%) and Hong Kong, China (23.5%) also recorded higher growth. Meanwhile, some Asian countries—Bangladesh, Indonesia, Japan, Malaysia, Pakistan, the Philippines, the Republic of Korea, Thailand, and Viet Nam—also benefited from the reallocation of US soybean exports (Figure 1.19b). The countries received a combined share to US total soybean exports of 26.2% in H2 2018, an increase from 17.1% in H2 2017 (equivalent to $584 million).

Large declines in PRC imports from the US also occurred in cotton, particularly on yarns used as intermediate goods. US bilateral cotton exports declined by 27.1% in H2 2018 ($89.5 million) (Figure 1.20a). The PRC also reduced its imports from Pakistan, Australia, Japan, Italy, and Turkey (worth $385.3 million). However, this was more than offset by large exports of $534.9 million from India; Hong Kong, China; and Kazakhstan, and $388.1 million from Brazil. The US, on the other hand, diverted $163.4 million in cotton exports to the top Asian textile and garment exporters—Viet Nam, Pakistan, and Bangladesh (Figure 1.20b). The ASEAN5 countries (Indonesia, Thailand, Malaysia, the Philippines, and Singapore) also received higher exports from the US.

The PRC raised the tariffs on US automobile imports to 40% in the first round. As a result, bilateral imports decreased by about 49.2% in H2 2018, equivalent to $3.7 billion. However, overall, automobile imports by the PRC declined by 38.4% as it reduced its imports by $12.5 billion from its major trading partners—Japan, Germany, the United Kingdom, and Italy (Figure 1.21a). This more than offset the increase in PRC imports from Hong Kong, China; Singapore; India; the Philippines; and Armenia (worth $263 million). The US, however, had just a 5.5% decline in automobile exports in H2 2018. Asian countries increased demand worth $552 million, with large increased purchases from Australia, the Republic of Korea, Japan, Georgia, Singapore, Cambodia, and Mongolia (Figure 1.21b). The decline in US automobile exports to the PRC is expected to taper slightly in 2019. In December 2018, the PRC indicated it would cut tariffs for US-made automobiles to 15%, and suspend 5% on selected auto parts.

Figure 1.19: Impact of PRC Tariff Hikes on US Soybeans and Miscellaneous Grains and Fruits

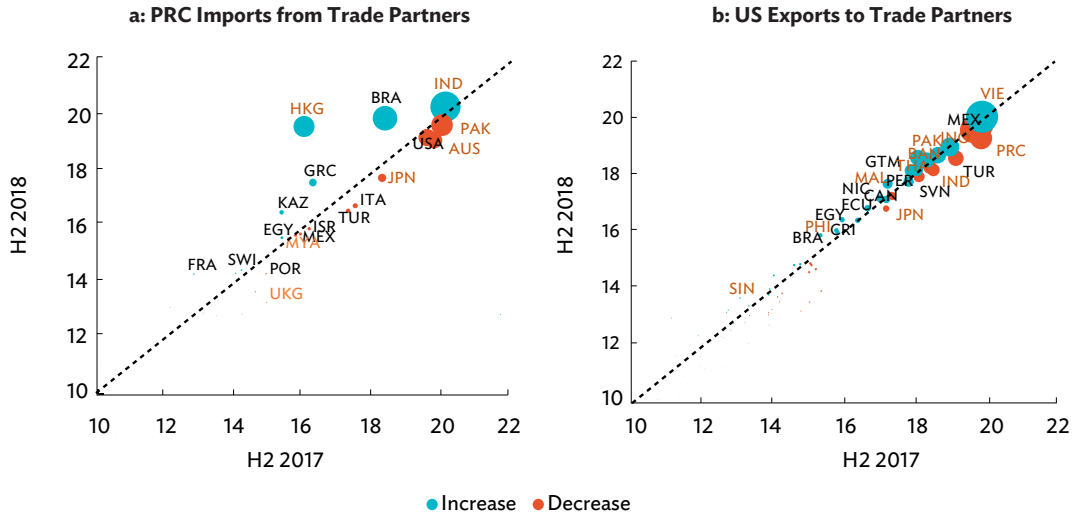


H2 = second semester; ARE = United Arab Emirates; ARG = Argentina; AUS = Australia; AZE = Azerbaijan; BAN = Bangladesh; BRA = Brazil; BGR = Bulgaria; CAN = Canada; CRI = Costa Rica; CUB = Cuba; EGY = Egypt; FRA = France; GTM = Guatemala; HKG = Hong Kong, China; INO = Indonesia; IRN = Islamic Republic of Iran; ITA = Italy; JPN = Japan; KOR = Republic of Korea; MAL = Malaysia; MEX = Mexico; MYA = Myanmar; NEP = Nepal; NET = Netherlands; PAK = Pakistan; POR = Portugal; PRC = People's Republic of China; ROU = Romania; RUS = Russian Federation; SVN = Slovenia; SPA = Spain; TUN = Tunisia; TUR = Turkey; UKG = United Kingdom; US or USA = United States; VIE = Viet Nam.

Notes: Asian economy codes are marked in orange. The figures compare the natural log of the import values from second half of 2017 to the same period in 2018. Each point represents a trade partner. The size of the points indicates the share to PRC imports or US exports. The line in each figure is the 45-degree line, which separates the economies experiencing a decline or increase in trade. Red points below the line indicate decline in trade in 2018, while blue points indicate increase in trade.

Source: ADB calculations using data from United Nations. Commodity Trade Database. https://comtrade.un.org (accessed July 2019).

Figure 1.20: Impact of PRC Tariff Hikes on US Cotton—Raw Material, Yarn, and Woven Fabric

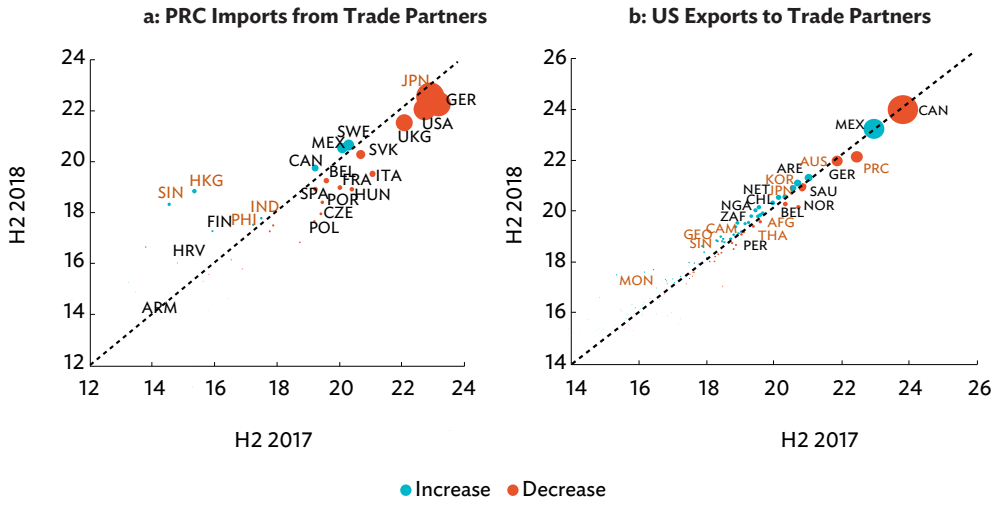


H2 = second semester; AUS = Australia; BAN = Bangladesh; BRA = Brazil; CAN = Canada; CRI = Costa Rica; ECU = Ecuador; EGY = Egypt; FRA = France; GRC = Greece; GTM = Guatemala; HKG = Hong Kong, China; IND = India; INO = Indonesia; ISR = Israel; ITA = Italy; JPN = Japan; KAZ = Kazakhstan; MAL = Malaysia; MEX = Mexico; MYA = Myanmar; NIC = Nicaragua; PAK = Pakistan; PER = Peru; PHI = Philippines; POR = Portugal; PRC = People's Republic of China; SIN = Singapore; SVN = Slovenia; SWI = Switzerland; THA = Thailand; TUR = Turkey; UKG = United Kingdom; US or USA = United States; VIE = Viet Nam.

Notes: Asian economy codes are marked in orange. The figures compare the natural log of the import values from second half of 2017 to the same period in 2018. Each point represents a trade partner. The size of the points indicates the share to PRC imports or US exports. The line in each figure is the 45-degree line, which separates the economies experiencing a decline or increase in trade. Red points below the line indicate decline in trade in 2018, while blue points indicate increase in trade.

Source: ADB calculations using data from United Nations. Commodity Trade Database. https://comtrade.un.org (accessed July 2019).

Figure 1.21: Impact of PRC Tariff Hikes on US Automobiles



H2 = second semester; AFG = Afghanistan; ARE = United Arab Emirates; ARM = Armenia; AUS = Australia; BEL = Belgium; CAM = Cambodia; CAN = Canada; CHL = Chile; CZE = Czech Republic; FIN = Finland; FRA = France; GEO = Georgia; GER = Germany; HKG = Hong Kong, China; HRV = Croatia; GEO = Georgia; HUN = Hungary; IND = India; ITA = Italy; JPN = Japan; KOR = Republic of Korea; MEX = Mexico; MON = Mongolia; NET = Netherlands; NGA = Nigeria; NOR = Norway; PER = Peru; PHI = Philippines; POL = Poland; POR = Portugal; PRC = People's Republic of China; SAU = Saudi Arabia; SIN = Singapore; SPA = Spain; SVK = Slovak Republic; SWE = Sweden; THA = Thailand; UKG = United Kingdom; US or USA = United States; ZAF = South Africa.

Notes: Asian economy codes are marked in orange. The figures compare the natural log of the import values from second half of 2017 to the same period in 2018. Each point represents a trade partner. The size of the points indicates the share to PRC imports or US exports. The line in each figure is the 45-degree line, which separates the economies experiencing a decline or increase in trade. Red points below the line indicate decline in trade in 2018, while blue points indicate increase in trade.

Source: ADB calculations using data from United Nations. Commodity Trade Database. https://comtrade.un.org (accessed July 2019).

Recent trends point to sluggish export growth across Asia, in particular exports to the PRC.

Amid trade tensions, most Asian economies saw overall export growth slow in H1 2019. In H2 2018, exports by Hong Kong, China; India; Malaysia; and Viet Nam to the PRC showed relatively higher growth than other Asian economies on year-on-year basis. Yet the growth of exports to the PRC moderated across the board in H1 2019, with India; Japan; Indonesia; the Philippines; the Republic of Korea; Singapore; Taipei,China; and Viet Nam contracting (Figure 1.22a). PRC imports from the US continued to decline in H1 2019. Asian exports to the US were relatively more resilient in H2 2018. But in H1 2019, the export outcome became more varied across economies, with Australia; India; the Republic of Korea; Taipei,China; and Viet Nam showing relatively higher growth rates in bilateral exports to the US (Figure 1.22b).

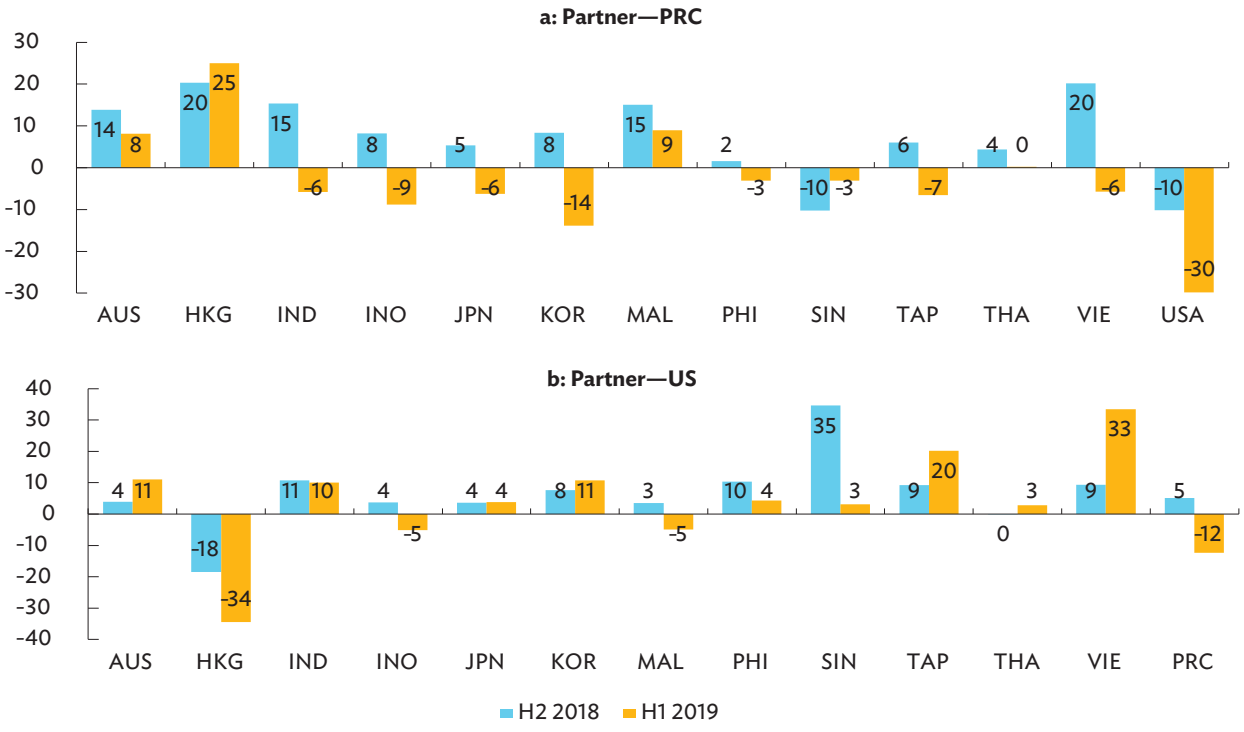
Although trade diversion or the redirection effect could benefit some Asian economies, there is no guarantee the benefits would be sustainable in the long run. Furthermore, if uncertainties surrounding international trade persist and continue to dampen business and investment confidence, there could be a significantly negative impact on global economic growth and international trade.

The net effect of higher US tariffs on the PRC exports will be based on each economy's trade position in either a substitute or a complementary relationship with the PRC in exports (Box 1.3).

The spillover impact of higher trade barriers may move beyond trade partners due to backward and forward industrial value chain linkages.

Production network across borders has involved multiple countries. For example, Apple's iPhone assembled in the PRC requires various intermediate goods from other countries, including the US (Figure 1.23).

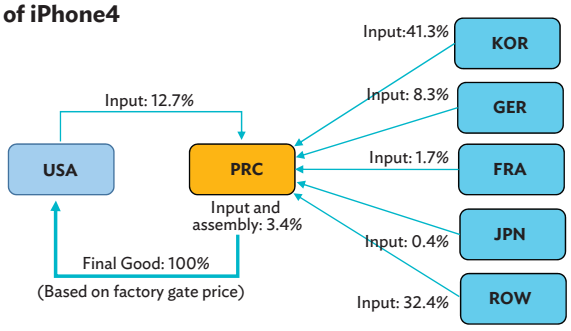
Figure 1.22: Export Growth of Selected Asian Economies *(%)*



AUS = Australia; H1 = 1st semester; H2 = 2nd semester; HKG = Hong Kong, China; IND = India; INO = Indonesia; JPN = Japan; KOR = Republic of Korea; MAL = Malaysia; PHI = Philippines; PRC = People's Republic of China; SIN = Singapore; TAP = Taipei,China; THA = Thailand; US or USA = United States; VIE = Viet Nam.

Source: ADB calculations using data from CEIC.

Figure 1.23: Value-Added Decomposition for One Unit of iPhone4



FRA = France, GER = Germany, JPN = Japan, KOR = Republic of Korea, PRC = People's Republic of China, ROW = Rest of the World, USA = United States.

Source: De Backer (2011).

The impact of US tariff hikes against the PRC in the electrical and optical equipment, and textile product sectors can be depicted through network charts of GVC linkages. The charts provide information on how much other economies are involved in the backward linkages of value chains (represented by the size of the circles in Figures 1.24a and 1.25a), as well as in the forward linkages (size of the circles in Figures 1.24b and 1.25b). The charts also describe the magnitude and direction of the flow of goods between economies (represented by the thickness of the lines and the direction of arrows in Figures 1.24 and 1.25). The greater the involvement of

Box 1.3: Trade Complementarity and Substitutability within ASEAN+3

Spillover effects of the international trade tensions will cascade into a broader set of economies through the region's supply chains. While the supply chain integration has boosted trade complementarity particularly among economies in East Asia and Southeast Asia, exports of many of these economies demonstrate increased substitutability. High export substitutability (i.e. high competitive pressures for exports) suggests potential gains from trade redirection for some economies. Impact of the PRC's export decline on other Asian countries' export performance will be dependent upon the net effects of these two factors.

Box Tables 1 and 2 indicate degrees of bilateral export substitutability and trade complementarity among ASEAN+3 economies, where data are available. With respect to the PRC, Thailand; Viet Nam; and Hong Kong, China show the greatest export substitutability in export structure. On the other hand, Singapore, Malaysia, and the Republic of Korea have the highest degree of trade complementarity with the PRC.

1: Export Substitutability by ASEAN+3 Trade Partner, 2017

	Partner													
Reporter	BRU	CAM	LAO	MYA	VIE	INO	MAL	PHI	THA	SIN	PRC	HKG	JPN	KOR
BRU		0.017	0.016	0.235	0.043	0.101	0.125	0.041	0.040	0.054	0.042	0.037	0.052	0.043
CAM	0.017		0.187	0.214	0.271	0.157	0.076	0.090	0.134	0.060	0.165	0.105	0.061	0.058
LAO	0.016	0.187		0.207	0.302	0.216	0.228	0.241	0.269	0.214	0.275	0.298	0.193	0.202
MYA	0.235	0.214	0.207		0.231	0.261	0.177	0.144	0.168	0.098	0.175	0.125	0.096	0.121
VIE	0.043	0.271	0.302	0.231		0.330	0.374	0.358	0.422	0.303	0.554	0.405	0.300	0.334
INO	0.101	0.157	0.216	0.261	0.330		0.414	0.252	0.340	0.218	0.323	0.214	0.261	0.258
MAL	0.125	0.076	0.228	0.177	0.374	0.414		0.436	0.468	0.520	0.470	0.496	0.474	0.526
PHI	0.041	0.090	0.241	0.144	0.358	0.252	0.436		0.418	0.542	0.392	0.420	0.424	0.400
THA	0.040	0.134	0.269	0.168	0.422	0.340	0.468	0.418		0.387	0.503	0.416	0.496	0.504
SIN	0.054	0.060	0.214	0.098	0.303	0.218	0.520	0.542	0.387		0.376	0.553	0.471	0.527
PRC	0.042	0.165	0.275	0.175	0.554	0.323	0.470	0.392	0.503	0.376		0.516	0.474	0.497
HKG	0.037	0.105	0.298	0.125	0.405	0.214	0.496	0.420	0.416	0.553	0.516		0.426	0.497
JPN	0.052	0.061	0.193	0.096	0.300	0.261	0.474	0.424	0.496	0.471	0.474	0.426		0.658
KOR	0.043	0.058	0.202	0.121	0.334	0.258	0.526	0.400	0.504	0.527	0.497	0.497	0.658	

= "low" similarity, export similarity index (ESI) of below 0.3; = "medium" similarity, ESI between 0.3 and 0.5; = "high" similarity, ESI above 0.5 and below 1.0; ASEAN = Association of Southeast Asian Nations; BRU = Brunei Darussalam; CAM = Cambodia; HKG = Hong Kong, China; INO = Indonesia; JPN = Japan; KOR = Republic of Korea; LAO = Lao People's Democratic Republic; MAL = Malaysia; MYA = Myanmar; PHI = Philippines; PRC = People's Republic of China; SIN = Singapore; THA = Thailand; VIE = Viet Nam.

Notes: Export substitutability is measured by the ESI, which captures the degree of similarity of the export patterns between two economies. The index is between 0 and 1, where 1 indicates perfect overlap in the export profile and 0 indicates no overlap. It is computed by taking the sum over all commodities of the smaller export shares—based from the comparison of the export shares between two economies. In mathematical form the index for countries, *i* and *j* is $\text{ESI}_{ij} = \sum_{\forall c} \min[x_{ic}, x_{jc}]$, where each x_{*c} is the commodity *c*'s share to the respective total exports of each economy. The summation over commodity groupings is at the level 4 of the Standard International Trade Classification.

Sources: ADB calculations using United Nations. Commodity Trade Database. https://comtrade.un.org (accessed October 2019); and methodology by Finger and Kreinin (1979).

continued on next page

Box 1.3: Trade Complementarity and Substitutability within ASEAN+3 *(continued)*

2: Trade Complementarity by ASEAN+3 Trade Partner, 2017

	Partner										
Reporter	**BRU**	**MYA**	**VIE**	**INO**	**MAL**	**PHI**	**SIN**	**PRC**	**HKG**	**JPN**	**KOR**
BRU		0.255	0.142	0.274	0.227	0.199	0.321	0.237	0.091	0.314	0.332
MYA	0.262		0.219	0.381	0.335	0.278	0.363	0.331	0.155	0.433	0.402
VIE	0.390	0.340		0.408	0.588	0.517	0.532	0.521	0.600	0.519	0.493
INO	0.431	0.539	0.383		0.507	0.471	0.503	0.507	0.273	0.626	0.589
MAL	0.488	0.550	0.713	0.611		0.695	0.770	0.736	0.595	0.664	0.680
PHI	0.421	0.353	0.616	0.426	0.648		0.624	0.588	0.746	0.519	0.516
SIN	0.468	0.473	0.663	0.567	0.769	0.699		0.749	0.643	0.614	0.643
PRC	0.541	0.461	0.685	0.562	0.698	0.645	0.628		0.575	0.595	0.595
HKG	0.327	0.273	0.544	0.358	0.561	0.482	0.604	0.506		0.432	0.437
JPN	0.561	0.515	0.562	0.560	0.591	0.649	0.538	0.567	0.422		0.599
KOR	0.539	0.566	0.749	0.628	0.748	0.733	0.684	0.690	0.554	0.560	

= "low" complementarity, with trade complementarity index (TCI) of below 0.3; = "medium" complementarity, with TCI between 0.3 and 0.5; = "high" complementarity, with TCI above 0.5 and below 1.0; ASEAN = Association of Southeast Asian Nations; BRU = Brunei Darussalam; HKG = Hong Kong, China; INO = Indonesia; JPN = Japan; KOR = Republic of Korea; MAL = Malaysia; MYA = Myanmar; PHI = Philippines; PRC = People's Republic of China; SIN = Singapore; VIE = Viet Nam.

Notes: Trade complementarity is measured using an index that ranges from 0 and 1, where 1 indicates perfect complementarity and 0 indicates no complementarity. The index provides information how one economy's export pattern matches another economy's import pattern. It is computed as: $\text{TCI}_{ij} = 1 - \sum_{vc}|m_{ic} - x_{jc}|/2$, where m_{ic} is commodity c's share to economy i's total imports and x_{jc} is commodity c's share to economy j's exports.

Source: Data from World Bank. World Integrated Trade Solutions. https://wits.worldbank.org/ (accessed September 2019).

Source: ADB staff.

an economy in value chains, the more susceptible it is to one country's tariff rate hikes against the other.

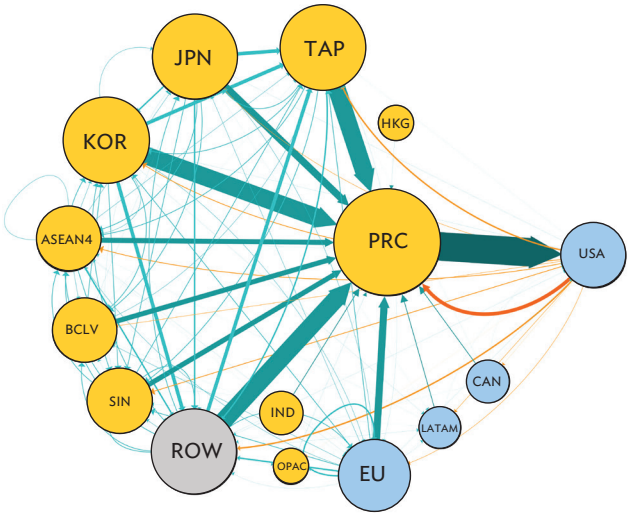
In the backward linkages, the intermediate goods that the economies export would eventually be imported by the PRC (represented by green thick lines in Figures 1.24a and 1.25a), and then processed to be exported to the US as final goods (thickest dark green line in Figures 1.24a and 1.25a). Moreover, the PRC also imports intermediate goods from other economies, which were produced by using intermediate goods that were also initially imported from other economies. In terms of the GVC framework, these initial intermediate goods are domestic value added (DVA) of primary economies to the US–PRC linkage (thin light green lines in Figures 1.24a and 1.25a). The charts also take into account US-returned DVA in imported final goods via third economies (thin light orange lines in Figures 1.24a and 1.25a), and returned DVA in imported final goods directly from the PRC (orange line in Figures 1.24a and 1.25a).

Consequently, in the forward linkages, the PRC's intermediate exports (represented by the thickest dark green line in Figures 1.24b and 1.25b) are used by the US to produce either intermediate or final goods for other economies (green thick lines in Figures 1.24b and 1.25b). US intermediate exports would then be used by the third economies to produce final goods to be exported to another economy (thin light green lines in Figures 1.24b and 1.25b), while some may go back to the US (thin yellow lines in Figures 1.24b and 1.25b). The charts also consider economies' returned DVA in imported final goods via the PRC and the US (thin orange line in Figure 1.24b).

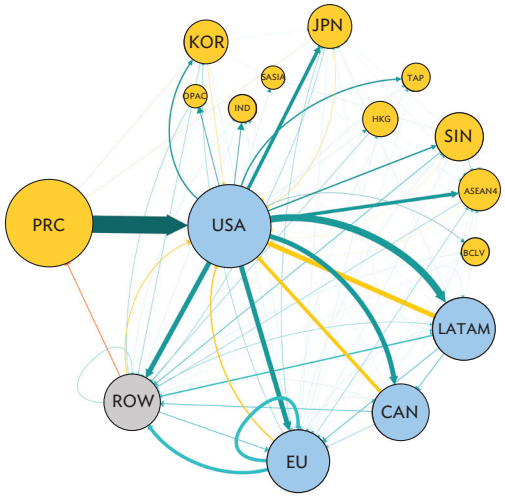
In the case of electrical and optical equipment, the Republic of Korea and Taipei,China are found to be affected the most through their direct backward value chain linkages with the PRC. The gross impact—combining both the direct impact and indirect impact through third economies—is likely to be greater in Japan;

Figure 1.24: Backward and Forward Linkages of US and PRC Trade on Electrical and Optical Equipment

a: Backward Linkages



b: Forward Linkages



- PRC exports of final goods to the US using imported intermediate goods from other economies
- Direct intermediate exports to the PRC for further production, then imported by the US as final goods
- Indirect intermediate exports to the PRC for further production, then imported by the US as final goods
- US direct intermediate exports to the PRC for further production, then return to the US as final goods
- US indirect intermediate exports to the PRC for further production, then return to the US as final goods
- PRC exports of intermediate goods to the US for further production
- US exports of intermediate and final goods, using intermediate goods directly imported from the PRC
- Export of final goods using intermediate goods indirectly imported from the PRC
- Export of final goods to the US using intermediate goods indirectly imported from the PRC
- Export of intermediate goods to the PRC for further production, then returned to the initial exporter as final goods

ASEAN4 = Indonesia, Malaysia, the Philippines, and Thailand; BCLV = Brunei Darussalam, Cambodia, the Lao People's Democratic Republic, and Viet Nam; CAN = Canada; EU = European Union; HKG = Hong Kong, China; IND = India; JPN = Japan; KOR = Republic of Korea; LATAM = Latin America (Brazil and Mexico); OPAC = the Pacific and Oceania (Australia and Fiji); PRC = People's Republic of China; ROW = Rest of the world; SASIA = South Asia (Bangladesh, Bhutan, Maldives, Nepal, Pakistan, and Sri Lanka); SIN = Singapore; TAP = Taipei,China; US or USA = United States.

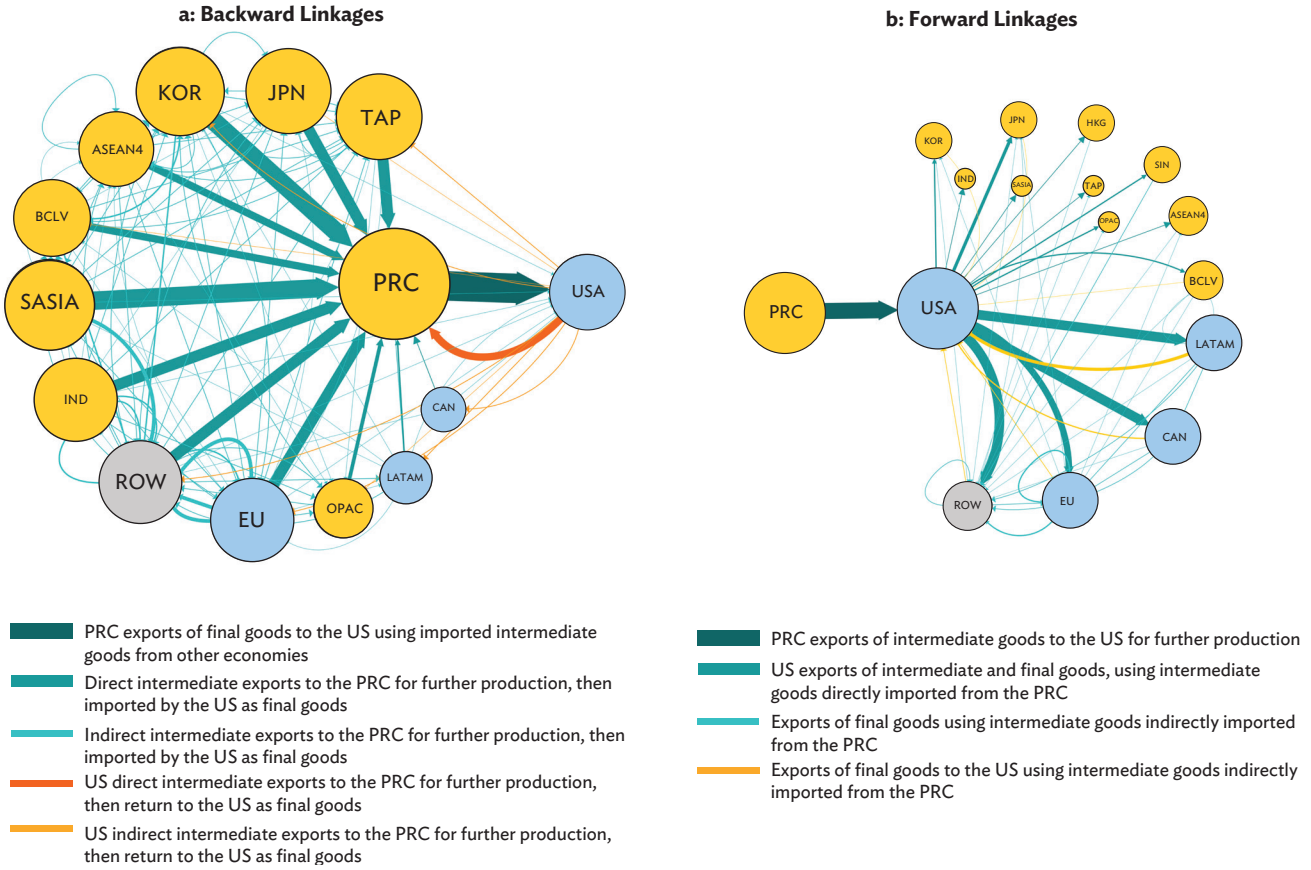
Notes: Indirect intermediate exports to the PRC refer to an economy's export of intermediate goods, which is used by another economy for the production of intermediate exports to the PRC, while direct intermediate exports refer to an economy's export of intermediate goods directly to the PRC. Indirect intermediate imports from the PRC refer to an economy's import of intermediate goods from another economy which has used intermediate imports from the PRC for production. Orange circles refer to Asian economies, while blue circles refer to non-Asia. In the backward linkages figure, the size of the circles represents the magnitude of the economy's direct and indirect export of intermediate goods processed by the PRC to be exported to the US as final goods. In the forward linkages, the size of the circles represents the economy's export value of intermediate and final goods using processed direct and indirect imports from the PRC. For both figures, the thickness of the lines linking the economies represent the value of the flow of intermediate and final goods between them.

Sources: ADB calculations using data from ADB. Multi-Regional Input-Output Tables; and methodology by Wang, Wei, and Zhu (2014).

the Republic of Korea; and Taipei,China than in others (Figure 1.24a). In the forward value chain linkages, economies like those in Latin America, Canada, the EU, Japan, and some ASEAN economies (to a lesser extent) are expected to be affected relatively more in case US imports of electrical and optical equipment are affected by its tariff hikes against the PRC (Figure 1.24b).

For textile and textile products, those most affected through direct backward value chain linkages with the PRC are likely to be the Republic of Korea and South Asian economies (except for India) as a group, plus India; Japan; Taipei,China; and the EU to a lesser extent. The gross impact—with direct and indirect impact combined—could be greater in the Republic of Korea and South Asian economies (Figure 1.25a). For forward linkages, economies in Latin America, Canada, and the EU are likely to be affected most through both direct and indirect value chain linkages, while other East Asian and Southeast Asian economies will also be affected to a lesser extent (Figure 1.25b).

Figure 1.25: Backward and Forward Linkages of US and PRC Trade on Textile and Textile Products



ASEAN4 = Indonesia, Malaysia, the Philippines, and Thailand; BCLV = Brunei Darussalam, Cambodia, the Lao People's Democratic Republic, and Viet Nam; CAN = Canada; EU = European Union; HKG = Hong Kong, China; IND = India; JPN = Japan; KOR = Republic of Korea; LATAM = Latin America (Brazil and Mexico); OPAC = the Pacific and Oceania (Australia and Fiji); PRC = People's Republic of China; ROW = Rest of the world; SASIA = South Asia (Bangladesh, Bhutan, Maldives, Nepal, Pakistan, and Sri Lanka); SIN = Singapore; TAP = Taipei,China; US or USA = United States.

Notes: Indirect intermediate exports to the PRC refer to an economy's export of intermediate goods, which is used by another economy for the production of intermediate exports to the PRC, while direct intermediate exports refer to an economy's export of intermediate goods directly to the PRC. Indirect intermediate imports from the PRC refer to an economy's import of intermediate goods from another economy which has used intermediate imports from PRC for production. Orange circles refer to Asian economies, while blue circles refer to non-Asia. In the backward linkages figure, the size of the circles represents the magnitude of the economy's direct and indirect export of intermediate goods processed by the PRC to be exported to the US as final goods. In the forward linkages, the size of the circles represents the economy's export value of intermediate and final goods using processed direct and indirect imports from the PRC. For both figures, the thickness of the lines linking the economies represent the value of the flow of intermediate and final goods between them.

Sources: ADB calculations using data from ADB. Multi-Regional Input-Output Tables; and methodology by Wang, Wei, and Zhu (2014).

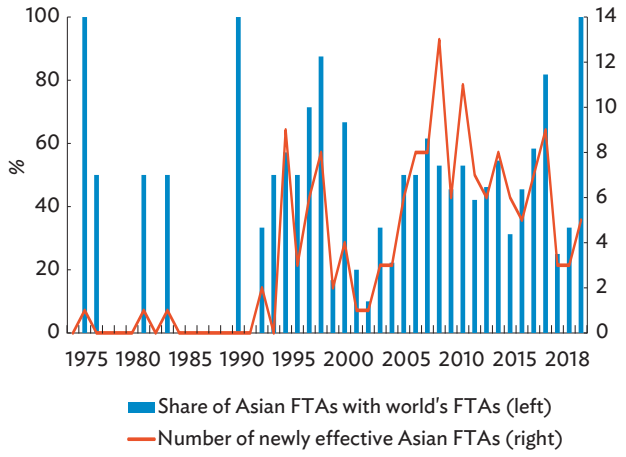
Updates on Regional Trade Policy

With a steep resurgence in the number of signed Asian free trade agreements, the region's trade agreement landscape is moving toward greater trade liberalization.

The rise in the number of signed Asian free trade agreements (FTAs) is a welcome development—given that rules-based trade can help strengthen the stability and predictability in the international trading system. It also sends an encouraging signal to the world that Asia remains committed to trade openness.

According to the World Trade Organization (WTO) Regional Trade Agreements database, all FTAs that came into force in 2018 involve Asian economies (Figure 1.26). This is a huge jump compared with the 33% share of Asian FTAs in 2017. The number of signed Asian FTAs increased from 8 to 13 (Figure 1.27), also reflected in the rise in the cumulative number of signed FTAs (Figure 1.28).

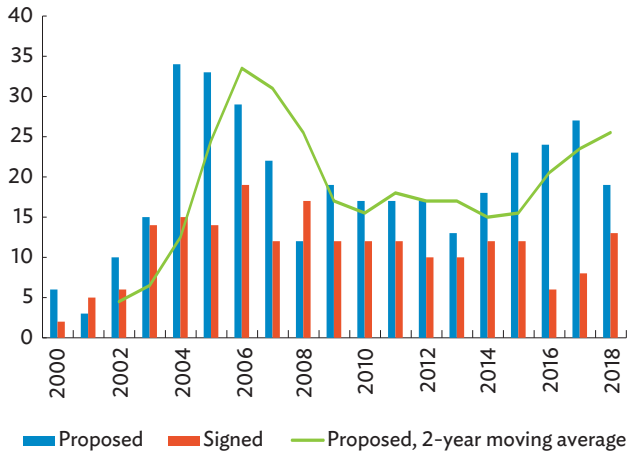
Figure 1.26: Number of Newly Effective Free Trade Agreements—Asia



FTA = free trade agreement.

Sources: ADB calculations using data from ADB. Asia Regional Integration Center FTA Database. https://aric.adb.org/fta (accessed September 2019); and World Trade Organization. Regional Trade Agreement Information System. http://rtais.wto.org (accessed August 2019).

Figure 1.27: Number of Proposed and Signed Free Trade Agreements—Asia

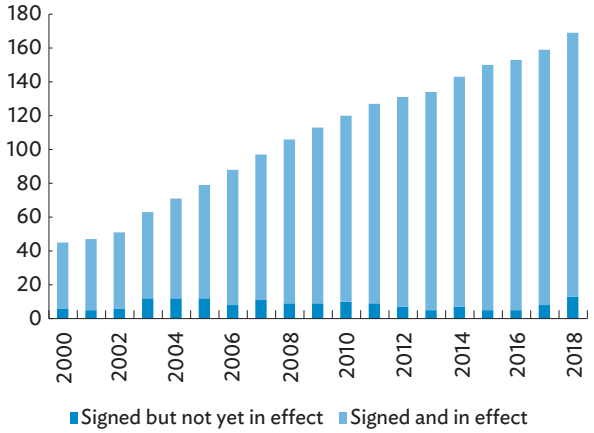


FTA = free trade agreement.

Notes: Includes bilateral and plurilateral FTAs with at least one of ADB's 49 regional members as signatory. "Signed" includes FTAs that are signed but not yet in effect, and those signed and in effect. "Proposed" includes FTAs that are (i) proposed (the parties consider an FTA, governments or ministries issue a joint statement on the FTA's desirability, or establish a joint-study group and joint-task force to conduct feasibility studies); (ii) framework agreements signed and under negotiation (the parties, through ministries, negotiate the contents of a framework agreement that serves as a framework for future negotiations); and (iii) under negotiation (the parties, through ministries, declare the official launch of negotiations, or start a first round of negotiations).

Source: ADB. Asia Regional Integration Center FTA Database. https://aric.adb.org/fta (accessed September 2019).

Figure 1.28: Number of Signed Free Trade Agreements—Asia (cumulative since 1975)



FTA = free trade agreement.

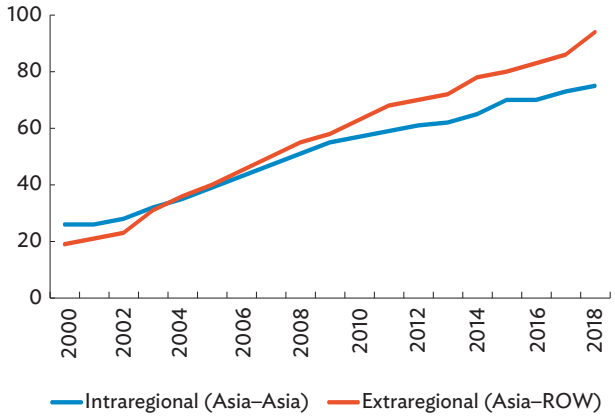
Notes: Includes bilateral and plurilateral FTAs with at least one of ADB's 49 regional members as signatory. "Signed" includes FTAs that are signed but not yet in effect, and those signed and in effect.

Source: ADB. Asia Regional Integration Center FTA Database. https://aric.adb.org/fta (accessed September 2019).

Some key trends characterize Asia's FTA landscape. Asia continues to push for stronger trade ties and greater market access with economies outside the region (Figure 1.29). Eleven of the 13 signed Asian FTAs (85%) involve non-Asian partners. Except for bilateral FTAs between Australia and Peru; Hong Kong, China and Georgia; the PRC and Georgia; and Taipei,China and Paraguay, the rest of signed Asian FTAs involve multiple FTA partners outside the region. Foremost among these is the Comprehensive and Progressive Trans-Pacific Partnership Agreement (CPTPP), a mega trade deal composed of 11 economies representing 495 million people and a combined gross domestic product (GDP) of $13.5 trillion. It was signed on 8 March 2018 and came into force in December 2018 between Australia, Canada, Japan, Mexico, New Zealand, and Singapore. The CPTPP entered into force for Viet Nam on 14 January 2019.

The ambitious scope and high quality of standards and rules of the CPTPP makes it a novel trade agreement which can influence the rules on economic integration and shape the future direction for businesses. To illustrate, the CPTPP is currently the most advanced trade agreement shaping the international trade policy discourse on the

Figure 1.29: Number of Signed Free Trade Agreements, Intraregional and Extraregional (cumulative since 1975)



FTA = free trade agreement, ROW = rest of the world.

Notes: Includes bilateral and plurilateral FTAs with at least one of ADB's 48 regional members as signatory. "Signed" includes FTAs that are signed but not yet in effect, and those signed and in effect.

Source: ADB. Asia Regional Integration Center FTA Database. https://aric.adb.org/fta (accessed September 2019).

digital economy. It will introduce new rules to address the high costs of international mobile roaming (Australian Government, Department of Foreign Affairs and Trade 2016). Because internet connectivity is the backbone of the digital economy, lower international mobile roaming charges will make the internet more accessible, creating positive impacts not only in the digital economy but also on GVC exports (Box 1.4).

The digital economy will benefit from zero duties on every single part and component of information and communication technology goods. For instance, a smartphone manufacturer has the opportunity to procure materials from across the CPTPP members including screens from Japanese firms, semiconductor chips manufactured in Malaysia, and chassis made in Singapore, without paying duties on any of these items.[3] The smartphone, assembled in Viet Nam, can be transported to consumers in CPTPP markets, also without duties (Asian Trade Centre 2018). The free flow of information and communication technology products across CPTPP members can enhance the availability of latest technologies, which is an important factor affecting GVC exports (see Box 1.4).

Meanwhile, another mega trade deal, Regional Comprehensive Economic Partnership (RCEP), presents an opportunity for Asian economies to further enhance trade liberalization within the region. The 16 RCEP nations account for 32% of global GDP, 28% of global trade, and a population of 3.5 billion. Although some challenges have yet to be resolved in the negotiations, RCEP negotiations have reached a critical milestone as the deadline for reaching an agreement. RCEP member economies recognize the urgency of successfully concluding the RCEP to strengthen the rules-based international trading system and enhance certainty in the market, which are key elements of a vibrant trade and investment environment in the region.

Another mega trade deal signed in 2018 is the Economic Partnership Agreement (EPA) between Japan and the EU, which represents almost a third of the world's GDP. The EPA entered into force on 1 February 2019, effectively creating new markets of 635 million people. Four years after the conclusion of the negotiations, the Singapore–EU FTA was finally signed on 18 October 2018, making Singapore the first Southeast Asian country to seal a trade deal with the EU. The Philippine–European Free Trade Area (EFTA) FTA also took effect in 2018. Other plurilateral FTAs signed in 2018 include the Eurasian Economic Union's bilateral FTAs with the Islamic Republic of Iran and the PRC, the Indonesia–EFTA FTA, and the Republic of Korea–Central America FTA.

The plurilateral ASEAN–Hong Kong, China FTA (AHK FTA), which became effective 11 June 2019, is ASEAN's first FTA to come into force in almost a decade. According to the Trade and Industry Department of Hong Kong, China (2019), under the AHK FTA, Hong Kong, China and Singapore will eliminate all tariffs upon entry into force of the agreement. Hong Kong, China will enjoy tariff-free access on 85% of products traded with four ASEAN economies namely, Brunei Darussalam, Malaysia, the Philippines, and Thailand. These economies will reduce another 10% of tariff lines on exports from Hong Kong, China within 14 years. Indonesia and Viet Nam will grant tariff-free access to 75% of their products within 10 years and reduce another 10% of tariff lines within 14 years. Cambodia, the Lao PDR, and Myanmar will remove tariffs for 65% of their products within 15 years and cut back another 20% of tariff lines within 20 years.

[3] Smartphone is an advanced technology not covered by existing multilateral agreement for electronics products, the Information Technology Agreement.

Australia signed bilateral FTAs with Indonesia and Hong Kong, China in 2019. Viet Nam has also inked a trade deal with the EU. On 7 October 2019, the US and Japan, which together account for approximately 30% of world GDP, signed a trade deal granting tariff reductions on agricultural and industrial goods, including commitments on digital trade. The two economies expressed intent to commence trade talks on a more comprehensive deal after the entry into force of the initial agreement, which is expected to be on 1 January 2020 (Congressional Research Service 2019).

The PRC continues to upgrade FTAs with trade partners. It upgraded bilateral FTAs with Hong Kong, China and Macau, China coming into force on 1 January 2019, with Chile on 1 March 2019, and with the signing of the protocol upgrading its FTA with Pakistan on 28 April 2019. It also concluded FTA upgrade negotiations with Singapore and launched another with Peru. On 26 February 2019, ASEAN and Japan signed the protocol that will amend the existing ASEAN–Japan FTA to incorporate chapters on trade in services, movement of natural persons, and investment. Overall, 13 Asian FTAs are currently in different stages of the upgrading process.

Box 1.4: Impact of Technology on Global Value Chain Exports

Rapid technological advancements, particularly in information and communication technology (ICT), have revolutionized the production of goods and services. ICT infrastructure includes fixed, mobile, and broadcast networks that enhance the connectivity of devices, people, and objects—leading to the expansion of the digital economy. These developments allow production processes in both manufacturing and services to have a finer degree of specialization, allowing them to be more fragmented than in the past—known as global value chains (GVCs).

Although technology has been widely recognized as an important driving force behind GVC trade, empirical studies have mostly focused on the role of technology as enabler of gross exports. Here, the role of technology, in particular including different components of ICT as a determinant of GVC exports, is examined using the following empirical specifications based on Ang et al. (2015):

$$(1)\ \ln GVC_{it} = \delta_0 + \delta_1 \ln TWI_{it} + \delta_2 \ln tar_{it} + \delta_3 \ln P^{ex}_{it} + \delta_4 lnLC^{MW}_{it} + \delta_5 \ln LC^{ME}_{it} + \delta_6 \ln TECH^{x}_{it} + CD_i + \varepsilon_{1,it}$$

$$(2)\ \ln GVC_{it} = \lambda_0 + \lambda_1 \ln TWI_{it} + \lambda_2 \ln tar_{it} + \lambda_3 \ln P^{ex}_{it} + \lambda_4 \ln LC^{MW}_{it} + \lambda_5 \ln LC^{ME}_{it} + \lambda_6 \ln TECH\_L^{x}_{it} + CD_i + \varepsilon_{2,it}$$

where $\ln GVC_{it}$ is the natural log of GVC exports of country i at year t, TWI_{it} is the natural log of GVC-weighted real income of importing countries,[a] $\ln tar_{it}$ is the natural log of GVC-weighted simple average tariff,[b] P^{ex}_{it} is the natural log of GVC export price competitiveness where an increase in P^{ex}_{it} denotes a deterioration of the exporter's price competitiveness.[c] $\ln LC^{MW}_{it}$ is the natural log of labor cost competitiveness using the minimum wage as a measure of labor cost.[d] $\ln LC^{ME}_{it}$ is the natural log of labor cost competitiveness using monthly earnings as a measure of labor cost.[e] $\ln TECH^{x}_{it}$ is the natural log of technology competitiveness for the technology variable x.[f] $\ln TECH\_L^{x}_{it}$ is the natural log of the technology variable x in levels. CD represents a set of country dummies, and ε is the stochastic error term.

Foreign income and GVC exports price competitiveness are significant determinants of GVC exports (Ang et al. 2015). The coefficients of GVC exports price competitiveness are statistically significant in all cases for both technology variables in levels and index. As expected, importing countries' income exert positive impact on GVC exports, while price competitiveness of export countries has a negative impact. GVC-weighted simple tariff coefficients manifest the expected negative sign and are statistically significant. Coefficients of the labor cost competitiveness index using monthly earnings exhibit negative relationship with GVC exports. In the meantime, minimum wage shows positive impact on GVC exports.

When technology variables in levels are considered, international internet bandwidth (kilobits per second)—being positive and statistically significant—emerges as the most important technological factor affecting GVC exports. A 10% increase in international internet bandwidth or data speed supported by a network connection leads to a 0.29% rise in GVC exports (Annex Table 1a.1, column 4). To determine whether the relationship between technology and GVC exports is nonlinear, a square of log-transformed technology variables is included in the regression (Annex Table 1a.1, columns 5–8). The exercise shows that while the technological readiness index and the percentage of

continued on next page

Box 1.4: Impact of Technology on GVC Exports *(continued)*

individuals using the internet positively affects GVC exports, the square of these variables are negative and statistically significant, which means that the positive impact on GVC exports of further improvements in these technological factors will be lessened.

Employing a 1-year lag of the values of the technology variables to control for endogeneity reinforces the result that international internet bandwidth is an important technological factor in increasing GVC exports. A 10% increase in the lag value of this technological variable raises GVC exports by 0.31% (Annex Table 1a.1, column 12).

The technology competitiveness of the exporting country relative to the rest of the world was also considered. An improvement in the availability of latest technologies (ALT) of an exporting country compared with all other importers has a positive effect on GVC exports. A unit increase in technology competitiveness in terms of ALT will increase GVC exports by 0.37% (Annex Table 1a.2, column 2).

Moreover, as the exporter's ALT competitiveness further improves, the positive impact of ALT on GVC exports becomes stronger as the squared of log-transformed ALT is positive and statistically significant (Annex Table 1a.2, column 9). While a unit increase in the 1-year lag of ALT competitiveness results in a smaller increase in GVC exports (0.18%) compared with the contemporaneous value of ALT (Annex Table 1a.2, column 10), this further highlights that relative ALT competitiveness plays an important role in enhancing GVC exports.

Meanwhile, a unit increase in the 1-year lag of foreign direct investment (FDI) and technology transfer (FTT) competitiveness decreases GVC exports by 0.24% (Annex Table 1a.2, column 11). Conversely, when the FTT of the rest of the importers is higher than the FTT of the exporter, the FTT competitiveness of the exporter will lead to higher GVC exports, which highlights the relative importance of the absorptive capacity of importing countries.

[a] TWI_{it} is the GVC weighted real income of importing countries and is computed as follows:

$$(1)\ TWI_{it} = \sum_{j=1}^{n} \frac{GVC_{jit} Y_{jt}}{GVC_{it}},\ i \neq j$$

GVC_{jit} = GVC exports of home country i to destination country j at year t

Y_{jt} = real income of destination country j

Real income (real GDP) for each country is normalized to have a mean of 1.

[b] GVC weighted simple average tariff of importing countries is computed similar to TWI_{it}, replacing Y_{jt} with tar_{jt}.

[c] GVC exports price competitiveness is constructed using bilateral GVC weights as follows:

$$(2)\ P_{it}^{ex} = \frac{P_{it}}{\sum_{j=1}^{n} \frac{GVC_{jit} e_{ijt} P_{jt}}{GVC_{it}}},\ i \neq j$$

P_i and P_j are exports unit values (export prices) of country i and destination country j at year t.

e_{ijt} = bilateral exchange rate between country j and i

[d] Labor cost competitiveness using minimum wage is constructed using bilateral GVC weights as follows: $LC_{it}^{MW} = \frac{MW_{it}}{\sum_{j=1}^{n} \frac{GVC_{ijt} MW_{jt}}{GVC_{it}}}\ i \neq j$

MW_{it} and MW_{jt} are minimum wages of source country i and destination country j at year t.

[e] Labor cost competitiveness using monthly earnings is constructed similar to LC_{it}^{MW} replacing MW_{it} with ME_{it}.

[f] Technology competitiveness is computed similar to LC_{it}^{MW} with $TECH_{it}^{x}$ replacing MW_{it}. $TECH_{it}^{x}$ is the technology variable x of country i at year t. Technology variable x takes the following indicators: (1) technological readiness index; (2) availability of latest technologies; (3) firm-level technology absorption; (4) foreign direct investment and technology transfer; (5) % of individuals using the internet; (6) fixed broadband internet subscription; (7) international internet bandwidth, kb/s; (8) mobile broadband subscription/100 population; (9) mobile telephone subscription; (10) fixed telephone lines; and (11) ICT use. Technological readiness index is comprised of items (2) – (11) while ICT use covers items (5)–(10).

Sources: ADB calculations using Ang et al. (2015) and data from ADB. Multi-Regional Input–Output Tables; CEIC; United Nations. Commodity Trade Database. https://comtrade.un.org; World Bank. World Development Indicators. https://databank.worldbank.org/source/world-development-indicators; World Bank. World Integrated Trade Solutions. https://wits.worldbank.org; and World Economic Forum. The Global Competitiveness Index Dataset 2007-2017. https://www.weforum.org; (all accessed February 2019); and methodology by Wang, Wei, and Zhu (2014).

The region continues to pursue trade liberalization by forging more plurilateral trade deals outside the region and by deepening existing FTA commitments. These efforts are expected to help create new trade and business opportunities against the backdrop of global trade policy uncertainties.

The Role of FTAs in Making Trade Work for All

The last 3 decades saw an unprecedented rise in cross-border flows of goods and services, capital, technology, information, and people. The widely accepted belief is that breaking down economic, cultural, and geographic barriers result in higher productivity, increased economic opportunities, and overall improvement in living standards. While this belief is true to a certain extent, it obscures the fact that not everyone benefits from free trade. Indeed, free trade has left many behind, particularly the most vulnerable segments of society such as unskilled labor, small businesses, women, and indigenous people.

As the linkages between trade policy, development, and equitable distribution of gains from trade become increasingly clear, the role of trade instruments such as FTAs in making trade work for all becomes more evident as well. FTAs have increasingly included commitments in areas that are outside WTO obligations, such as protection of cultural heritage and traditional knowledge of indigenous people, which lie outside the WTO Agreement on Trade-Related Intellectual Property Rights. FTAs can also induce structural reforms in the economies involved by including provisions that set a standard on working conditions, create a favorable environment for small businesses, and promote gender equality.

Labor

The International Labour Organization (ILO) defines labor provisions as "any standard which addresses labour relations or minimum working terms or conditions, mechanisms for monitoring or promoting compliance, and/or a framework for cooperation" (ILO 2016). This broad definition reflects the heterogeneity of labor provisions in Asian FTAs and their extensive scope.[4] Two key principles underpin the core functions of labor provisions: (i) outline a set of standards or commitments, and (ii) stipulate a mechanism to ensure compliance. Asian FTAs with labor provisions are relatively new, with the oldest (Singapore–US FTA) entering into force in 2004. Out of 142 active FTAs with available full text, almost a quarter (35 FTAs) contains some form of labor provisions.

The most commonly referenced baseline for standards and commitments in Asian FTAs is the 1998 ILO Declaration on fundamental principles and rights at work and its follow-up (Table 1.1). It expects every member country to respect fundamental rights merely by virtue of membership and explicitly mentions that "labour standards should not be used for protectionist trade purposes" (ILO 1998).[5] Another ILO convention cited in FTAs is the 2006 Economic and Social (ECOSOC) Declaration that supports the ratification of additional conventions, in particular those "concerning the employment rights of women, youth, persons with disabilities, migrants and indigenous people" (Engen 2017). More than a quarter of Asian FTAs with labor provisions (26%) include this standard, while 17% cover the 2008 ILO Declaration, which includes four labor-empowerment goals.[6]

One-fifth of Asian FTAs with labor provisions further explicitly promote non-fundamental ILO conventions. For

[4] Asian FTAs involve at least one partner from Asia and the Pacific.

[5] These fundamental rights, also known as the Core Labour Standards, include (i) freedom of association and the effective recognition of the right to collective bargaining, (ii) the elimination of all forms of forced or compulsory labor, (iii) the effective abolition of child labor, and (iv) the elimination of discrimination with respect to employment and occupation.

[6] (i) Promoting employment; (ii) developing measures of social protection; (iii) promoting social dialogue; and (iv) respecting, promoting, and realizing the fundamental principles and rights at work.

Table 1.1: Asian FTAs with Labor Provisions

Labor Provisions in FTAs	Number of FTAs	Share in Total Number of Active FTAs with Available Full Text (%)	Share in Total Number of FTAs with Labor Provisions (%)
International Standards			
ILO 1998	25	17.2	71.4
ECOSOC 2006	9	6.3	25.7
ILO 2008	6	4.2	17.1
ILO Convention	7	4.9	20.0
Commitments			
Enforce own standards	21	14.8	60.0
Not encourage trade or investment through weakening of labor laws	25	17.6	71.4
Compliance Mechanism			
Enforcement (DSM)	25	17.6	71.4
Legally binding arbitration	5	3.5	14.3
Normal agreement DSM	4	2.8	11.4
Consultation only, no enforcement	16	11.3	45.7
No (purely cooperational)	10	7.0	28.6
Cooperation on Labor Issues	31	22.5	88.6
Monitoring			
Civil society involvement	15	11.3	42.9
FTAs with labor provisions	35	24.7	
Active FTAs with available full text	142		

DSM = Dispute Settlement Mechanism, ECOSOC 2006 = 2006 Economic and Social (ECOSOC) Declaration, FTA = free trade agreement, ILO = International Labour Organization.

Sources: ADB calculations using data from ADB. Asia Regional Integration Center FTA Database. https://aric.adb.org/fta (accessed May 2019); and official FTA texts.

instance, the EU–Georgia FTA urges member economies to "reaffirm their commitment to effectively implement in their law and practice the fundamental, the priority, and other ILO conventions ratified."[7] The ILO is responsible for monitoring adherence to ILO conventions. As a result, the use of ILO conventions as the international standard is beneficial to both parties, because linking commitments to externally monitored and relatively unambiguous standards can help evaluate compliance as well as provide legitimacy to a ruling in disputes (Engen 2017). The most common commitment is the prohibition of lowering labor rights to encourage trade or investment (71%). Provisions prohibiting the non-enforcement of domestic labor laws are present in 21 FTAs (60%). In terms of enforcement, most agreements include consultations and dialogue only (46%), while only a few agreements feature legally binding arbitration (14%). The labor provisions of Asian FTAs ascribe heavy emphasis on cooperation. With the exception of three Japanese agreements with labor provisions in their investment, cooperation provisions are found in all the agreements reviewed. In general, monitoring is not the strongest point of Asian FTA labor provisions. On the one hand, the provisions in the FTAs reviewed allow for some kind of labor committee or subcommittee, or at the minimum, contact points for both partners. On the other hand, most provisions do not indicate the monitoring responsibilities of these committees or any semblance of a time frame or schedule for assessment. Only 16 agreements (46%) mention civil society participation, and even less when the context of monitoring is considered.

Small and Medium-Sized Enterprises

Small and medium-sized enterprises (SMEs) in Asia have much to gain from participating in GVCs and international trade. This includes the opportunity to

[7] European Union, *Association Agreement between the European Union and the European Atomic Energy Community and their Member States, of the one Part, and Georgia, of the other Part.*

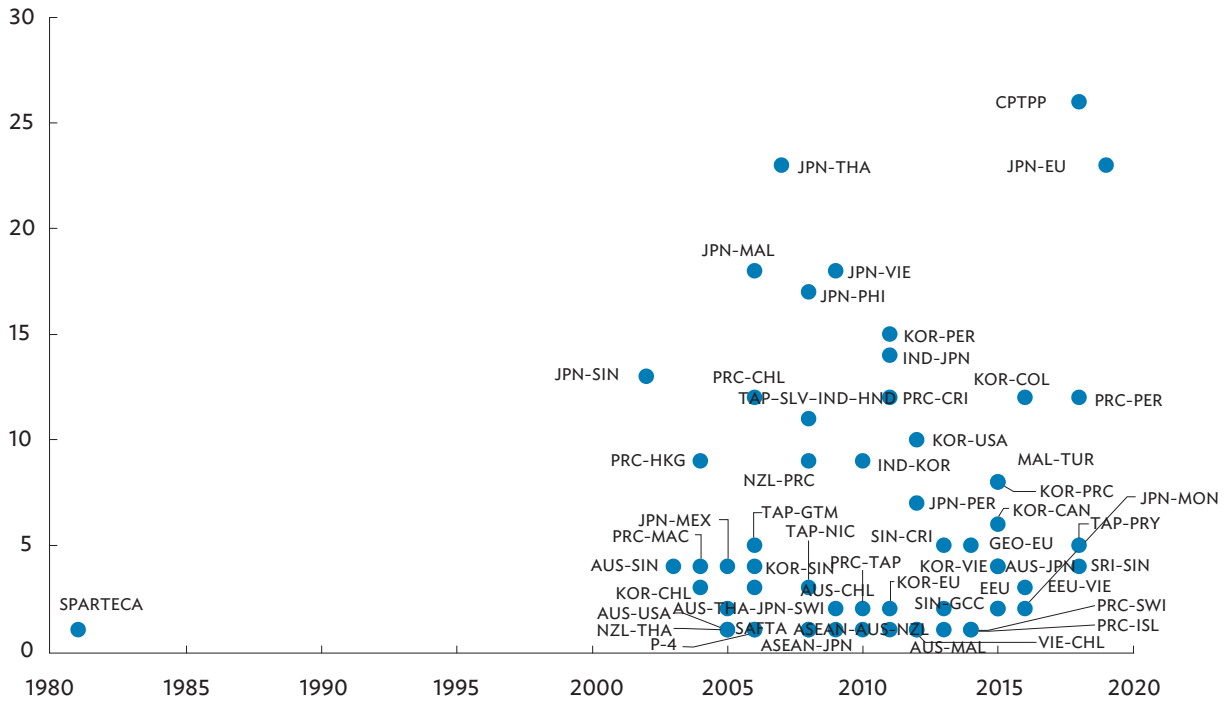
improve productivity and achieve economies of scale through increased exports to more markets. Participation in GVCs and collaboration within a network of upstream and downstream industries create positive spillover effects on SMEs—through more learning opportunities, introducing new business models and advanced technologies, leading to the expansion of SME growth horizons.

While SMEs have much to gain from increased internationalization, only a few are involved in international trade (Harvie 2010). FTAs can help SMEs plug into GVCs by reducing or eliminating tariff and nontariff barriers, simplifying customs procedures, promoting electronic commerce, and fostering technology transfer. Moreover, while the number of FTAs continues to grow, FTA utilization of SMEs remains low. This means SMEs may not be reaping the full benefits from FTAs (Tambunan and Chandra 2014). SME-related provisions in FTAs—such as enhancing information exchange on trade-related domestic laws and financial access—may help improve FTA utilization of SMEs.

The analysis shows that out of 142 FTAs with Asian partners reviewed, only 60 incorporate at least one provision explicitly mentioning SMEs. The 2000s saw a tremendous increase in the number of FTAs with SME-related provisions (Figure 1.30). In addition, the quantity and quality of details of these SME-related provisions in FTAs have also improved considerably.

The goal of strengthening institutional support to SMEs and enhancing their participation in international trade cuts through a wide range of concerns. This explains why SME-related provisions are scattered across different locations in FTAs and cover distinct areas. As presented in Figure 1.31, SME-related provisions pertain mostly to cooperation on SMEs.

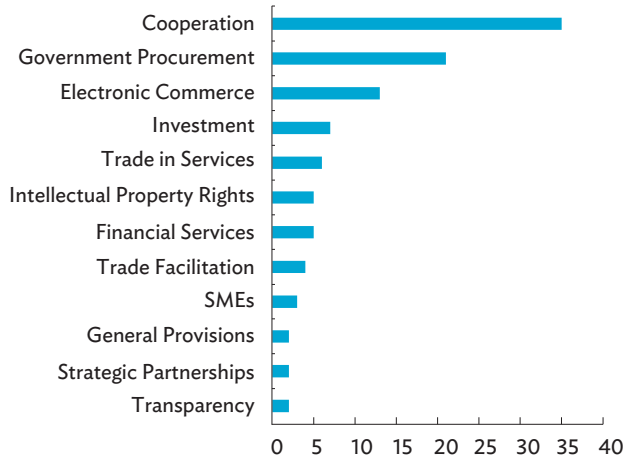
Figure 1.30: Number of SME-Related Provisions in Asian FTAs



ASEAN = Association of Southeast Asian Nations; AUS = Australia; CAN = Canada; CHL = Chile; COL = Colombia; CPTPP = Comprehensive and Progressive Agreement for Trans-Pacific Partnership; CRI = Costa Rica; EEU = Eurasian Economic Union; EU = European Union; FTA = foreign trade agreement; GCC = Gulf Cooperation Council; GEO = Georgia; GTM = Guatemala; HKG = Hong Kong, China; HND = Honduras; IND = India; ISL = Iceland; JPN = Japan; KOR = Republic of Korea; MAC = Macau, China; MAL = Malaysia; MEX = Mexico; MON = Mongolia; NIC = Nicaragua; NZL = New Zealand; P-4 = Trans-Pacific Strategic Economic Partnership Agreement; PER = Peru; PHI = Philippines; PRC = People's Republic of China; PRY = Paraguay; SIN = Singapore; SLV = El Salvador; SAFTA = South Asia Free Trade Area; SME = small and medium-sized enterprise; SPARTECA = South Pacific Regional Trade and Economic Co-operation Agreement; SRI = Sri Lanka; SWI = Switzerland; TAP = Taipei,China; THA = Thailand; TUR = Turkey; USA = United States; VIE = Viet Nam.

Sources: ADB calculations using ADB. Asia Regional Integration Center FTA Database. https://aric.adb.org/fta (accessed May 2019); and official FTA texts.

Figure 1.31: Main Areas of SME-Related Provisions in RTAs



FTA = free trade agreement, RTA = regional trade agreement, SME = small and medium-sized enterprise.

Sources: ADB calculations using ADB. Asia Regional Integration Center FTA Database. https://aric.adb.org/fta (accessed May 2019); and official FTA texts.

The extent and areas of cooperation relating to SMEs differ across FTAs. While some FTAs merely identify SMEs as a specific area for cooperation, others include more specific language. Promoting a favorable environment for SME development and engendering capacity-building programs for SMEs are among the most covered issues in cooperation provisions of Asian FTAs. Other key matters addressed in cooperative activities include development of opportunities for business partnerships, formation of information networks, export promotion, and encouragement of innovation and technology transfers. Several FTAs also contain provisions on improving information exchange on access to finance for SMEs and the development of financial intermediaries.

Other types of SME-related provisions are found in the following areas: (i) government procurement, (ii) electronic commerce, (iii) investment, (iv) services, (v) intellectual property, and (vi) financial services. Of the 60 Asian FTAs with SME-related provisions, only three—all involving Japan—have a chapter dedicated to SMEs. Similar to labor provisions, SME-related provisions are remarkably heterogeneous and vary considerably in terms of language, scope, and commitments. Most SME-related provisions are couched in best endeavor language in contrast with strong stipulations that give rise to mandatory obligations. The two most common categories are stipulations (i) promoting cooperation in SMEs, and (ii) specifying that SMEs are excluded from certain FTA obligations.

Women and Gender

The prevailing assumption for decades has been that free trade, combined with the liberalization of investment and financial systems, is a "gender-neutral" policy that would facilitate the process of sustained economic growth, leading to more employment opportunities and higher standards of living for both men and women. Recent statistics on gender inequality, however, cast doubts on this long-held notion. Women remain more vulnerable to deprivation in terms of less access to food, health care, and education. Women also remain underrepresented in international trade, with only 13.6% of women-led firms in developing Asia engaged directly or indirectly as exporters (World Bank Enterprise Surveys).

One way to make trade policy work for women is through trade instruments addressing gender inequality. The inclusion of gender-related provisions in FTAs is a welcome step toward raising the profile of gender equality challenges in the trade discourse. As of present, only a handful of Asian FTAs in force includes gender-related provisions.[8] These provisions are located in different parts or chapters—such as the preamble; labor; cooperation and capacity-building; trade and sustainable development; and employment, social policy, and equal opportunities. Gender-related provisions also differ according to language, scope, and commitment, although most stipulations are couched in best endeavor terms.

Cooperation provisions on gender are the most prevalent type of gender-related provision in Asian FTAs. These provisions focus on the elimination of discrimination in

[8] (i) Australia–US FTA; (ii) Taipei,China–Nicaragua FTA; (iii) CPTPP; (iv) Georgia–EU Deep and Comprehensive FTA; (v) Viet Nam–Chile FTA; and (vi) PRC–Peru FTA.

respect of employment and occupation, and providing capacity-building programs for women. For instance, the preamble of the CPTPP explicitly reaffirms commitment to gender equality. It also identifies promotion of gender equality as an area of cooperation in the context of labor and capacity building. CPTPP's chapter on development has specific provisions for women and economic growth. It aims to increase opportunities for women by providing advice or training in the form of (i) programs aimed at helping women build skills and capacity, and enhance their access to markets, technology and financing; (ii) developing women's leadership networks; and (iii) identifying best practices related to workplace flexibility.

On the multilateral level, 123 of 164 WTO member states and observers backed the groundbreaking Joint Declaration on Trade and Women's Economic Empowerment. Though nonbinding, the declaration provides a framework for WTO members to adopt "gender-responsive" trade policies. The declaration says that both developed and developing countries acknowledge that "improving women's access to opportunities and removing barriers to their participation in national and international economies contributes to sustainable economic development." This joint declaration may pave the way for gender equality issues to form part of mainstream trade policy discourse and for gender-neutral trade rules to become regular features of well-established trade instruments such as FTAs.

Indigenous People

While the free flows of goods, services, people, and ideas have undoubtedly improved the standards of living of many and brought about modern conveniences, it has also challenged cultural norms and threatened the age-old traditional knowledge and practices that indigenous people and native communities have developed from their intimate ties to land.

Protection of traditional knowledge, indigenous cultural expressions, and heritage from commercialization and cultural appropriation is one of the key issues of indigenous groups over trade. These concerns are addressed in some FTAs, particularly those involving New Zealand; Australia; and Taipei,China.[9] These FTAs include an explicit statement that "nothing in this Agreement shall be construed to prevent the adoption or enforcement by a Party of measures necessary... to support creative arts," which includes indigenous traditional practices.

FTAs such as the CPTPP and PRC–Peru also include a specific article recognizing the role of traditional knowledge in environment preservation by considering "the importance of respecting, preserving, and maintaining knowledge and practices of indigenous and local communities embodying traditional lifestyles that contribute to the conservation and sustainable use of biological diversity."

[9] (i) New Zealand–Taipei,China Economic Cooperation Agreement; (ii) CPTPP; (iii) New Zealand–Malaysia FTA; (iv) New Zealand–PRC FTA; (v) New Zealand–Taipei,China Economic Cooperation Agreement; (vi) Trans-Pacific Strategic Economic Partnership Agreement; (vii) ASEAN–Australia and New Zealand FTA;(viii) Australia–US FTA; (ix) Taipei,China–Guatemala FTA; (x) Taipei,China–Nicaragua FTA; (xi) Taipei,China–Panama FTA; (xii) PRC–Peru FTA; (xiii) Australia–Chile FTA; and (xiv) Australia–Chile FTA.

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ANNEX 1a: Impact of Technology on GVC Exports

Annex Table 1a.1: Panel Ordinary Least Squares Using Technology Variables in Levels
Dependent Variable: Log(GVC Exports$_{it}$)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	Technology Variables in Levels											
Variables	**TR**	**ALT**	**IUT**	**IIB**	**TR**	**ALT**	**IUT**	**IIB**	**TR**	**ALT**	**IUT**	**IIB**
Log(GVC weighted income)	0.052**	0.065***	0.048**	-0.00009	0.071***	0.060***	0.064***	-0.0005	0.011	0.015	0.007	-0.023
	(0.025)	(0.017)	(0.024)	(0.028)	(0.019)	(0.017)	(0.025)	(0.030)	(0.033)	(0.028)	(0.035)	(0.041)
Log(GVC weighted simple tariff)	-0.015*	-0.017**	-0.012	0.002	-0.013*	-0.018*	-0.010*	0.002	0.005	0.005	0.004	0.006
	(0.009)	(0.009)	(0.007)	(0.007)	(0.007)	(0.010)	(0.006)	(0.007)	(0.008)	(0.007)	(0.008)	(0.008)
Log(Price Competitiveness Index)	-0.065***	-0.062***	-0.064***	-0.053***	-0.060***	-0.061***	-0.053***	-0.053***	-0.053***	-0.053***	-0.050***	-0.045***
	(0.019)	(0.018)	(0.019)	(0.017)	(0.015)	(0.018)	(0.017)	(0.017)	(0.017)	(0.017)	(0.016)	(0.016)
Log(Labor Cost Competitiveness Index)	-0.025**	-0.022*	-0.025***	-0.024***	-0.028**	-0.024**	-0.025**	-0.024***	-0.028***	-0.026***	-0.028***	-0.022**
- Monthly Earnings	(0.010)	(0.012)	(0.009)	(0.007)	(0.012)	(0.012)	(0.011)	(0.007)	(0.009)	(0.009)	(0.009)	(0.011)
Log(Labor Cost Competitiveness Index)	0.031	0.028	0.033	0.035**	0.047**	0.029	0.041**	0.035**	0.038**	0.036**	0.039**	0.034
- Minimum Wage	(0.021)	(0.019)	(0.021)	(0.017)	(0.021)	(0.018)	(0.021)	(0.018)	(0.017)	(0.016)	(0.017)	(0.020)
Log(Technology Variable)	0.249	0.556	0.196	0.029***	7.453***	5.512	4.74*	0.032				
	(0.335)	(0.364)	(0.219)	(0.007)	(1.817)	(4.782)	(2.52)	(0.037)				
[Log(Technology Variable)]^2					-2.402***	-1.516	-0.584*	-0.0003				
					(0.596)	(1.403)	(0.321)	(0.003)				
Lag[Log(Technology Variable)]									0.057	0.211	0.081	0.031**
									(0.179)	(0.225)	(0.213)	(0.015)
Constant	11.99***	11.41***	11.56***	12.26***	6.742***	7.423*	2.907	12.26***	12.32***	12.03***	12.06***	12.25***
	(0.590)	(0.673)	(0.965)	(0.034)	(1.387)	(4.067)	(4.901)	(0.110)	(0.311)	(0.422)	(0.944)	(0.082)
Observations	113	113	113	107	113	113	113	107	107	107	107	98
Country Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Exporter	All Countries	All Countries	All Countries	All Countries	All Countries	All Countries	All Countries	All Countries	All Countries	All Countries	All Countries	All Countries
Overall R-squared	0.998	0.998	0.998	0.999	0.998	0.998	0.998	0.999	0.998	0.998	0.998	0.998

*** = significant at 1%, ** = significant at 5%, * = significant at 10%. Robust standard errors in parentheses.

ALT = availability of latest technologies; GVC = global value chain; IIB = international internet bandwidth, kb/s; IUT = % of individuals using the internet; TR = Technological Readiness Index.

Sources: ADB calculations using data from ADB. Multi-Regional Input–Output Tables; CEIC; United Nations. Commodity Trade Database. https://comtrade.un.org; World Bank. World Development Indicators. https://databank.worldbank.org/source/world-development-indicators; World Bank. World Integrated Trade Solutions. https://wits.worldbank.org; and World Economic Forum. The Global Competitiveness Index Dataset 2007-2017. https://www.weforum.org; (all accessed February 2019); and methodology by Wang, Wei, and Zhu (2014).

Annex Table 1a.2: Panel Ordinary Least Squares Using Technology Variables Index
Dependent Variable: Log(GVC Exports$_{it}$)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	Technology Variables Index											
Variables	**TR**	**ALT**	**FTT**	**ICT**	**TR**	**ALT**	**FTT**	**ICT**	**TR**	**ALT**	**FTT**	**ICT**
Log(GVC weighted income)	0.067***	0.072***	0.071***	0.067***	0.066***	0.066***	0.071***	0.067***	-0.008	0.009	0.020	-0.006
	(0.021)	(0.017)	(0.023)	(0.022)	(0.020)	(0.014)	(0.022)	(0.022)	(0.025)	(0.033)	(0.032)	(0.026)
Log(GVC weighted simple tariff)	-0.014*	-0.025**	-0.014*	-0.014*	-0.015*	-0.027***	-0.015	-0.014*	0.010	0.006	0.006	0.009
	(0.008)	(0.011)	(0.008)	(0.008)	(0.008)	(0.010)	(0.009)	(0.008)	(0.006)	(0.011)	(0.012)	(0.007)
Log(Price Competitiveness Index)	-0.061***	-0.056**	-0.064***	-0.059***	-0.059***	-0.042*	-0.056**	-0.059***	-0.052***	-0.059***	-0.058***	-0.057***
	(0.017)	(0.024)	(0.021)	(0.017)	(0.017)	(0.022)	(0.022)	(0.017)	(0.014)	(0.020)	(0.017)	(0.015)
Log(Labor Cost Competitiveness Index)	-0.029**	-0.023*	-0.024**	-0.027*	-0.026*	-0.023	-0.018	-0.026	-0.025**	-0.022**	-0.031***	-0.020*
- Monthly Earnings	(0.014)	(0.014)	(0.012)	(0.015)	(0.015)	(0.015)	(0.012)	(0.016)	(0.010)	(0.009)	(0.011)	(0.011)
Log(Labor Cost Competitiveness Index)	0.018	0.033*	0.031	0.021	0.019	0.031*	0.027	0.020	0.035*	0.031*	0.041**	0.031*
- Minimum Wage	(0.021)	(0.020)	(0.023)	(0.023)	(0.021)	(0.017)	(0.021)	(0.025)	(0.019)	(0.016)	(0.018)	(0.019)
Log(Technology Variable)	(0.021)	0.026*	0.004	0.015	0.026	0.048***	0.010	0.016				
	0.014	(0.014)	(0.017)	(0.027)	(0.037)	(0.017)	(0.018)	(0.032)				
[Log(Technology Variable)]^2					0.008	0.010**	0.013	0.004				
					(0.012)	(0.005)	(0.009)	(0.031)				
Lag[Log(Technology Variable)]									-0.018	0.012**	-0.017**	-0.023
									(0.014)	(0.006)	(0.007)	(0.014)
Constant	12.45***	12.43***	12.44***	12.44***	12.44***	12.41***	12.42***	12.44***	12.42***	12.42***	12.45***	12.42***
	(0.021)	(0.025)	(0.030)	(0.024)	(0.023)	(0.019)	(0.034)	(0.024)	(0.016)	(0.022)	(0.022)	(0.019)
Observations	107	101	97	106	107	101	97	106	95	96	94	95
Country Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Exporter	All Countries	All Countries	All Countries	All Countries	All Countries	All Countries	All Countries	All Countries	All Countries	All Countries	All Countries	All Countries
Overall R-squared	0.998	0.998	0.998	0.998	0.998	0.998	0.998	0.998	0.999	0.998	0.999	0.999

*** = significant at 1%, ** = significant at 5%, * = significant at 10%. Robust standard errors in parentheses.

ALT = availability of latest technologies; FTT = foreign direct investment and technology transfer; GVC = global value chain; ICT = information and communication technology; TR = Technological Readiness Index.

Sources: ADB calculations using data from ADB. Multi-Regional Input–Output Tables; CEIC; United Nations. Commodity Trade Database. https://comtrade.un.org; World Bank. World Integrated Trade Solutions. https://wits.worldbank.org; and World Economic Forum. The Global Competitiveness Index Dataset 2007-2017. https://www.weforum.org; (all accessed February 2019); and methodology by Wang, Wei, and Zhu (2014).

Table A12.b: Outbound Visitor Share—Asia, 2017 (% of total outbound visitors)

	Destination				
		of which			
Origin	Asia	PRC	EU	US	ROW
Central Asia	**56.1**	**1.3**	**0.9**	**0.2**	**42.8**
Armenia	64.2	0.3	1.3	0.6	34.0
Azerbaijan	35.0	0.3	0.7	0.2	64.1
Georgia	17.7	0.3	2.6	0.1	79.6
Kazakhstan	55.2	2.5	0.9	0.3	43.6
Kyrgyz Republic	76.7	1.5	0.1	0.1	23.1
Tajikistan	70.5	1.6	0.1	0.1	29.3
Turkmenistan	30.3	2.5	0.4	0.2	69.1
Uzbekistan	86.2	0.9	0.4	0.2	13.2
East Asia	**74.9**	**35.2**	**5.8**	**3.6**	**15.7**
China, People's Republic of	61.1		8.2	3.2	27.6
Hong Kong, China	92.5	85.6	0.3	0.2	7.0
Japan	59.2	11.6	14.9	15.6	10.3
Korea, Republic of	71.9	12.7	8.9	7.7	11.5
Mongolia	82.4	74.5	0.1	0.5	17.0
Taipei,China	84.4	32.8	4.7	2.7	8.3
South Asia	**49.2**	**5.4**	**8.0**	**6.3**	**36.4**
Afghanistan	18.2	1.3	1.1	0.2	80.5
Bangladesh	85.5	2.8	0.5	1.0	13.0
Bhutan	96.2	1.4	1.1	1.1	1.7
India	48.6	6.2	12.7	9.7	28.9
Maldives	94.3	3.0	0.2	0.1	5.3
Nepal	86.8	24.6	0.7	5.9	6.6
Pakistan	12.5	3.3	3.1	2.4	82.0
Sri Lanka	85.3	6.9	1.3	2.5	10.8
Southeast Asia	**92.5**	**24.5**	**1.3**	**1.0**	**5.2**
Brunei Darussalam	99.4	0.4	0.0	0.1	0.5
Cambodia	98.5	4.7	0.1	0.4	1.1
Indonesia	79.9	6.2	1.6	1.0	17.5
Lao PDR	99.9	30.4	0.1	0.0	0.1
Malaysia	91.1	9.8	2.0	0.6	6.3
Myanmar	99.7	91.5	0.0	0.1	0.2
Philippines	80.9	17.2	2.5	4.6	12.0
Singapore	95.9	4.7	1.5	0.7	1.9
Thailand	92.6	7.2	1.6	1.0	4.8
Viet Nam	97.9	56.1	0.1	1.0	0.9
The Pacific	**84.1**	**4.0**	**0.3**	**3.5**	**12.0**
Cook Islands	95.7	0.0	0.2	0.4	3.7
Fiji	88.5	4.3	0.4	6.4	4.7
Kiribati	90.9	31.7	0.4	2.9	5.7
Marshall Islands	42.9	12.9	0.8	4.4	52.0
Micronesia, Federated States of	9.6	1.8	0.4	2.8	87.2
Nauru	92.1	3.9	1.6	1.8	4.5
Niue	95.7	0.0	0.2	0.9	3.2
Palau	11.5	1.7	0.6	3.2	84.7
Papua New Guinea	96.4	2.3	0.1	1.1	2.4
Samoa	77.9	4.2	0.1	0.0	22.0
Solomon Islands	91.2	6.4	1.0	1.7	6.1
Timor-Leste	93.7	6.9	0.9	1.1	4.3
Tonga	89.1	3.5	0.2	9.3	1.4
Tuvalu	81.0	10.3	1.1	2.6	15.4
Vanuatu	81.6	3.1	0.4	0.6	17.4
Oceania	**58.2**	**4.4**	**23.5**	**8.2**	**10.2**
Australia	54.7	4.5	26.3	8.2	10.8
New Zealand	73.4	3.9	11.2	8.0	7.4
Asia	**75.1**	**27.7**	**5.5**	**3.2**	**16.2**
Developing Asia	**76.9**	**29.9**	**4.0**	**2.2**	**16.9**

– = unavailable, EU = European Union, Lao PDR = Lao People's Democratic Republic, PRC = People's Republic of China, ROW = rest of the world, US = United States.

Source: ADB calculations using data from United Nations World Tourism Organization. Tourism Satellite Accounts. http://statistics.umwto.org (accessed April 2019).