Asia-Pacific Economic Cooperation

Advancing Free Trade for Asia-Pacific Prosperity

APEC REGIONAL TRENDS ANALYSIS

- Bolstering Supply Chains, Rebuilding Global Trade
- Making Recovery Inclusive

APEC Policy Support Unit
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Prepared by:
Asia-Pacific Economic Cooperation Policy Support Unit
Asia-Pacific Economic Cooperation Secretariat
35 Heng Mui Keng Terrace
Singapore 119616
Tel: (65) 6891-9600 │ Fax: (65) 6891-9690
Email: psugroup@apec.org Website: www.apec.org

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KEY ABBREVIATIONS

APEC	Asia-Pacific Economic Cooperation
ARTA	APEC Regional Trends Analysis
GDP	gross domestic product
GVC	global value chain
ILO	International Labour Organization
IMF	International Monetary Fund
OECD	Organisation for Economic Co-operation and Development
PPE	personal protective equipment
PSU	Policy Support Unit (APEC)
UNCTAD	United Nations Conference on Trade and Development
WTO	World Trade Organization

KEY MESSAGES

I. Bolstering Supply Chains, Rebuilding Global Trade

- COVID-19 has severely impacted global supply chains. Measures implemented to contain and control the pandemic have resulted in closures of non-essential businesses, leading to significant and costly disruptions to global supply chains and lower production from manufacturing hubs.

- Supply chain disruptions have also impeded COVID-19 response and mitigation measures. Disruptions to the pharmaceutical industry supply chain meant that medicines and medical equipment could not reach where they were needed the most. And higher demand, factory shutdowns, and just-in-time inventory systems led to global shortages of personal protective equipment (PPE) such as surgical masks and biohazard suits. Trade-restrictive measures further worsened access to essentials like medicines and food.

- Calls for greater resilience have grown louder after the supply chain disruptions. However, improving resilience is neither simple nor cost-free. The current structure of global value chains (GVCs) is the result of fundamental factors – such as resource endowments and costs, market size, geography and institutional quality – which together determine the most efficient business connections with the greatest productivity gains. Altering network relations within GVCs to accommodate greater agility and resilience could work against the economic efficiency and cost considerations that drove their formation in the first place.

- Since 2008, participation in GVCs has stagnated while trading partners in certain sectors have become more geographically concentrated. This trend illustrates a salient feature of today's GVCs: the pursuit of efficiency has resulted in concentration around a few hubs. However, such concentration risks reducing resiliency in case of unexpected disruptions at manufacturing hubs.

- To improve resiliency, economies can promote adoption of digital technologies to enhance supply chain visibility, and strengthen trade facilitation efforts to manage flows of traded goods. Governments could also focus on maintaining the competitiveness and efficiency of domestic enterprises by building on the skills and know-how that firms have acquired from their supply chains under the GVC network.

- Regional cooperation is key to building trust in trading commitments and relations. APEC economies need to maintain their commitment to open trade policies and avoid discriminatory and trade-restrictive measures. Governments should see participation in GVCs as part of the solution when it comes to handling supply shortages and advancing global recovery. Within the APEC context, it is important to avoid policy interventions that disrupt the configuration of GVCs formed based on economic fundamentals.

II. Making Recovery Inclusive

- APEC GDP declined by 1.9 percent in 2020, better than the 2.7 percent contraction projected in the May 2020 edition of the APEC Regional Trends Analysis (ARTA). The softer contraction was due to the economic turnaround during the second half of 2020 as economies gradually reopened amid continued fiscal and monetary support.

- However, GDP growth across APEC has been uneven, with a few economies returning to positive territory by the end of 2020, others contracting less than expected, but some plunging deeper into recession.

- The near-term economic outlook points to higher APEC GDP growth of 6.3 percent in 2021 as pent-up demand is unleashed following a year of subdued spending while the rollout of multiple vaccines has buoyed optimism. Growth is expected to be sustained in 2022 and 2023 but at a moderated pace of 4.4 percent and 3.4 percent, respectively.

- APEC economies are projected to recover at different speeds and strengths depending on vaccine availability and access in each economy, which in turn affect the pace and coverage of vaccinations. The majority could reach widespread immunisation by mid-2022 onwards, while some could do so earlier, by the end of 2021. Confirmed vaccine purchases also vary across APEC, resulting in wide disparity in coverage, from as low as 40 percent of the population to as high as almost 800 percent of the population.

- Significant uncertainty surrounds the short-term economic outlook, linked largely to the unpredictable path of the pandemic. Virus mutations could prolong the pandemic and delay the planned full reopening of businesses and borders. Cautious spending due to job insecurity, business closures and expectations of higher inflation could hold back economic activity. The start–stop economic reopening amid the elevated risk of resurgence in infections could also result in lower growth than projected.

- The pandemic has exposed underlying economic, social and digital divisions and fragilities, making the journey toward an inclusive economic recovery that facilitates the full and equal participation of all segments of society more important.

- While the strategies adopted by individual economies may vary depending on their level of economic, financial and technological development, there are four key imperatives to ensure that no one is left behind:

  - *Contain the pandemic*.
  - *Relearn old lessons for a new future*. Implement structural reforms to improve social outcomes and boost human capital development, while ensuring that everyone benefits from the rapid digital transformation.
  - *Protect the environment.* As seen during this pandemic, diseases could grind an entire economy to a halt, reducing productivity, hampering economic growth, and making everyone worse off. COVID-19 is a call to action: protect the environment, save lives and livelihoods.
  - *Leverage regional cooperation* to realise inclusive recovery, beginning with the implementation of Putrajaya Vision 2040, the APEC vision launched in 2020.

1 BOLSTERING SUPPLY CHAINS, REBUILDING GLOBAL TRADE[1]

There is nothing quite like a global pandemic to focus minds on where our basic necessities come from. Images of nurses wearing garbage bags and of empty grocery shelves in early 2020, and of undelivered vaccines today, highlight the vulnerabilities of the long and complex supply chains we have come to rely on.

Indeed, COVID-19 has refocused attention toward the workings of global value chains (GVCs) and how to make them more resilient. Measures implemented to contain and control the pandemic have resulted in closures of non-essential businesses, leading to significant and costly disruptions to global supply chains.[2] Calls for greater resilience grew louder shortly after those disruptions. However, firms and governments are quickly realising that rebalancing toward resilience is neither simple nor cost-free.

1.1 IMPACT OF COVID-19 ON SUPPLY CHAINS

COVID-19 has severely affected the performance of global manufacturing hubs. The impact and spread of the novel coronavirus have forced many economies to impose pandemic response measures. All but 14 economies across the globe have reported COVID-19 cases[3] and almost all economies have imposed lockdowns of varying degrees.[4] Measures implemented to contain and control the pandemic have resulted in disruptions to economic activities. Non-essential businesses were closed and workers were instructed to stay at home, leading to significant and costly disruptions to global supply chains.

The APEC region has been producing around 60 percent of global manufacturing value added (MVA) over the past two decades (Figure 1.1). China's share in global MVA tripled from 10 percent in 2000 to 32 percent in 2020, showing its growing importance as a manufacturing hub. However, the pandemic led to cities and factories in China being shut down in early 2020, and its merchandise exports fell by 13.4 percent in the first quarter of 2020.[5] This phenomenon was repeated around the globe in 2020. As lockdowns and other movement control measures were implemented, global supply chains were disrupted through a ripple effect with products sourced from manufacturing hubs no longer being produced or exported at the same rate.[6]

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[1] Prepared by Akhmad Bayhaqi, Satvinderjit Kaur Singh and Emmanuel A. San Andres, APEC Policy Support Unit (PSU). The assistance of Nathanael Lam Zhao Dian with research is gratefully acknowledged.

[2] The terms 'global value chain' (GVC) and 'global supply chain' (GSC) are often used interchangeably. They refer to the same chain or network relations between suppliers and firms. GSC emphasises the network of suppliers, manufacturers, warehouses, distribution centres and retailers through which raw materials are acquired, transformed and delivered to customers. GVC emphasises the trade and market aspects, specifically the full spectrum of value-added activities required to bring a product from its conception right through to end consumers: design; sourcing of raw materials and intermediate inputs; production; marketing; distribution and support.

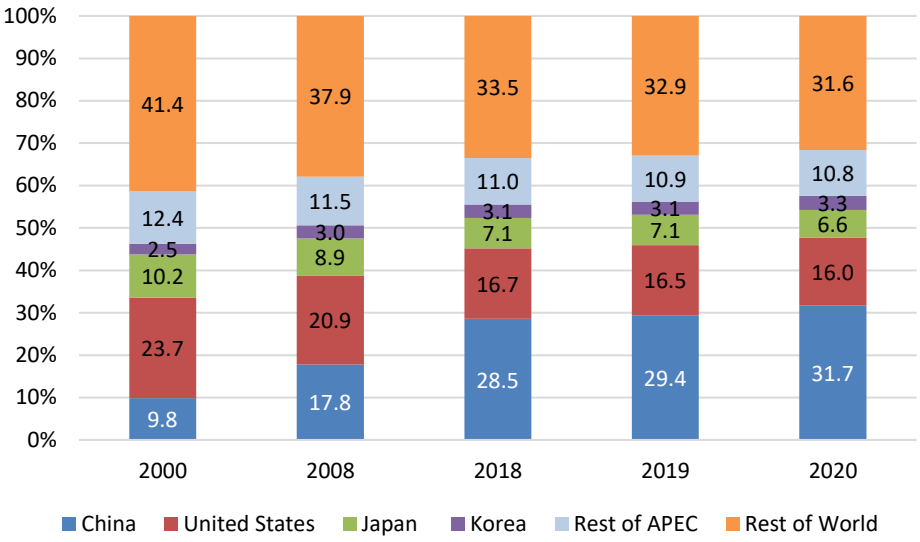
[3] K. Hubbard, "Places without Reported COVID-19 Cases," *US News*, accessed 28 February 2021, https://www.usnews.com/news/best-countries/slideshows/countries-without-reported-covid-19-cases

[4] "Lockdowns Compared: Tracking Governments' Coronavirus Responses," *Financial Times*, accessed 28 February 2021, https://ig.ft.com/coronavirus-lockdowns/

[5] World Trade Organization (WTO), "Statistics on Merchandise Trade," accessed 28 February 2021, https://www.wto.org/english/res_e/statis_e/merch_trade_stat_e.htm

[6] F. Richter, "These Are the Top 10 Manufacturing Countries in the World," World Economic Forum, 25 February 2020, https://www.weforum.org/agenda/2020/02/countries-manufacturing-trade-exports-economics/

Figure 1.1 Contribution to total manufacturing value added (MVA), 2000–2020



Source: APEC Policy Support Unit (PSU) staff calculations; United Nations Industrial Development Organization, "UNIDO Statistics Data Portal," https://stat.unido.org/database/MVA%202021,%20Manufacturing

China's lockdown in early 2020 has had a greater impact on global manufacturing than the severe acute respiratory syndrome (SARS) epidemic 18 years earlier. In the intervening years, as reflected in the rise in China's share of global MVA, many industries have become heavily reliant on inputs and finished products from China.[7] At the same time, companies have been motivated to minimise supply chain costs by adopting just-in-time and lean manufacturing methods, which leaves little room for redundancy or excess capacity and may expose them to risk of severe disruptions if even a single node along the supply chain breaks down, particularly in a central hub of production.[8]

The early disruption in Chinese exports and the subsequent spread of the virus to other major manufacturing hubs like the United States and Japan led to even more supply chain disruptions: US merchandise exports dropped by 12.9 percent and Japan merchandise exports fell by 9.1 percent in 2020 compared to 2019.[9] In the first four months of 2020 alone, the APEC region saw a 6.3 percent decrease in exports and a 5.5 percent decrease in imports compared to 2019.[10]

The vulnerabilities of the electronics industry were laid stark because of its lean production methods, which meant low inventory levels and limited alternative sources for components.[11] For example, disruptions in the semiconductor chip industry during late 2020 and early 2021 show that it is the weakest link in automobile supply chains, which

[7] P. Haren and D. Simchi-Levi, "How Coronavirus Could Impact the Global Supply Chain by Mid-March," *Harvard Business Review*, 28 February 2020, https://hbr.org/2020/02/how-coronavirus-could-impact-the-global-supply-chain-by-mid-march
[8] A. Hadwick, "The End of Just in Time?" *Reuters*, 3 July 2020, https://www.reutersevents.com/supplychain/supply-chain/end-just-time
[9] WTO, "Statistics on Merchandise Trade," accessed 24 March 2021.
[10] APEC, "APEC in Charts 2020" (Singapore: APEC, 2020), https://www.apec.org/Publications/2020/11/APEC-in-Charts-2020
[11] "The New Coronavirus Could Have a Lasting Impact on Global Supply Chains," *The Economist*, 15 February 2020, https://www.economist.com/international/2020/02/15/the-new-coronavirus-could-have-a-lasting-impact-on-global-supply-chains

may cost the global automotive industry USD 60.6 billion in revenue in 2021.[12] The pandemic also displayed the fragility of the optical components industry which is reliant on small optics suppliers who found it difficult to cope with sudden increases in demand as more people connected over the internet for work, school and entertainment.[13]

Perhaps more urgently, supply chain disruptions have impeded COVID-19 response and mitigation measures. Disruptions in the pharmaceutical industry meant that medications and medical equipment could not reach where they were needed the most. For example, lockdowns in China meant that pharmaceutical raw materials could not reach India, the top producer of medicines in the world, which meant that drugs needed for managing the milder symptoms of COVID-19 and for treatment trials could not reach patients.[14] And higher demand, factory shutdowns, and just-in-time inventory systems led to global shortages of personal protective equipment (PPE) such as surgical masks and biohazard suits, which resulted in healthcare workers scrambling for supplies or improvising creative protection options.[15] While just-in-time measures were effective in improving inventory management efficiency and cutting costs in PPE supply chains, they also increased their vulnerability to disruptions. More recently, the impact of supply chain disruptions became evident in the delivery of vaccines. Pfizer Inc. announced that it would be able to deliver only half of the vaccines it promised in 2020 due to raw material shortages and slow scaling-up of raw material production due to rigidities in their supply chains.[16]

Likewise, ripple effects were seen in food supply chains as lockdowns forced restaurants to cancel their orders from food suppliers, resulting in considerable food wastage. For example, farmers in the United States had to dump 14 million litres of milk daily.[17] Similarly, the five-day statewide lockdown in Victoria, Australia forced the hospitality industry to lose AUD 30 million worth of fresh food and produce.[18] While producers supplying to local restaurants were forced to dump their produce, grocery stores were running out of several products due to rigid supply chains which could not cope with the increased household demand. Changes in customer purchasing behaviours during the lockdown led to shortages in several items such as bottled water, flour and dry yeast.[19] These experiences of severe shortages during the pandemic show that over-reliance on

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[12] M. Wayland, "How Covid Led to a $60 Billion Global Chip Shortage for the Auto Industry," *CNBC*, 11 February 2021, https://www.cnbc.com/2021/02/11/how-covid-led-to-a-60-billion-global-chip-shortage-for-automakers.html

[13] LightCounting, "Optics Remains the Weakest Link in the Industry Supply Chain, But It Is Now More Important than Ever," 21 May 2020, https://www.lightcounting.com/light-trends/optics-remains-weakest-link-industry-supply-chain-it-now-more-important-ever/

[14] Oxford Business Group, "The Impact of Covid-19 on Global Supply Chains," 24 April 2020, https://oxfordbusinessgroup.com/news/impact-covid-19-global-supply-chains

[15] Asian Development Bank (ADB), "Global Shortage of Personal Protective Equipment amid COVID-19: Supply Chains, Bottlenecks, and Policy Implications," ADB Briefs, no. 130 (April 2020), https://www.adb.org/sites/default/files/publication/579121/ppe-covid-19-supply-chains-bottlenecks-policy.pdf; Advisory Board, "When Desperation Breeds Creativity: How US Hospitals Are Approaching a PPE Shortage," 27 March 2020, https://www.advisory.com/daily-briefing/2020/03/27/ppe-shortage

[16] R. Handfield, "What Is Causing the COVID-19 Vaccine Supply Chain Disruption?," NC State University: Supply Chain Resource Cooperative, 10 February 2021, https://scm.ncsu.edu/scm-articles/article/what-is-causing-the-covid-19-vaccine-supply-chain-disruption; C. Paris, "Supply-Chain Obstacles Led to Last Month's Cut to Pfizer's Covid-19 Vaccine-Rollout Target," *The Wall Street Journal*, 3 December 2020, https://www.wsj.com/articles/pfizer-slashed-its-covid-19-vaccine-rollout-target-after-facing-supply-chain-obstacles-11607027787

[17] "Coronavirus: Five Ways the Outbreak is Hitting Global Food Industry," *BBC News*, 13 April 2020, https://www.bbc.com/news/world-52267943

[18] P. Durkin, "$30 Million in Fresh Food To Be Dumped in Lockdown," *Financial Review*, 12 February 2021, https://www.afr.com/policy/economy/30-million-in-fresh-food-to-be-dumped-in-lockdown-20210212-p5722n

[19] D. Taylor, A. Pritchard, D. Duhan, and S. Mishra, "What's Behind the Empty Grocery Shelves," Supply Chain Management Review, 10 August 2020, https://www.scmr.com/article/whats_behind_the_empty_grocery_shelves

a few sources of supply is extremely risky, especially in critical industries like pharmaceuticals and food.

Trade-restrictive measures have further worsened access to essential goods like medicines and food. As of May 2020, the International Monetary Fund (IMF) reported 120 new export restrictions implemented by economies worldwide.[20] APEC economies implemented over 50 restrictive non-tariff measures (NTMs) on essential goods such as PPE and food in 2020.[21] The impact of these trade restrictions was more strongly felt in remote areas and import-dependent economies. The World Food Programme expects an additional 130 million people to suffer from acute food insecurity due to trade restrictions, food supply chain disruptions, and loss of income associated with COVID-19.[22] Similar concerns are also highlighted with regard to trade restrictions on PPE. The most commonly used NTM in APEC in 2020 was export prohibition and it was almost exclusively applied on PPEs and medical supplies.[23] This could pose serious challenges for economies that depend on PPE and medical imports. For example, the European Union's (EU) export restrictions on medical gear increased the risk of shortages among poor economies that are heavily dependent on EU suppliers for their essential medical equipment.[24]

The dire impact of the COVID-19 pandemic has highlighted the need to build more resilience into global supply chains so that economies can better respond to sudden shifts in demand and supply. According to a McKinsey report, resilience can be built into global supply chains by diversifying sources, increasing transparency in supply chains through digitisation, and adopting just-in-case rather than just-in-time inventory management.[25]

1.2 EFFICIENCY VS RESILIENCE

Calls for greater resilience always grow louder shortly after a supply chain disruption, only to predictably taper down when things get back to normal. This is because improving resilience is not an easy or cost-free exercise. Global supply chains are the result of fundamental factors – such as resource endowments, market size, geography and institutional quality – which together determine the most efficient connections with the greatest productivity gains.[26] Altering participation within global supply chains to accommodate greater agility and resilience could work against the economic efficiency and cost considerations that drove their formation in the first place.

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[20] International Monetary Fund (IMF), "2020 External Sector Report: Global Imbalances and the COVID-19 Crisis" (Washington, DC: IMF, August 2020), https://www.imf.org/en/Publications/ESR/Issues/2020/07/28/2020-external-sector-report

[21] J. Ballingall, "Non-Tariff Measures (NTMs) on Essential Goods during COVID-19 in the APEC Region" (Singapore: APEC, 2020), https://www.apec.org/Publications/2021/04/Non-Tariff-Measures-on-Essential-Goods-during-COVID-19-in-the-APEC-Region

[22] T. Welsh, "WFP Chief Warns of 'Hunger Pandemic' as COVID-19 Threatens Food Security," Devex, 22 April 2020, https://www.devex.com/news/wfp-chief-warns-of-hungerpandemic-as-covid-19-threatens-food-security-97058

[23] Ballingall, "Non-Tariff Measures (NTMs) on Essential Goods."

[24] C.P. Brown, "EU Limits on Medical Gear Exports Put Poor Countries and Europeans at Risk," Peterson Institute for International Economics, 19 March 2020, https://www.piie.com/blogs/trade-and-investment-policy-watch/eu-limits-medical-gear-exports-put-poor-countries-and

[25] McKinsey Global Institute, "Addressing Risk and Building Resilience in Asia's Supply Chains" (prepared for *Singapore Summit 2020*, 2020).

[26] World Bank, *World Development Report 2020: Trading for Development in the Age of Global Value Chains* (Washington, DC: World Bank, 2020), https://www.worldbank.org/en/publication/wdr2020

Supply chains started becoming more globalised in the 1990s and 2000s as businesses began to reorganise production across borders with products being designed in one economy, raw materials sourced from another, and components assembled into a final output in yet another economy.[27] This reorganisation was enabled by the digital revolution which lowered the cost and improved the quality of information and communications technology, allowing companies to coordinate and supervise complex production activities from a distance while ensuring quality. This coincided with a period of pro-globalisation policies leading to liberalisation of trade and cross-border investment. As a result, companies were able to develop their supply linkages without regard to borders but based on relative costs, factor endowments, and specialisations to create an efficient supply chain that benefitted from economies of scale and scope. According to the Organisation for Economic Co-operation and Development (OECD), about 70 percent of international trade involves GVCs,[28] while the World Bank estimates that GVCs account for almost 50 percent of global trade.[29]

Table 1.1 Top 5 global value chain trades in APEC and World, 2015 and 1990 (USD million)

World	2015				1990			
Sector	Gross Export	GVC Trades	GVC share	FVA share	Gross Export	GVC Trades	GVC share	FVA share
5	1,160,562	461,145	39.73	25.20	209124.6	70797.75	33.85	21.16
8	1,489,053	905,785	60.83	27.50	243455.3	129212.6	53.07	20.93
9	4,721,650	2,288,256	48.46	29.74	858788.7	347556.3	40.47	23.13
10	1,697,413	817,681	48.17	33.57	344667.8	135734.5	39.38	25.73
21	1,245,235	420,190	33.74	7.23	215440.6	59685.86	27.70	4.87

APEC	2015				1990			
Sector	Gross Export	GVC Trades	GVC share	FVA share	Gross Export	GVC Trades	GVC share	FVA share
5	561,319	195,607	34.85	21.76	74,683	23,276	31.17	20.73
8	673,999	367,113	54.47	24.43	77,508	33,727	43.51	16.09
9	2,458,088	1,202,446	48.92	29.42	413,052	168,951	40.90	22.64
10	639,049	241,381	37.77	25.67	134,915	39,368	29.18	17.82
21	675,775	206,637	30.58	6.46	102,874	24,811	24.12	4.12

FVA=foreign value-added; GVC=global value chain.
Note: For sectors: 5=textiles and wearing apparel; 8=metal products; 9=electrical and machinery; 10=transport equipment; 21=financial intermediation and business activities.
Source: APEC PSU staff calculations; TradEconomics.[30]

GVC links are formed when economies import components (forming a backward linkage) or export intermediate inputs to their trading partners (forming a forward linkage) in order to produce the final goods. At the sectoral level, the five largest GVC trades (excluding petroleum and mining) occur in the following sectors: textiles and wearing apparel; metal

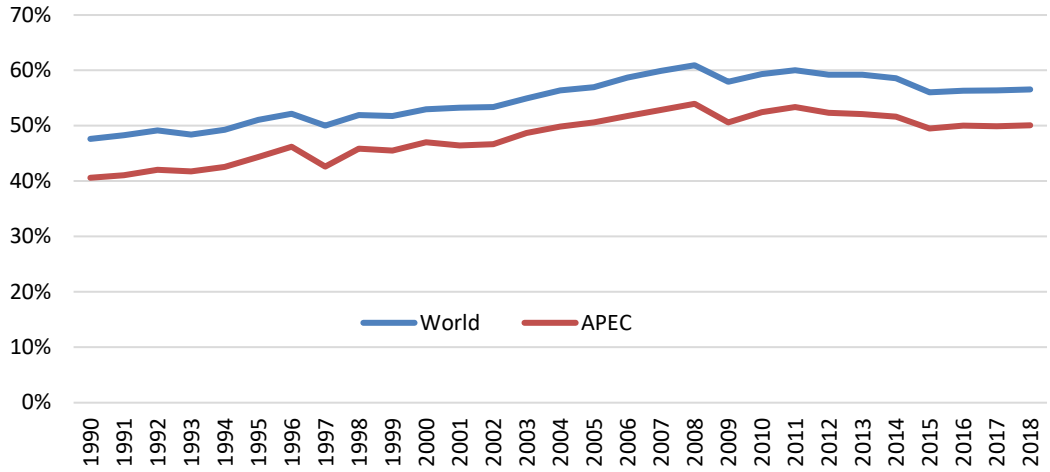
[27] World Bank, *World Development Report 2020.*
[28] Organisation for Economic Co-operation and Development (OECD), "The Trade Policy Implications of Global Value Chains," accessed 24 March 2021, https://www.oecd.org/trade/topics/global-value-chains-and-trade/
[29] World Bank, *World Development Report 2020.*
[30] F. Belotti, A. Borin and M. Mancini, "icio: Economic Analysis with Inter-Country Input-Output Tables in Stata" (Policy Research working paper no. WPS 9156. Washington, DC: World Bank, 2020); M. Lenzen, D. Moran, K. Kanemoto, A. Geschke, "Building Eora: A Global Multi-regional Input-Output Database at High Country and Sector Resolution," *Economic Systems Research* 25, no. 1 (2013): 20-49.

products; electrical and machinery; transport equipment; and financial intermediation and business activities (see Table 1.1). These sectors also are the five commodities with the largest gross export values. Among these five GVC sectors, only one (financial intermediation and business activities) is in the services sector, which has a significantly lower foreign value-added (FVA) component.

The current wave of globalisation has allowed global supply chains to proliferate and provide economic benefits to both developing and developed economies. By integrating with GVCs, businesses in developed economies can outsource production to economies with cheaper input costs for labour or raw materials. Firms in developing economies are able to take advantage of foreign industrial bases rather than developing entire industries from the ground up. Additionally, trading partners can benefit from access to foreign markets, innovations, technologies, and knowledge sharing. Therefore, global supply chains have been formed based on the business linkages that would provide the most cost-efficient outcome, so that businesses can position themselves competitively in the global markets.

As the share of GVCs in global trade increased in the 1990s and early 2000s (Figure 1.2), so did the diversification of markets as seen in the decline of the Herfindahl-Hirschman Index (HHI) – a measure of market concentration – until the 2000s (Figure 1.3).

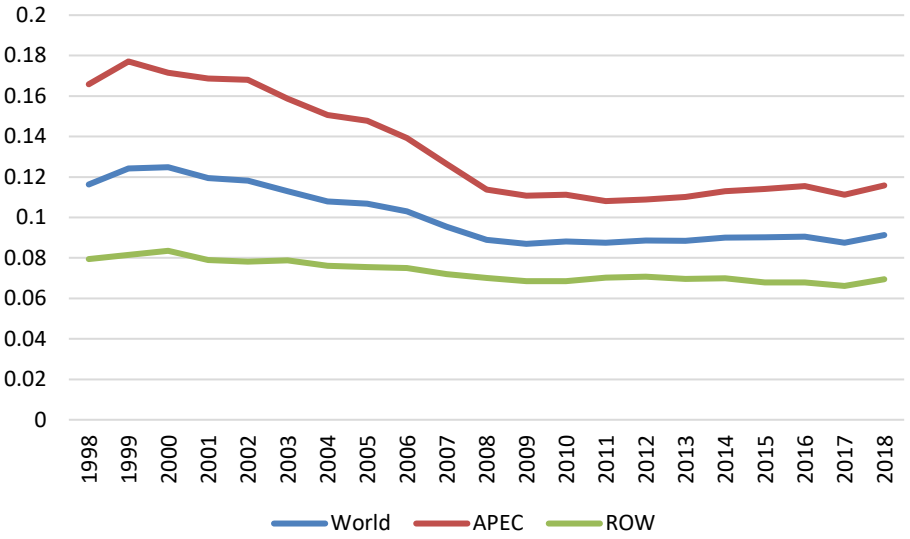
Figure 1.2 Global value chain share of global trade, 1990–2018



Note: Global value chain (GVC) share is the proportion of an economy's GVC trade in total exports. GVC trade is calculated as DVX + FVA, where DVX = indirect value-added, or indirect exports in terms of intermediate inputs that are sent to a third economy, and FVA = foreign value-added, or the value of imported inputs in exported goods. The GVC share is GVC trade divided by total exports (in percent).[31]
Source: APEC PSU staff calculations; UNCTAD-Eora GVC Database (worldmrio.com).

[31] For elaboration, see B. Casella, R. Bolwijn, D. Moran, and K. Kanemoto, "Improving the Analysis of Global Value Chains: The UNCTAD-Eora Database," *Transnational Corporations* 26, no. 3 (2019), cited in "UNCTAD-Eora GVC Database", worldmrio.com, https://worldmrio.com/unctadgvc/. See also A. Aslam, N. Novta and F. Rodrigues-Bastos, "Calculating Trade in Value Added," International Monetary Fund, 31 July 2017, https://www.imf.org/en/Publications/WP/Issues/2017/07/31/Calculating-Trade-in-Value-Added-45114

Figure 1.3 HHI for market concentration, 1998–2018



Note: The Herfindahl-Hirschman Index (HHI) measures the diversification of trade value across an exporter's partners. An HHI score close to 1 indicates high concentration in very few markets or low diversification. Likewise, a score close to 0 indicates a well-diversified trade portfolio. Values are exports-weighted averages. APEC data is available for 19 economies. Incomplete data is estimated using the last-observation-carried-forward method in order to obtain a balanced data set.
Source: APEC PSU staff calculations; World Bank, World Integrated Trade Solution (WITS) database.

However, costly disruptions to global supply chains in recent years due to external shocks have exposed interconnected risks in the system. The Tohoku earthquake in Japan and the floods in Thailand in 2011 severely disrupted production in the automotive and electronics industries in economies reliant on their exports. Disruptions caused by the Tohoku earthquake sent the global semiconductor industry on a long nine-month path to recovery[32] and set Japanese GDP back about 0.4 percent in 2011.[33] Similar significant impacts were felt on hard disk drive production due to the flooding in Thailand.[34] Note that these two events in 2011 were initially localised disruptions but led to ripple effects on GVCs. The global scale of the COVID-19 pandemic and the more interconnected nature of current GVCs means recovery post-pandemic will be longer and more complicated compared to post-2011.[35]

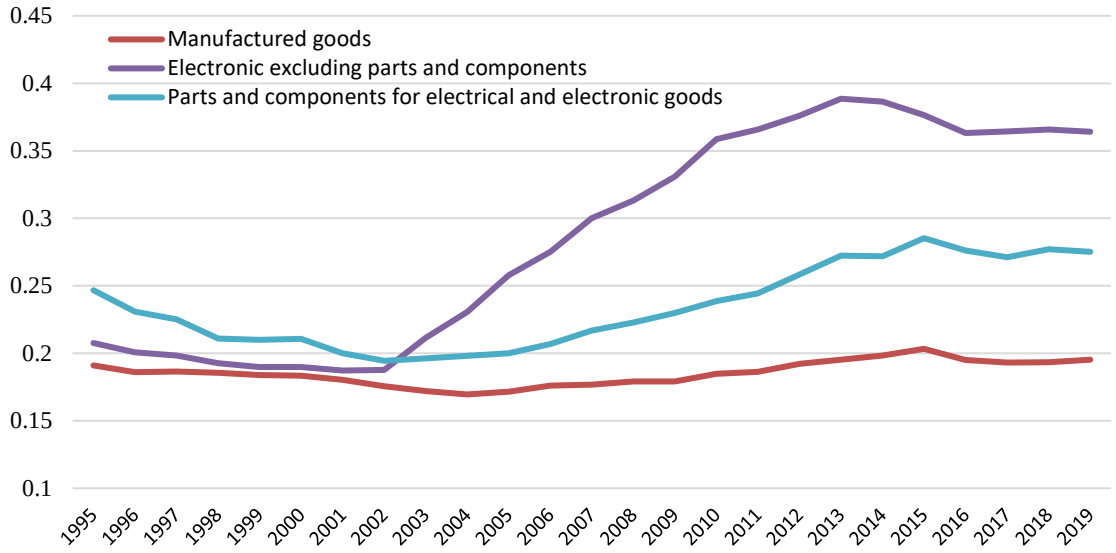
Since 2008, participation in GVCs has stagnated while trading partners have become more concentrated, especially in certain sectors (Figures 1.2, 1.3 and 1.4). This trend illustrates a salient feature of today's GVCs: the pursuit of efficiency has led to greater

[32] I. Fan, T. Holzheu, and C. Wong, "De-risking Global Supply Chains: Rebalancing to Strengthen Resilience" (Zurich: Swiss Re Institute, 2020).
[33] J. Tokui, K. Kawasaki, and T. Miyagawa, "The Economic Impact of Supply Chain Disruptions from the Great East Japan Earthquake" (Research Institute of Economy, Trade and Industry (RIETI), 2015), https://www.rieti.go.jp/jp/publications/dp/15e094.pdf
[34] B. Bland and R. Kwong, "Supply Chain Disruption: Sunken Ambitions," *Financial Times*, 4 November 2011, https://www.ft.com/content/6b20d192-0613-11e1-ad0e-00144feabdc0
[35] A. Barua, "Economic Impact of Epidemics and Pandemics in Asia since 2000: COVID-19 Will Likely Be Harsher than Others" (Deloitte, 2020), https://www2.deloitte.com/content/dam/insights/us/articles/63584_Economic-effects-of-past-epidemics/DI_Economic-effects-of-past-epidemics.pdf; P. Dvorak, 'Differences between New Coronavirus and SARS Show Why Quick Economic Recovery Is Unlikely', *The Wall Street Journal*, 12 June 2020, https://www.wsj.com/articles/differences-between-new-coronavirus-and-sars-show-why-quick-economic-recovery-is-unlikely-11591959607

concentration around a few hubs.[36] However, such concentration risks reducing resiliency. Concentration in export markets introduces inflexibilities and exposes supply chains to greater risk of shocks and disruptions. Indeed, the disruptions seen in the electronics sector during the pandemic could very well be the result of their increased export market concentration. The market concentration index for electronics exports as well as their parts and components has risen significantly in comparison to the increase in the index for total manufactured goods (Figure 1.4). This is of concern since GVC trade in electrical and machinery accounts for 48.9 percent of total GVC trade in APEC (Table 1.1). Businesses' attempts to reduce supply chain costs by focusing on lean manufacturing, offshoring, and supplier consolidation seems to have increased overall global supply chain risk and reduced flexibility. This has led to calls for greater resilience in the aftermath of COVID-19.

However, while focusing on supply chain resilience is a proper response to mitigate risks, de-emphasising efficiency in favour of stronger resilience comes with certain trade-offs in terms of efficiency losses. According to a report from Swiss Re Institute, assuming a five-year transition period for global supply chains, global economic growth could be boosted by 0.2 percent annually by the increase in investments to support relocation and re-shoring.[37] However, relocation and re-shoring could mean a shift away from the most cost-efficient means of production in low-wage economies to more resilient and sustainable locations with possibly higher costs of production, hence hurting the long-term global outlook. Indeed, resilience is not a cost-free endeavour; it often comes with hard choices and trade-offs that firms need to make.

Figure 1.4 HHI for export market concentration of selected products, 1995–2019



Note: The Herfindahl-Hirschman Index (HHI) measures, for each product, the degree of export market concentration by economy of origin. Higher values indicate that a large share of commodity exports is accounted for by a small number of economies or only a small number of economies export the product. https://unctadstat.unctad.org/en/IndicatorsExplained/statie2018d1_en.pdf
Source: APEC PSU staff calculations; UNCTADstat, https://unctadstat.unctad.org/wds/TableViewer/tableView.aspx?ReportId=121

[36] L. D'Aguanno et al., "Global Value Chains, Volatility and Safe Openness: Is Trade a Double-edged Sword?", Bank of England, 15 January 2021, https://www.bankofengland.co.uk/financial-stability-paper/2021/global-value-chains-volatility-and-safe-openness-is-trade-a-double-edged-sword
[37] Fan, Holzheu, and Wong, "De-risking Global Supply Chains."

This does not mean that global supply chains should be left as they are. There are other factors, especially economic ones, that indicate a need for some reorganisation and an opportunity for improved resiliency. First, changes in labour cost advantages as economies develop may entice production centres to look for cheaper locations. Second, as economies implement structural reforms to develop a better business environment, companies may reconsider them as outsourcing locations. Third, availability of technologies such as 3D printing and robotics can simplify production processes and reduce the need for mass labour. These drivers of change show that businesses may need to update their existing supply chains in line with changes in market dynamics. In doing so, businesses may also want to strengthen their supply chains to better endure shocks like the COVID-19 pandemic. For this, there is a need to find a balance between ensuring efficiency and pursuing resilience.

1.3 SEARCHING FOR RESILIENCE

The COVID-19 pandemic has made businesses and governments more aware of the importance of resiliency. Some have also argued that the global pandemic has exposed inherent weaknesses in the current supply chain configuration of global firms, and more broadly, of the global trade architecture and regime. Firms around the world have responded to the supply chain disruptions swiftly by strengthening and repurposing their supply chains to ensure resilience.[38] Supply chain resilience has several definitions. The APEC Policy Support Unit (PSU) emphasises the following key characteristics of a resilient supply chain:[39]

- *Robustness*: strong enough to withstand shocks and changes
- *Agility*: able to quickly recover from shocks
- *Flexibility*: able to leverage on options and alternatives during normal times and during recovery
- *Redundancy*: able to build redundancy or surplus capacity

Given the substantial benefits from incorporating resilience and the urgency brought about by COVID-19 induced disruptions, businesses have been considering the following adjustments to their supply chains.

1.3.1 Supply chain re-shoring, near-shoring and rebalancing

Some businesses are considering reconfiguring their supply chains to alternative competitive locations to diversify risks, or closer to markets or headquarters for easier management if shocks arise. These changes could involve re-shoring or near-shoring of production or relocation to other economies to diversify risks. Re-shoring (business operations moving back to their home economy) or near-shoring (moving business operations closer to the home economy) would result in more regional supply chains: re-shoring would be associated with a rise in domestic production at the expense of total imports, while near-shoring would increase imports from regional suppliers.[40] Re-shoring and near-shoring have been frequently considered as alternative means to manage sustainability in GVC operations and this has gained traction during the pandemic.

[38] "COVID-19: Repurpose Your Supply Chain for Resilience," Accenture, 14 April 2020, https://www.accenture.com/us-en/insights/consulting/coronavirus-supply-chain-rapid-response
[39] APEC, "Value Chain Resilience in the Asia Pacific: A Synthesis Report" (Singapore: APEC, 2015), https://www.apec.org/Publications/2015/03/Value-Chain-Resilience-in-the-Asia-Pacific-A-Synthesis-Report
[40] A. Shingal and P. Agarwal, "Global Value Chain Responses to Previous Health Shocks: Lessons for Covid-19," voxeu.org, 8 December 2020, https://voxeu.org/article/global-value-chain-responses-previous-health-shocks

According to a survey of executives conducted by Ernst & Young in April 2020, 83 percent of respondents were thinking of re-shoring or near-shoring to mitigate the impacts of COVID-19. A follow-up survey in October found that the numbers have dropped to just 37 percent, pointing to the sticky nature of global supply chains.[41]

However, Miroudot argues against the re-shoring strategy: 'the idea that reshoring unambiguously improves the resilience of supply chains … is not supported by academic research'.[42] The same message is echoed by Brown, quoting Massachusetts Institute of Technology (MIT) professor Yossi Sheffi, who suggested that supply chains have been able to improve over time and adapt to handle large-scale disruptions.[43] Recent findings from the World Bank suggest that while goods trade fell more rapidly during COVID-19 than during the global financial crisis, a quicker and smoother recovery during the pandemic may be facilitated by improved GVC resilience.[44]

While re-shoring or near-shoring may not be the best response in terms of efficiency, geographical diversification of value chains still has its merits. The diversification of value chains allows businesses to spread their risks by reducing the share of imports from potential epicentres of supply chain disruption.[45] For example, the 'China+1' strategy – i.e., trading with other economies in addition to China to limit the risk of over-dependence on one source – is expected to be one of the strategies adopted by businesses that want to diversify their supply chains yet continue to leverage on established ones.[46] Adoption of this strategy will see some portion of manufacturing shifting to economies with a cost advantage in Southeast Asia. A similar strategy was employed by several firms after the Tohoku earthquake in 2011when imports shifted away from the epicentre and toward developing economies with a comparative advantage in inputs.[47] Moreover, recent trade tensions between China and the United States saw imports of electronics from China decline while those from Malaysia; Chinese Taipei; and Viet Nam increased.[48]

1.3.2 Just-in-case inventory management

Resilience can also be built into supply chains by building redundancies, that is, holding precautionary stocks of inputs and finished products, or by diversifying suppliers. Holding additional stock would provide firms some extra time to plan their recovery when hit by disruptions.[49] Some surveys show that businesses are already considering introducing

[41] "Is a Wave of Supply-chain Reshoring around the Corner?," *The Economist*, 16 December 2020, https://www.economist.com/finance-and-economics/2020/12/16/is-a-wave-of-supply-chain-reshoring-around-the-corner
[42] S. Miroudot, "Reshaping the Policy Debate on the Implications of COVID-19 for Global Supply Chains," *Journal of International Business Policy* 3 (2020): 430–42, https://doi.org/10.1057/s42214-020-00074-6
[43] S. Brown, "Reshoring, Restructuring, and the Future of Supply Chains," MIT Sloan School of Management, 22 July 2020, https://mitsloan.mit.edu/ideas-made-to-matter/reshoring-restructuring-and-future-supply-chains
[44] World Bank, "Global Economic Prospects, January 2021" (Washington, DC: World Bank, 2021), doi:10.1596/978-1-4648-1612-3.
[45] Shingal and Agarwal, "Global Value Chain Responses."
[46] M. Forde, "PwC, AmCham China Predict Companies Will Pursue a 'China+1' Strategy after COVID-19," Supply Chain Dive, 20 April 2020, https://www.supplychaindive.com/news/coronavirus-companies-expect-china-operations-normalize-under-3-months-pwc/576355/; H. Suzuki, "Building Resilient Global Supply Chains: The Geopolitics of the Indo-Pacific Region," Center for Strategic and International Studies (CSIS), 19 February 2021, https://www.csis.org/analysis/building-resilient-global-supply-chains-geopolitics-indo-pacific-region
[47] World Bank, "From Containment to Recovery," East Asia and Pacific Economic Update (October) (Washington, DC: World Bank, 2020), 29, doi: 10.1596/978-1-4648-1641-3.
[48] Suzuki, "Building Resilient Global Supply Chains."
[49] Y. Sheffi, "Preparing for the Big One," *Manufacturing Engineer* (October/November 2005): 12–15, http://web.mit.edu/sheffi/www/PreparingfortheBigOne.pdf

redundancy as a means to improve the resilience and flexibility of their supply chains. A McKinsey survey of supply chain executives conducted in May 2020 reports that 93 percent of executives planned to incorporate redundancy across suppliers, reduce the number of unique parts, and shorten and regionalise supply chains.[50]

However, having more redundancy may be viewed as inefficient as it entails higher costs and could also lead to slower recovery. A study of 4,000 firms in the United States highlighted this issue when the more diversified supply chains recorded slower recoveries following a disruption compared to businesses relying on single suppliers.[51] One reason for this may be the lack of strong long-term relationships when engaging many suppliers, who then may not be as invested to mitigate risks or may be less willing to go beyond the contractual minimum or share information.

Hence, what could be considered is efficient redundancy, achieved by developing a network of supply chains rather than just one supply chain, enabling flexibility in reallocating production within a network. This was seen during the pandemic when Samsung temporarily moved its high-end mobile phone production from Korea to Viet Nam to mitigate the impacts of COVID-19.[52] Introducing such redundancies will provide flexibilities within the supply chain when necessary but will not require having multiple suppliers on a permanent basis.

1.3.3 Improving visibility

A supply chain's ability to react to disruptions can also be improved by increasing their visibility, wherein the status of events and milestones of components and products can be tracked prior to and during transit across different tiers of suppliers.[53] End-to-end visibility will allow companies to predict shifts in demand and react to them with greater flexibility. Better supply chain visibility is expected to result in 20 to 25 percent cost savings and overall improved levels of service.[54]

Digital technologies play an important role in facilitating supply chain visibility. For example, implementing digital visibility along the supply chain will allow firms to see how their supply chain functions in real time and allow them to switch suppliers promptly during disruptions. [55] In general, mastering digital capabilities will improve business competitiveness during normal times and drive flexibility during disruptions, avoiding the worst impacts and enabling a quick recovery.[56] Moreover, real-time visibility could allow for greater cooperation across platforms and enable remote collaboration.[57]

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[50] S. Lund et al., "Risk, Resilience, and Rebalancing in Global Value Chains," McKinsey & Company, 6 August 2020, https://www.mckinsey.com/business-functions/operations/our-insights/risk-resilience-and-rebalancing-in-global-value-chains

[51] Miroudot, "Reshaping the Policy Debate."

[52] Miroudot, "Reshaping the Policy Debate."

[53] "Supply Chain Digital Transformation: Enhancement of Supply Chain Visibility for the Post-COVID-19 World," SGInnovate, 2 June 2020, https://www.sginnovate.com/blog/supply-chain-digital-transformation-enhancement-supply-chain-visibility-post-covid-19-world

[54] G. Steinberg, "COVID-19: Why Real-time Visibility Is a Game Changer for Supply Chains," EY, 11 June 2020, https://www.ey.com/en_gl/consulting/covid-19-why-real-time-visibility-is-a-game-changer-for-supply-chains

[55] A. Kroupenev, "How to Combine Resilience with Just-in-Time Manufacturing Methodologies," Global Trade, 14 January 2021, https://www.globaltrademag.com/how-to-combine-resilience-with-just-in-time-manufacturing-methodologies/

[56] C. Price, "How Should We Future-proof Our Supply Chains?" World Economic Forum, 3 September 2020, https://www.weforum.org/agenda/2020/09/how-to-build-supply-chains-fit-for-the-future/

[57] Kroupenev, "How to Combine Resilience."

However, a 2020 Ernst & Young survey of supply chain executives found that while complete supply chain visibility was considered the most important factor in developing successful supply chains, only 6 percent of respondents had confidence in their capabilities in this area.[58] A study by APEC PSU suggests that hardware, software, and training costs pose significant barriers to increasing supply chain visibility especially for small- and medium-sized firms.[59]

1.4 INVESTING IN SUPPLY CHAIN RESILIENCE

While the jury is still out on the most effective way to improve supply chain resilience, it seems that a combination of different strategies could be a good starting point. While just-in-time manufacturing had been roundly criticised during the pandemic,[60] others have argued that it is far from obsolete and that firms applying just-in-time may be able to recover in a more efficient manner.[61] Improved just-in-time, combined with the right technology and other strategies, can strengthen resilience as well. For example, Toyota successfully employed the lessons learned from the 2011 Tohoku earthquake to improve its just-in-time lean manufacturing method by implementing the following measures aimed at improving visibility, rebalancing, and advancing just-in-case management:[62]

- It standardised some components across vehicle models to enable global sharing of inventory and flexibility in production across various sites.
- It built a comprehensive database of its suppliers and parts they held in inventory.
- It regionalised its supply chains to avoid depending on one location.
- It identified its single-source suppliers and asked them to disperse production of parts to multiple locations or hold extra inventory.

In a way, resilient just-in-time does not need to be an oxymoron. Buffers in a just-in-time system will be set against the expected risk: as firms are now aware of the risks from global pandemics, the size of buffers can be adjusted accordingly. One could even argue that organisations incorporating just-in-time may actually be more resilient: lean does not have to mean brittle.[63]

Large, premeditated investments may be needed to incorporate any of the resilience-improving changes into existing global supply chains. These strategies could include improving problem identification within supply chains, and increasing their flexibility and security. These strategy options are briefly elaborated on in Table 1.2.

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[58] Steinberg, “COVID-19: Why Real-time Visibility.”
[59] APEC, “Study on the Application of Global Data Standards for Supply Chain Connectivity (Phase 2)” (Singapore: APEC, 2017), https://www.apec.org/Publications/2017/11/Study-on-the-Application-of-GDS-for-Supply-Chain-Connectivity-Phase-2
[60] Hadwick, “The End of Just in Time?”
[61] F. Pisch, “Just-in-time Supply Chains after the Covid-19 Crisis,” voxeu.org, 30 June 2020, https://voxeu.org/article/just-time-supply-chains-after-covid-19-crisis; “Recap: Prof. Yossi Sheffi’s Discussion on His Book ‘The New (Ab)Normal’”, Resilinc, https://www.resilinc.com/blog/recap-prof-yossi-sheffis-discussion-on-his-book-the-new-abnormal/; C. López-Gómez, "UK Supply Chains: Learning the Right Lessons from Covid-19,” UK in a Changing Europe, 22 May 2020, https://ukandeu.ac.uk/uk-supply-chains-learning-the-right-lessons-from-covid-19/
[62] Lund et al., “Risk, Resilience, and Rebalancing.”
[63] R. van Stekelenborg, “Resilient Just-in-Time: An Oxymoron?”, Dumontis, 10 February 2020, https://dumontis.com/2020/02/resilient-just-in-time/

Table 1.2 Investing in supply chain resilience

Investment strategy	Description	Examples of investments
Discovery	Investing in the ability to identify potential problems	- Improved information technology (IT) or information sharing - Early warning by supply chain partners - Forecasting - Demand sensing
Information	Investments in improving the quantity, speed and quality of information flows	- Improved IT - Effective communication - Information visibility
Supply chain design	Designing and implementing flexible supply chains	- Supply base management - Supply base configuration - Choosing flexible supply chain partners
Buffers	Creating cushions in the form of inventory, capacity or lead times	- Inventory - Operating flexibility - Excess operating capacity - Redundancy - Excess/safety lead time
Operating flexibility	Changing either flows or product specifications	- Transportation alternatives - Variable bills of materials
Security	Protecting the system from supply chain shocks such as theft, damage and counterfeiting	- Firewalls - Quarantine - Strengthened physical systems
Preparedness	Designing contingency plans for possible supply chain shocks	- Planning for contingencies - Training/rehearsing - Risk assessment and insurance
Indirect investments	Investing in other areas (goodwill or willingness) that could be drawn from when a shock occurs	- Relationships with suppliers/customers - Supplier/customer loyalty

Source: Adapted from S.A. Melnyk et al., "Understanding Supply Chain Resilience" (Michigan State University).

Firms may choose their investment strategy based on several factors, such as risk exposure, risk appetite as well as competition strategy. Done correctly, investments in supply chain resilience could deliver a 15–25 percent improvement in plant output and a 20–30 percent increase in customer satisfaction.[64]

1.5 A ROLE FOR REGIONAL COOPERATION

So far, most discussions on supply chain resilience have been at the firm level. More can be done to manage resilience at the policy level. COVID-19 has caused significant disruptions to supply chains in the APEC region and has highlighted the need for governments to consider strategies for greater resilience. While the rise in GVC integration has been blamed for vulnerabilities to external shocks, it is inattention to long-term resilience in pursuit of short-term profit that should be blamed. A withdrawal from GVCs, without actually addressing resilience, can result in higher economic costs without a significant reduction in economic vulnerability. For example, policies to re-shore production could lead to an increase in volatility as they lead to a higher concentration of value chain trade on domestic sources.[65] Hence, governments should see participation in GVCs as part of the solution to handle supply shortages and advance global recovery.[66] Within the APEC context, it is important to avoid policy interventions that disrupt the

[64] O. Schatteman, D. Woodhouse, and J. Terino, "Supply Chain Lessons from Covid-19: Time to Refocus on Resilience," Bain & Company, 27 April 2020, https://www.bain.com/insights/supply-chain-lessons-from-covid-19/

[65] D'Aguanno, et al., "Global Value Chains, Volatility and Safe Openness."

[66] M.S. Alrajeh et al., "Policy Actions To Safeguard the Operations of GVCs in Times of Crisis and Beyond," G20 Insights, 26 November 2020 (updated 10 December 2020), https://www.g20-insights.org/policy_briefs/policy-actions-to-safeguard-the-operations-of-gvcs-in-times-of-crisis-and-beyond/

configuration of GVCs based on economic fundamentals. APEC could consider the following areas for regional cooperation on supply chain resilience.

Promote digitalisation and supply chain visibility. The benefits of digital technologies have been continuously highlighted during the course of the global pandemic. Governments should continue developing information and communications technology (ICT) infrastructure and improving access to digital infrastructure, tools and skills to facilitate remote working, online schooling and online health services, among others. Digitalisation could also contribute to greater capacity to implement measures for supply chain visibility that can help mitigate risks through proper monitoring and transparency. Innovative technology such as blockchain could automate administrative tasks and improve supply chain transparency and collaboration in a secure manner.[67]

Develop domestic competitiveness by improving the productivity of local enterprises. GVCs are an important network for knowledge transfer and productivity spillovers for local firms. Governments should focus on maintaining the competitiveness and efficiency of domestic enterprises by maintaining the skills and know-how that firms have acquired from their supply chains under the GVC network.[68] Regardless of global foreign direct investment (FDI) relocation, improving productivity of local enterprises by promoting technology adoption and diffusion will support deeper FDI attraction. Additionally, backward and forward production linkages can be strengthened through timely fiscal stimulus and by providing extra liquidity to small- and medium-sized enterprises (SMEs).[69]

Strengthen trade facilitation and structural reform efforts. Economies need to strengthen trade facilitation efforts and measures, particularly in relation to managing the flows of essential goods such as food and medical products. Customs operations can be improved by applying automation and digitisation through platforms such as Single Windows for Foreign Trade or Port Community Systems.[70] Structural reform efforts may include developing a stable and predictable regulatory environment that allows GVCs to operate and recalibrate[71] their network structures during recovery from a pandemic.[72] At the sectoral level, governments could consider easing the burden on businesses by providing more transparent and consistent policymaking with regard to health and lockdown policies, among others.

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[67] Matamala, Barbara, "Compendium of Best Practice Technology Solutions for Single Window Interoperability" (Singapore: APEC, 2019), https://www.apec.org/Publications/2019/11/Compendium-of-Best-Practice-Technology-Solutions-for-Single-Window-Interoperability

[68] F. de Nicola, J. Timmis, and A. Akhlaque, "How Is COVID-19 Transforming Global Value Chains? Lessons from Ethiopia and Vietnam," World Bank Blogs, 10 September 2020, https://blogs.worldbank.org/voices/how-covid-19-transforming-global-value-chains-lessons-ethiopia-and-vietnam

[69] Muhammad Zeshan, "Double-hit Scenario of Covid-19 and Global Value Chains," *Environment, Development and Sustainability* (2020), https://link.springer.com/content/pdf/10.1007/s10668-020-00982-w.pdf; K. Heydon, 'Domestic Policies Key to the Supply Chain Resilience Initiative," East Asia Forum, 21 September 2020, https://www.eastasiaforum.org/2020/09/21/domestic-policies-key-to-the-supply-chain-resilience-initiative/

[70] S. Corcuera-Santamaria and J.M.G. Sanjinés, "The Resilience and Transformation of Customs Authorities during COVID-9," IDB Beyond Borders, 22 Jun 2020, https://blogs.iadb.org/integration-trade/en/customs-authorities-covid-19/

[71] A. Seric, M. Windisch, H. Görg, and W. Liu, "Risk, Resilience and Recalibration in Global Value Chains," OECD Development Matters, 10 February 2021, https://oecd-development-matters.org/2021/02/10/risk-resilience-and-recalibration-in-global-value-chains/

[72] "COVID-19 and Global Value Chains: Policy Options To Build More Resilient Production Networks," OECD, 3 June 2020, http://www.oecd.org/coronavirus/policy-responses/covid-19-and-global-value-chains-policy-options-to-build-more-resilient-production-networks-04934ef4/

Enhance regional cooperation on trade, connectivity and economic openness. Trust in trading commitments is only as strong as the first economy that reneges. APEC economies need to maintain their commitment to open trade policies and avoid discriminatory and trade-restrictive measures.[73] While re-shoring could make business sense for some firms, at the economy level, turning inwards would only hurt the long-run competitiveness of domestic industries and may preclude a strong recovery. Alrajeh et al. argue that 'self-sufficiency concentrates risk domestically, while GVCs are associated with risk distribution; thus, relying on well-diversified suppliers reduces the risk of supply shortages.' [74] Regional cooperation and commitments to openness can help speed recovery by ensuring policy stability and reducing uncertainty.

APEC economies have already started to develop tangible cooperation in the area of supply chain resilience in response to COVID-19. The APEC Declaration on Facilitating the Movement of Essential Goods emphasises the need to maintain consistency with World Trade Organization (WTO) rules and obligations, and identify and resolve any unnecessary barriers to trade in essential goods. [75] The Declaration also encourages each economy to facilitate trade by expediting the release of essential goods upon arrival and allowing pre-arrival processing whenever possible. More could be done to ensure that supply chains across borders remain open and flowing. Especially important is maintaining a commitment to trade openness and facilitation not only when times are good, but especially when times are tough.

Even as the COVID-19 pandemic continues to rage, the world is already being warned to prepare for the next global crisis be it from another pandemic, failure to address climate change, or something completely unexpected. Although supply chain disruptions have happened before, COVID-19 is unprecedented in terms of scale and impact. The images of unprotected healthcare workers and insufficient essential goods in the early months of 2020 were regrettable but somewhat understandable; similar images in the next global crisis would be inexcusable.

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[73] Y. Tham, "Ministers Flag Need for APEC Economies To Keep Supply Chains Open and Work To Reopen Borders Safely," *The Straits Times* (Singapore), 17 November 2020, https://www.straitstimes.com/singapore/politics/ministers-flag-need-for-asia-pacific-economies-to-keep-supply-chains-open-and

[74] Alrajeh et al., "Policy Actions To Safeguard."

[75] APEC, "Declaration on Facilitating the Movement of Essential Goods by the APEC Ministers Responsible for Trade (MRT)," 25 July 2020, https://www.apec.org/Meeting-Papers/Sectoral-Ministerial-Meetings/Trade/2020_MRT/Annex-A#:~:text=Employment-,Declaration%20on%20Facilitating%20the%20Movement%20of%20Essential%20Goods%20by,Ministers%20Responsible%20for%20Trade%20(MRT)&text=Each%20APEC%20economy%20will%20ensure,are%20consistent%20with%20WTO%20rules

2 MAKING RECOVERY INCLUSIVE[76]

2.1 APEC GDP GROWTH

2.1.1 Downturn, disruptions and unequal impact

COVID-19 continues to inflict extraordinary loss of lives across the world, with some economies fighting to contain its third or fourth waves amid overwhelmed health systems while others are still under some form of lockdown more than a year into the pandemic.

The impact on livelihoods has been unparalleled. As borders closed and people were confined to their homes to curb the spread of the virus, mobility decreased, demand declined, and businesses shuttered. Micro, small and medium enterprises (MSMEs) bore the brunt of the fallout. Growth receded to negative territory, leaving millions of people jobless and at risk of falling into extreme poverty.

The International Labour Organization (ILO) estimates that 81 million jobs were lost in the Asia-Pacific due to the pandemic, corresponding to a decline in employment of 4.6 percent for women and 4.0 percent for men, pushing an additional 22–25 million employed persons into extreme poverty, living at or below USD 1.90 per person per day.[77] In 2020 alone, the number of COVID-19 induced new poor globally surged to around 119–124 million according to World Bank estimates, reversing two decades' worth of gains in poverty reduction. [78]

The pandemic affected everyone everywhere, but not equally. Women, young people, the elderly and the poor experienced layers of negative consequences from the economic downturn and disruptions brought about by COVID-19. For example, the accelerated shift to online platforms and automation, necessary to contain the pandemic, has laid bare the digital divide that excludes certain segments of society from fully and equally participating in economic activity.

People with insufficient digital skills and equipment or those living in areas where access to the internet is plagued with unreliable connections or slow speed will not be able work or study, setting back productivity and education objectives. Women who lack digital skills face greater challenges while working from home, as they also need to deal with a disproportionate share of unpaid care work. Children and youth who do not have access to online schooling could suffer learning losses that in turn could result in limited capabilities, fewer career opportunities and lower future wages. It is also difficult for the elderly to navigate digital applications, substantially reducing their access to daily transactions now conducted online.

The adverse effects of COVID-19 are amplified for the poor as they are less likely to have teleworking jobs or savings, rendering it difficult for them to sustain their needs. Most also cannot afford a smartphone or an internet subscription, needed to be able to work or study from home, which could diminish their opportunities and lead to greater income inequality.

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[76] Prepared by Rhea C. Hernando, APEC Policy Support Unit (PSU).
[77] International Labour Organization (ILO), "Asia Pacific Employment and Social Outlook: Navigating the Crisis towards a Human-centred Future of Work" (Geneva: ILO. 2020), https://www.ilo.org/wcmsp5/groups/public/---asia/---ro-bangkok/---sro-bangkok/documents/publication/wcms_764084.pdf
[78] Christoph Lakner et al., "Updated Estimates of the Impact of Covid-19 on Global Poverty: Looking Back at 2020 and the Outlook for 2021," World Bank Blogs, 11 January 2021, https://blogs.worldbank.org/opendata/updated-estimates-impact-covid-19-global-poverty-looking-back-2020-and-outlook-2021#:~:text=for%20the%20first%20time%20in,(downside%20estimate)%20in%202020.

Rapid digital transformations brought about by the pandemic also adversely affect MSMEs, most of which are women-owned or women-led. MSMEs that lack capital and technological expertise are unable to shift their businesses online, which could translate into losses and closures, adding to rising livelihood fragility and poverty.

Compounding the existing digital, income and gender inequalities are the multiple layers of discrimination that vulnerable groups – indigenous groups, or people with disabilities and/or low level of literacy, education and skills – have to deal with that could aggravate their socioeconomic condition.

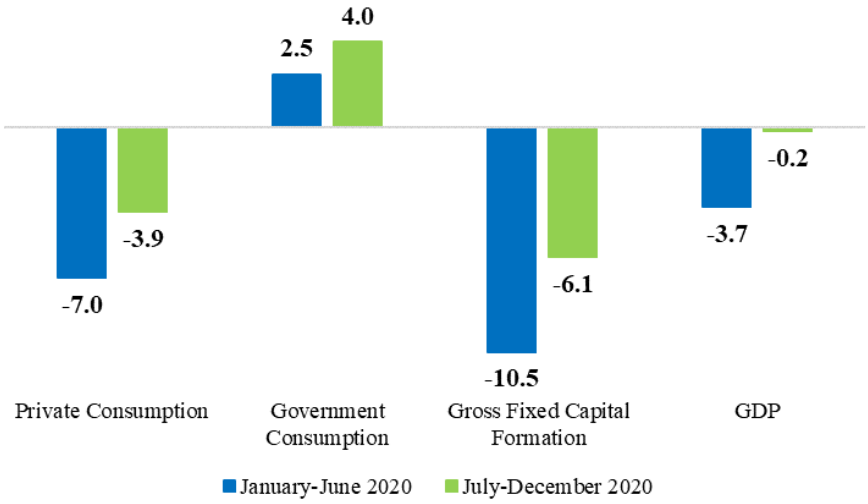
The unequal impact of the ongoing pandemic is seen not only within economies, but also across economies as differences in containment measures, fiscal space and extent of monetary support have resulted in uneven growth, particularly during the second half of 2020.

This divergence in the speed and strength of economic activity in the APEC region and the global economy is expected to continue in the near term, aggravated by unequal access to the vaccines, treatments and medical supplies needed to combat COVID-19. Economies that were able to purchase vaccines to cover their entire population would likely recover faster. However, others, particularly lower-income economies, rely largely on the COVID-19 Vaccines Global Access (COVAX) Facility for their supply of vaccines. More often than not, these vaccines would come in staggered rounds of allocations, suggesting that these economies are in for a longer battle, so economic recovery will be fragile as area lockdowns continue amid a higher risk of virus resurgence.

2.1.2 Better-than-expected but uneven growth

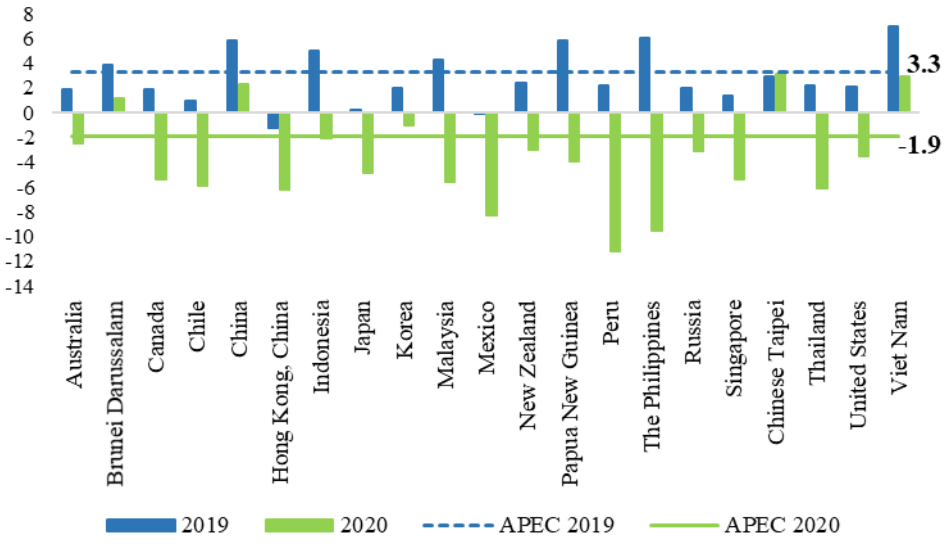
APEC economies felt the severe impact of the pandemic during the first half of 2020 as the region's gross domestic product (GDP) contracted by 3.7 percent with the implementation of lockdown measures within and across borders to contain the virus (Figure 2.1). The region saw a smaller decline in GDP of 0.2 percent in the second half of 2020 as economies implemented significant and wide-ranging fiscal measures targeted at supporting households and businesses amid sustained health measures. This led to a continued rise in government consumption, to 4.0 percent in the second half of 2020 from 2.5 percent in the previous semester.

Figure 2.1 Growth in consumption and investments (%), 1H and 2H 2020



Note: Data on consumption and investments are not available for China; Papua New Guinea; and Viet Nam. The calculation for weighted APEC GDP growth includes China and Viet Nam; but excludes Papua New Guinea due to unavailability of quarterly data on GDP growth.
Source: Economy sources; APEC Policy Support Unit (PSU) staff calculations.

Figure 2.2 Real GDP growth (%), 2019 and 2020



Source: Economy sources; IMF, "World Economic Outlook: Managing Divergent Recoveries" (Washington, DC: IMF, April 2021); APEC PSU staff calculations.

People also adapted better to pandemic living, while in parallel, scientists developed various vaccines, bringing hope that infection rates and death tolls will go down considerably earlier than expected.

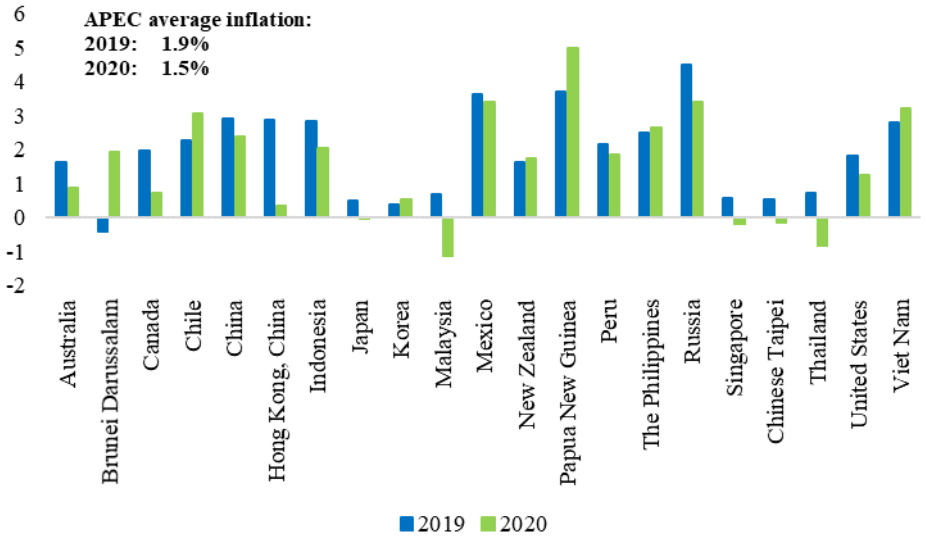
Household consumption, the main driver of APEC growth, improved to -3.9 percent during the period July–December 2020 from -7.0 percent in the first half, while investments followed the same trend.

For the whole year 2020, APEC GDP declined by 1.9 percent (Figure 2.2), better than the earlier projection of a 2.7 percent contraction in the May 2020 edition of the ARTA.[79] However, GDP growth across APEC has been uneven. A few economies were able to return to positive territory by the end of 2020, others contracted less than expected, but some plunged deeper into recession.

2.2 INFLATION AND MONETARY POLICY

The decrease in consumption contributed largely to lower inflation rate in the region at 1.5 percent in 2020 from 1.9 percent in 2019 (Figure 2.3). Oil prices decreased by 33 percent while prices of metals dipped by 2 percent during the same comparable period.

Figure 2.3 Inflation rate (%), 2019 and 2020

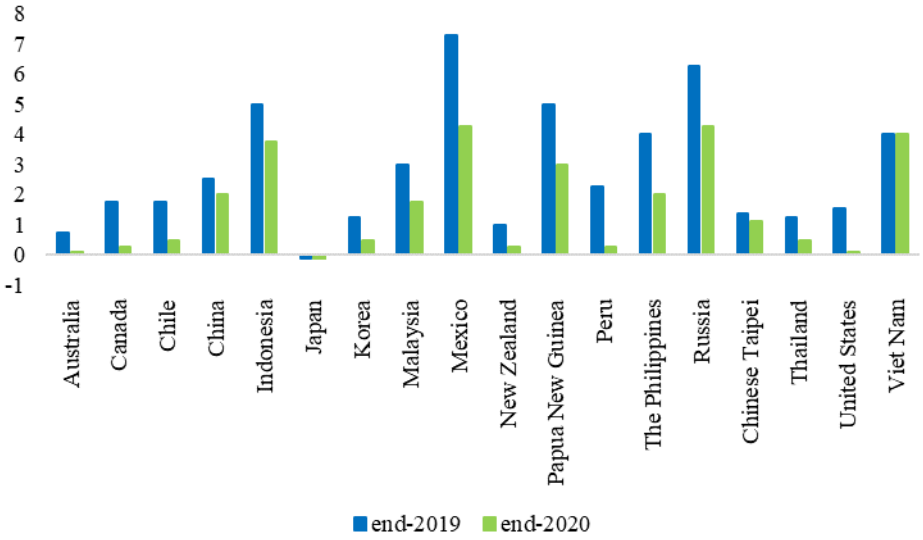


Source: Economy sources; APEC PSU staff calculations.

Muted inflation allowed central banks to deploy both conventional and non-conventional monetary policy measures, including loan deferments and credit provisions to complement the massive fiscal packages launched by governments to prop up their economies amid the downturn. Monetary authorities implemented sustained reductions in their benchmark interest rates, resulting in a substantially accommodative stance by end-2020 (Figure 2.4). Similarly, for 2020, the Monetary Authority of Singapore (MAS) maintained a zero percent per annum rate of appreciation of the Singapore dollar's nominal effective exchange rate (S$NEER) policy band with no change to the width and the level at which it is centred, reflecting a more accommodative policy stance amid the weak outlook for core inflation.

[79] APEC, "APEC Regional Trends Analysis: What Goes Around Comes Around: Pivoting to a Circular Economy; Uncertainty Tests APEC Resilience amid COVID-19" (Singapore: APEC, May 2020), https://www.apec.org/Publications/2020/05/APEC-Regional-Trends-Analysis---What-Goes-Around-Comes-Around

Figure 2.4 Monetary policy rate (%), end-2019 and end-2020



Note: The monetary policy framework in Brunei Darussalam is based on a currency board system, with the Brunei dollar anchored to the Singapore dollar at par. Hong Kong, China maintains a currency board system pegged against the US dollar. For Singapore, monetary policy is conducted through the trade-weighted exchange rate, which is allowed to fluctuate within a policy band. The operating targets for the S$NEER are expressed in the level, slope and width of the policy band, which determine the direction of monetary policy.

2.3 TRADE PERFORMANCE

Trade performance in the region has been sluggish since the escalation of trade and technology tensions in 2018, translating into a year-on-year decline in the volume of merchandise exports in 2019 (from 4.3 percent in 2018) while the value of merchandise trade contracted anew. The COVID-19 pandemic exacerbated the weakness in trade, with the closure of international borders, disruptions in global supply chains and substantial reductions in overall demand.

This resulted in a contraction in the volume of merchandise exports and imports in 2020 of 2.6 percent and 5.7 percent, respectively, compared to a small growth in the volume of exports in 2019 even as import volume was already declining (Figure 2.5). The value of merchandise trade stayed in negative territory in 2020 relative to the level in 2019, with exports decreasing by 4.7 percent and imports by 6.3 percent (Figure 2.6).

Nonetheless, trade performance in the APEC region fared better in 2020 compared to the rest of the world, which recorded a double-digit decline of 10.3 percent in the value of merchandise exports while merchandise imports also contracted by 9.0 percent (Table 2.1). The value of world merchandise trade was also lower by almost 8.0 percent in 2020 compared to a year ago.

Commercial services sustained substantial losses in 2020, since travel and tourism is one of the sectors severely impacted by COVID-19. In particular, transport and travel services plummeted by almost 50 percent in 2020 compared to the level in 2019 (Figure 2.7).

Figure 2.5 Growth in volume of merchandise trade (y-o-y, %)

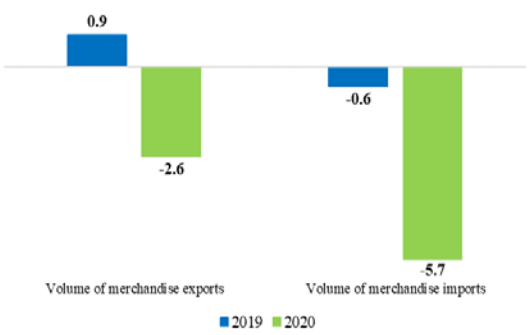
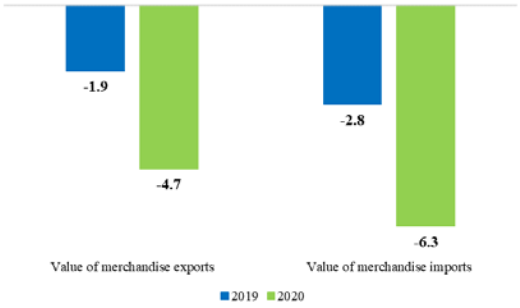


Figure 2.6 Growth in value of merchandise trade (y-o-y, %)



Note: Due to unavailability of data, the average growth in trade volume for APEC does not include Brunei Darussalam and Papua New Guinea.
Source: UNCTADstat (for trade volume); WTO (for trade values); APEC PSU staff calculations.

Figure 2.7 Growth in transport and travel services (y-o-y, %)

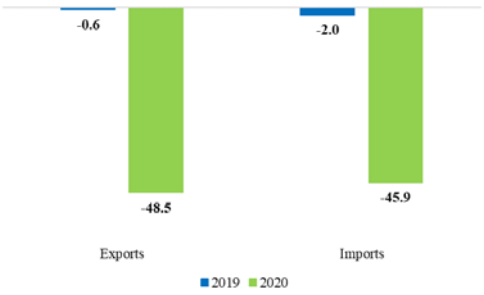
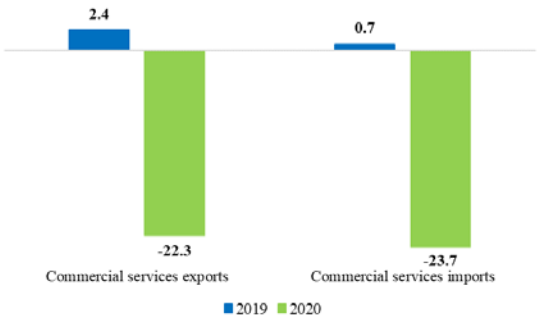


Figure 2.8 Growth in commercial services (y-o-y, %)



Source: WTO and APEC PSU staff calculations.

Table 2.1 Value and growth in merchandise trade, 1H 2019 and 1H 2020

	Value (in billion USD)			Growth (y-o-y, in %)	
	2019	2020		2019	2020
Merchandise Exports					
World	19015	17583		-2.7	-7.5
APEC	9408	8969		-1.9	-4.7
Rest of the World (ROW)	9607	8614		-3.6	-10.3
Merchandise Imports					
World	19284	17812		-2.8	-7.6
APEC	9648	9040		-2.8	-6.3
ROW	9636	8772		-2.7	-9.0
APEC's share of the World (in %)					
Merchandise Exports	49.5	51.0			
Merchandise Imports	50.0	50.8			

Source: WTO and APEC PSU staff calculations.

Based on data from the World Travel and Tourism Council (WTTC), global losses in the travel and tourism sector amounted to around USD 4.5 trillion in 2020, with international and domestic visitor spending dropping by 69.4 percent and 45 percent, respectively.[80] Moreover, the WTTC estimates that the sector lost 62 million jobs in 2020, equivalent to an 18.5 percent decline from the level in 2019. The combined damage from sizeable reductions in tourism spending and job losses has halved the sector's contribution to world GDP growth to around USD 4.7 trillion in 2020 compared to USD 9.2 trillion in 2019.

Overall, commercial services in 2020 reversed to a contractionary position with a decline of 22.3 percent for exports and 23.7 percent for imports relative to the modest growth fetched in 2019 (Figure 2.8).

Commercial services trade growth fell deeper in APEC compared to the rest of the world (Table 2.2).

Table 2.2 Value and growth in commercial services, 2019 and 2020

	Value (in billion USD)		Growth (y-o-y, in %)	
	2019	2020	2019	2020
Commercial services exports				
World	6129	4910	2.1	-19.9
APEC	2321	1804	2.4	-22.3
Rest of the World (ROW)	3808	3106	1.9	-18.4
Commercial services imports				
World	5834	4671	2.6	-19.9
APEC	2295	1752	0.7	-23.7
ROW	3539	2920	3.8	-17.5
APEC's share of the World (in %)				
Commercial services exports	37.9	36.7		
Commercial services imports	39.3	37.5		

Source: WTO and APEC PSU staff calculations.

2.4 INVESTMENT TRENDS

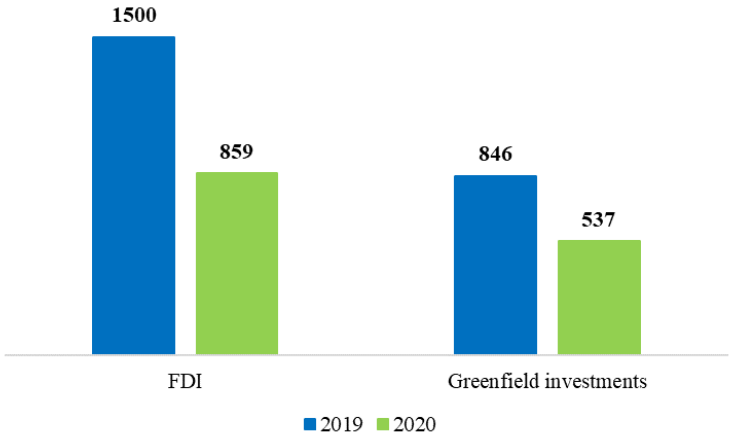
Preliminary figures on global foreign direct investment (FDI) reveal a 42.7 percent drop in 2020 to USD 859 billion, from USD 1.5 trillion in 2019 (Figure 2.9). Lower capital expenditures and intra-company loans coupled with lethargic activity in mergers and acquisitions amid a spate of equity divestments led to the collapse in global FDI.

It is also concerning that the value of announced greenfield investments shrunk by 36.5 percent to USD 537 billion in 2020, from USD 846 billion in 2019. The value of new projects was lower by 44 percent in the manufacturing sector and by 26 percent in the services sector over the same comparable period. [81] This development reflects investors' cautious stance on new projects amid heightened uncertainty. A pullback in investments could adversely affect economies since new projects are seen to add to employment and capital stock while also encouraging the transfer of technical skills and new technology.

[80] World Travel and Tourism Council, "Economic Impact Reports," accessed 25 April 2021, https://wttc.org/Research/Economic-Impact

[81] United Nations Conference on Trade and Development (UNCTAD), *Investment Trends Monitor*, no. 38 (January 2021), https://unctad.org/webflyer/global-investment-trend-monitor-no-38

Figure 2.9 Global FDI and greenfield investments (USD billion), 2019 and 2020



Note: Figures are preliminary.
Source: UNCTAD, *Investment Trends Monitor*, no. 38 (January 2021), https://unctad.org/webflyer/global-investment-trend-monitor-no-38

2.5 TRADE AND INVESTMENT MEASURES

Measures that restrict trade increased anew in the APEC region. The period mid-October 2019 to mid-October 2020 saw 125 trade-restrictive measures imposed by APEC economies compared to 100 such measures in the previous reporting period. Moreover, trade-restrictive measures outnumbered trade-facilitating measures, and this trend has persisted from mid-October 2017 to mid-October 2020 (Figure 2.10).

Figure 2.10 Trade and trade-related measures in APEC (actual number), 2017–2020

Source: WTO, "Overview of Developments in the International Trading Environment, Annual Report by the Director General," 30 November 2020.

The initiation and/or resumption of anti-dumping investigations dominated the measures that restricted trade during the period, followed by the initiation of countervailing and safeguard investigations (Table 2.3). APEC economies also imposed and/or increased import tariffs, export duties, levy rates and ad valorem taxes on some products during the

period while a few economies implemented export and import bans and quota requirements that served to restrict the entry of certain products.[82]

Table 2.3 Trade and trade-related measures in APEC, mid-October 2019 to mid-October 2020

	Number of Measures
Trade-restrictive measures	
Initiation/Resumption of anti-dumping investigation	75
Initiation of countervailing investigation	27
Initiation of safeguard investigation	11
Increase/Imposition of import tariffs, export duties, levy rates and taxes	8
Reduction/Elimination of tax rebates	0
Imposition of export/import requirements, quotas, bans, restrictions	4
Other trade-restrictive administrative measures	0
Sub-total: Trade-restrictive measures	***125***
Trade-facilitating measures	
Termination of anti-dumping investigation/duties	27
Termination of countervailing investigation/duties	7
Termination of safeguard investigation/duties	5
Reduction/elimination/suspension of export duties/import tariffs and taxes	23
Increase in tax rebates	1
Elimination of import/export ban, quantitative and other restrictions	0
Other trade-facilitating administrative measures	5
Sub-total: Trade-facilitating measures	***68***
Total: Trade and trade-related measures	**193**

Source: WTO, "Overview of Developments in the International Trading Environment, Annual Report by the Director General," 30 November 2020.

In terms of investment policy measures, APEC economies who are also G20 members[83] implemented eight such measures for the period mid-May 2020 to mid-October 2020, evenly spread into investment-facilitating and investment-restrictive measures (Table 2.4). Measures that lifted entry restrictions and quotas as well as reduced foreign exchange requirements have encouraged more investment flows into the region; however, this could have been offset by the new regulations and additional penalties that were also imposed during the period.[84]

[82] For a complete and detailed listing of trade and trade-related measures implemented during the period mid-October 2019 to mid-October 2020, see Annex 1: https://www.apec.org/-/media/Files/AboutUs/PolicySupportUnit/2021/Annex-1-Trade-and-Traderelated-MeasuresmidOct-2019-to-midOct-2020.docx

[83] Australia; Canada; China; Indonesia; Japan; Korea; Mexico; Russia; and the United States.

[84] For a complete and detailed listing of investment measures implemented during the period mid-May 2020 to mid-October 2020, see Annex 2: https://www.apec.org/-/media/Files/AboutUs/PolicySupportUnit/2021/Annex-2_Investment-Measures_mid-May-2020-to-mid-Oct-2020.docx

Table 2.4 Investment measures in APEC, mid-May 2020 to mid-October 2020

	Number of measures
Investment-facilitating measures	
Enters into bilateral investment agreements	**0**
Allows entry of foreign investments/lifts restrictions /removes quotas	**2**
Clarifies/Simplifies foreign investment/exchange regulations	**0**
Reduces foreign exchange reserve requirements	**2**
Sub-total: Investment-facilitating measures	***4***
Investment-restricting measures	
Prohibits entry of foreign investment	**0**
Imposes duties and other charges	**1**
Decreases foreign investment threshold	**1**
Introduces/adds new regulations on foreign investments and penalties	**2**
Sub-total: Investment-restricting measures	***4***
Total investment policy measures	**8**

Source: OECD and UNCTAD, "24th Report on G20 Investment Measures," 18 November 2020.

2.6 NEAR-TERM OUTLOOK, RISKS AND OPPORTUNITIES

At the onset of the pandemic, APEC economies closed borders and confined people to their homes to contain the spread of COVID-19. As governments learned effective ways to manage the pandemic, including sustained public health efforts as well as fiscal and monetary support while the population learned to adapt to new ways of earning a living, a gradual reopening followed, which boosted consumption. This is evident in the improvement in household and government consumption during the second half of 2020, reviving economic activity.

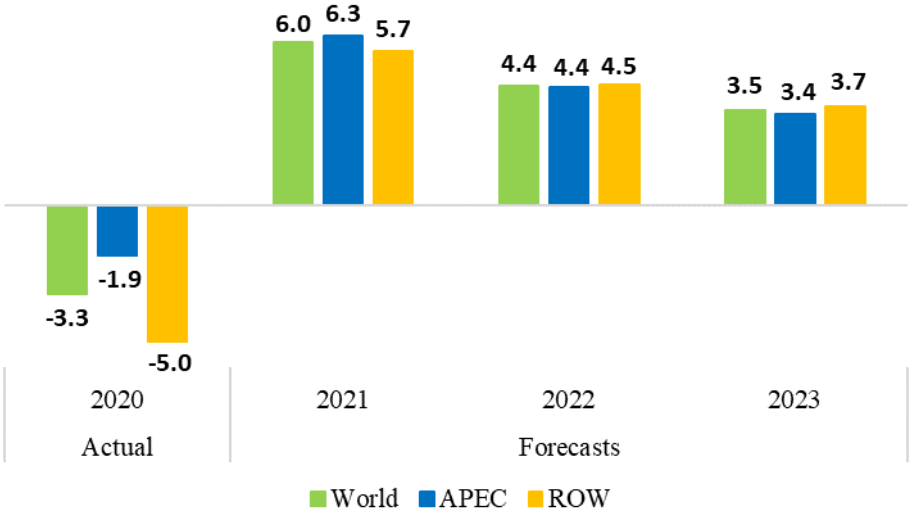
2.6.1 Consumption and vaccines boost APEC's recovery

Better growth outturns seen in the second half lifted GDP for the whole year of 2020, with APEC contracting softer, at 1.9 percent, than the May 2020 projection of -2.7 percent.

The near-term economic outlook points to higher APEC GDP growth of 6.3 percent in 2021, with the expected strong increase in domestic and global activity, as pent-up demand is unleashed following a year of subdued spending due largely to COVID-19 related movement restrictions (Figure 2.11). The development and production of multiple vaccines by the science community has generated optimism, boosting expectations of a more durable economic recovery.

Access to vaccines will help reduce transmission rates and slow down virus mutations, ensuring that COVID-19 is effectively managed everywhere. Once the virus is contained, economies could gradually reopen borders while the population will also become more confident to venture outside of their homes to work, dine or shop. Higher consumer confidence and economic reopening could also facilitate a gradual return to travel and tourism. Increased economic activity, within and across borders, in turn, would support a firmer recovery that enables all economies, especially those that are dependent on trade, tourism and specific products and markets, to revert to growth.

Figure 2.11 GDP growth (actual, 2020) and projections (2021–2023) (%)



Source: Economy sources; IMF, "World Economic Outlook: A Long and Difficult Ascent" (Washington, DC: IMF, October 2020); APEC PSU staff calculations.

The much-improved outlook also reflects continued government support, especially by economies with ample fiscal space, although economies are expected to shift to a more targeted approach to help those extremely affected and prop up viable businesses. Monetary policy accommodation could continue to complement fiscal stimulus measures. Even though average inflation for APEC could inch higher to 2.0 percent in 2021, it will remain manageable given negative output gaps and anchored inflation expectations. Thus, there is room for monetary policy to remain supportive of economic recovery, at least in the near term.

Growth is expected to be sustained in 2022 at 4.4 percent and in 2023 at 3.4 percent, but at a moderated pace, given setbacks in production and investment activity as well as losses in jobs and incomes, along with the expected gradual unwinding of massive fiscal stimulus packages. Scaled-down fiscal support is projected as governments balance between reining in the fiscal deficit incurred to counter the pandemic shock in 2020 and redirecting support toward the hardest-hit but employment-generating firms.

Healthier prospects for APEC GDP growth in the near term compared to the February 2021 Update of the ARTA[85] are in line with the improved forecasts for the global economy and the rest of the world (Table 2.5). It is also interesting to note that the current projection for APEC GDP growth is similar to May 2020, suggesting that the region as a whole was able to implement effective measures to counter the negative fallout from the COVID-19 to lift growth and begin the journey toward recovery.

[85] Rhea C. Hernando, "APEC Regional Trends Analysis: February 2021 Update – Uneven Recovery, Unequal Impact" (Singapore: APEC, February 2021), https://www.apec.org/Publications/2021/02/APEC-Regional-Trends-Analysis-February-2021-Update

Table 2.5 Comparing near-term GDP projections (%), 2020–2022

GDP Projections	as of ARTA May 2020	as of ARTA Update Feb 2021	as of ARTA May 2021*
2020			
World	-3.0	-3.5	-3.3
APEC	-2.7	-2.0	-1.9
ROW	-3.4	-5.4	-5.0
2021			
World	5.8	5.5	6.0
APEC	6.3	5.7	6.3
ROW	5.1	5.3	5.7
2022			
World		4.2	4.4
APEC		4.1	4.4
ROW		4.4	4.5
*Actual GDP growth for 2020; all other figures are GDP growth projections			

ROW=Rest of world.
Source: Economy sources; APEC, "APEC Regional Trends Analysis: What Goes Around Comes Around: Pivoting to a Circular Economy; Uncertainty Tests APEC Resilience amid COVID-19" (Singapore: APEC, May 2020), https://www.apec.org/Publications/2020/05/APEC-Regional-Trends-Analysis---What-Goes-Around-Comes-Around); Rhea C. Hernando, "APEC Regional Trends Analysis: February 2021 Update – Uneven Recovery, Unequal Impact" (Singapore: APEC, February 2021), https://www.apec.org/Publications/2021/02/APEC-Regional-Trends-Analysis-February-2021-Update; IMF, "World Economic Outlook: Managing Divergent Recoveries" (Washington, DC: IMF, April 2021); APEC PSU staff calculations.

2.6.2 Caution: Uncertainty ahead

The confluence of positive factors – such as the continued health measures to contain the spread of COVID-19 that has allowed economies to reopen gradually, the launch of vaccination programmes that are anticipated to boost health conditions and capacity, along with continued fiscal and monetary support – has resulted in improved growth prospects for the APEC region in the near term. However, considerable uncertainty surrounds the economic outlook, largely linked to how the pandemic is evolving.

Economies need to be on guard against virus mutations that could prolong the pandemic and delay the planned full reopening of businesses and borders. The race between variants and vaccines needs to be closely monitored to be able to respond swiftly to any surge in infections.

The resurgence of infections across the world, along with growing evidence of new virus variants, has given rise to worries about vaccine-resistant variants and, more pressing, how vaccine production can meet global demand. India houses the Serum Institute of India (SII), the world's largest vaccine manufacturer. In May 2021, its COVID-19 daily reported cases breached the 400,000 mark from around 70,000 cases in end-March. This surge in infections led India to temporarily restrict the SII's exports of the Oxford-AstraZeneca vaccine. As the SII was due to supply around half of the two billion doses needed by COVAX for distribution to 64 lower-income economies in 2021, this export restriction could result in a shortfall of 190 million doses by the end of June 2021.

The SII is looking at raising its production capacity to 100 million doses a month by July 2021 from 70 million doses, with USD 400 million worth of support extended by the government of India in April 2021. The SII is also planning to produce vaccines outside of India. In early May 2021, India and the United Kingdom (UK) signed a trade package that

contains a GBP 240 million investment by the SII to expand its vaccine business in the UK. These moves, together with the support expressed by the United States and other economies from the European Union for a temporary waiver of intellectual property protections on COVID-19 vaccines could greatly expand global production. However, in the immediate term, the world needs to come together to ensure equitable access to vaccines, especially by lower-income economies that rely heavily on donations from the COVAX facility. In parallel, health measures such as contact tracing, testing, isolating and treating patients have to be sustained alongside efforts to achieve widespread immunisation to slow down the virus transmission to manageable levels.

It is important to point out that APEC economies are expected to recover at different speeds and strengths due largely to differences in vaccine access and availability that in turn affect the pace and coverage of vaccination. The majority of APEC member economies could achieve widespread immunisation by mid-2022 onwards, with some anticipated to do so earlier, by the end of 2021. However, confirmed vaccine purchases vary across APEC members, resulting in a wide disparity in vaccination coverage, from as low as 40 percent of the population to as high as almost 800 percent of the population.[86]

Moreover, although subdued spending in 2020 means there are substantial savings that could be expended as soon as an opportunity arises, especially in tandem with the economic reopening, job losses and temporary business closures during the pandemic could also fuel cautious spending. Expectations of higher inflation in 2021, compounded by the increase in prices of home appliances and smartphones due to the global shortage in microchips could also suppress spending. Restrained consumption amid high uncertainty, coupled with start–stop economic reopening as economies navigate elevated risk of resurgence, could hold back economic activity and result in lower-than-projected growth.

The weakness in investments, which is projected to extend to 2021, could also affect growth. Greenfield investments are expected to remain at reduced levels as elevated uncertainty prevents investors from committing capital for new projects.

On the other hand, the World Trade Organization (WTO) expects the volume of world trade to expand by 8.0 percent in 2021 after declining by 5.3 percent in 2020, which is better than the earlier projection of a 9.2 percent contraction, reflecting the recovery in world trade in the second half of 2020 in line with the global economic rebound (Table 2.6). For 2022, world trade volume will continue to grow but at a slower pace of 4.0 percent due to the lingering effects of the pandemic.[87]

[86] Information on the projected vaccination schedule is obtained from The Economist Intelligence Unit (as of March 2021). Data on confirmed vaccine purchases are sourced from the Duke Global Health Innovation Centre, Duke University (as of January 2021).

[87] WTO, "World Trade Primed for Strong but Uneven Recovery after COVID-19 Pandemic Shock," press release, 31 March 2021, https://www.wto.org/english/news_e/pres21_e/pr876_e.htm

Table 2.6 World trade volume projections (%), October 2020 and March 2021

	as of October 2020	as of March 2021
2020	-9.2	-5.3*
2021	7.2	8.0
2022		4.0

*Actual growth; all other figures are projections.
Source: WTO.

However, similar to forecasts of economic growth, this projected expansion in trade in the near term masks disparities among economies. The WTO has cautioned that the unpredictable path of the pandemic, compounded by concerns regarding vaccine availability and slow vaccine rollout in low-income economies, together with the continued sluggishness in services trade, could reverse the momentum in trade.

The United Nations Conference on Trade and Development (UNCTAD) shares the same view, with its optimistic projections in trade growth clouded by continued uncertainty. In its May 2021 Global Trade Update,[88] the UNCTAD forecasts the value of global trade to expand by as much as 16 percent for the whole year 2021 following a 10 percent rebound in Q1 2021. Increased demand for COVID-related products, particularly healthcare products and home office and communication equipment, is behind the strong recovery. However, trade remains vulnerable to uncertainty arising from the uneven recovery across economies, changes in global supply chain operations that have given rise to container shortages and higher freight rates, a shift in consumption patterns (e.g., toward health and technology), as well as threats to macroeconomic stability as debt levels increased due to the pandemic.

Meanwhile, the International Monetary Fund (IMF) forecasts world trade volume to expand by as much as 8.4 percent in 2021 and 6.5 percent in 2022.[89] Unresolved trade and technology tensions as well as issues affecting the multilateral trading system will continue to play a role in trade performance going forward.

2.7 CONCLUDING REMARKS: RECOVERY FOR ALL

The pandemic has exposed underlying divisions and fragilities that pose significant challenges to governments and societies. The realisations, when translated into lessons, could help economies recover together. This means that economic recovery need to not only aim for higher or more sustainable growth, but it should be geared toward more inclusive growth, where all segments of society are able to participate fully and share equally the fruits of their contribution.

While the strategies adopted by individual economies may vary depending on their level of economic, financial and technological development, there are four key imperatives to ensure that no one is left behind.

First is to contain the pandemic. Second would be to relearn old lessons for a new future: implement structural reforms to improve social outcomes and boost human capital development, while ensuring that everyone benefits from digital transformation. Third is to protect the environment. As seen during this pandemic, diseases could grind an entire

[88] UNCTAD, "Global Trade Trends and Forecasts" (Geneva, Switzerland: UNCTAD-Division on International Trade and Commodities, May 2021).
[89] IMF, "World Economic Outlook: Managing Divergent Recoveries" (Washington, DC: IMF, April 2021).

economy to a halt, reducing productivity, hampering economic growth, and making everyone worse off. COVID-19 is a call to action: protect the environment, save lives and livelihoods. Finally, there is a need to leverage regional cooperation to realise inclusive recovery, beginning with the implementation of the Putrajaya Vision 2040.

2.7.1 Contain COVID-19

The priority for APEC economies is to contain the spread of COVID-19 and its variants. This requires a three-pronged, mutually reinforcing approach to be effective.

First, relentless efforts at contact tracing, testing, isolating and treating patients should be exerted in tandem with limiting gatherings, social distancing and wearing of masks for as long as the threat of the virus and its mutations exists and widespread immunisation is yet to be achieved.

Second, continuing government support, recognising that some economies have limited fiscal space while debt sustainability is increasingly becoming a concern. Fiscal support thus needs to be targeted at affected households and workers so that they could stay home, helping to control the spread of COVID-19. In parallel, assistance to businesses in the form of loans and subsidies has to be calibrated according to the stage of the pandemic and the viability of firms, with proper assessment of the employment they could generate to support economic recovery. At the same time, monetary policy measures aimed at providing credit also need to continue along with careful monitoring of inflationary pressures to be able to adjust policy settings as needed.

Third, significantly increasing public health expenditures, to boost hospital capacity and augment inventory of pandemic-related equipment; pay higher wages and comprehensive benefits for health workers; and allocate resources for vaccines. Investing in vaccines is a sensible decision since it could save economies from health, economic and social repercussions, the negative effects of which could last well into the long term if left unaddressed.

2.7.2 Relearn old lessons toward a new future

COVID-19 has exposed deep economic, social and digital divisions within and across economies, as well as environmental challenges, that existed even before the pandemic. It has brought to the fore persistent inadequacies in social safety nets that have implications on fiscal space and buffers; unreliable digital infrastructure and insufficient digital skills; and unsustainable practices that harm the environment and give rise to diseases. COVID-19 has also made it urgent to craft or update pandemic management plans to remain relevant and ready to use in any health crisis.

‘Building back better’ should go beyond the current buzz. Economies will have different priorities going forward, but it is imperative to relearn old lessons to invest in a balanced, sustainable and inclusive future. Economies should implement structural reforms that improve social outcomes, boost human capital development and facilitate a shift toward digitalisation even as the focus on environmental protection remains. Such reforms could help economies attain a durable and inclusive economic recovery.

An important part of addressing the ill effects of any crisis is to extend social assistance to those affected. This necessitates healthy fiscal balances so that governments remain ready to continue to support households and businesses as the crisis persists.

Beyond the pandemic, investing in social and human capital development is vital. This requires increasing public spending on health, education and other social programmes to

maximise the population's productivity and potential, enabling all segments of society to participate in economic activity. The declining trend in employment, exacerbated by jobs lost due to the pandemic, needs to be addressed to prevent long-term unemployment. In particular, resources should be allocated for the retraining and reskilling/upskilling the workforce.

Governments must also act swiftly to reverse COVID-19 induced human capital losses by providing higher funding for education. Policy responses should take a holistic perspective that encourages children and youth to go back to school while also ensuring that there are sufficient teachers, classrooms and educational tools and gadgets for effective learning. For example, better compensation is needed to encourage entry and retention of skilled educators. Infrastructure also needs to be enhanced, for example, by building more classrooms to avoid overcrowding, or improving health and learning facilities for better wellbeing of students. Economies could also explore providing incentives in the form of cash and/or groceries to households that have school-age children. Strengthening the education system's technological capacity in terms of access and related infrastructure could also be on the agenda. This would help teachers and students access updated learning materials online, and enable them to shift to online schooling when the need arises, such as during a pandemic.

For many years, there have been discussions and debates on automation and the digital era transforming the way we live and do business. Whether we are prepared or not, digital transformation is upon us, accelerated by the COVID-19 pandemic.

While some economies have adapted well to digital platforms to work, learn and conduct transactions on a daily basis, ably supported by reliable, fast and secure internet connections, other economies have found that they are ill-equipped to handle the rapid technological changes. Digitalisation would only expand as technological adoption becomes a necessary component of everyday life, both at home and in the workplace. This sends a strong signal for economies to improve digital infrastructure; widen access to the internet and to digital gadgets by making smartphones and internet charges affordable while also ensuring that online services are efficient and safe; and upskilling/reskilling the population with digital skills, particularly women, the elderly, and even MSMEs so that they can fully participate in the economy.

2.7.3 Protect the environment

Another important lesson from the pandemic is that damage to the environment could trigger an avalanche of disasters and diseases. Unsustainable practices such as deforestation and pollution have led to habitat loss for wildlife, resulting in increased contact between humans and animals, giving rise to health risks from zoonotic diseases such as COVID-19. Climate conditions, specifically rising temperatures, aggravate these risks by spreading diseases and releasing harmful viruses that have been locked in the permafrost. Improper waste management also creates breeding grounds for diseases and infections.[90]

There is a myriad of ways that economies can adopt practices to improve environmental conditions. Depending on an economy's development priority and available resources, economies can sequence environmental policies or apply a combination of policies to mitigate the harmful effects of climate change.

For example, applying carbon taxes could rein in the use of coal and other environmentally costly fuels. Revenues from these carbon taxes could be used to extend compensation to

[90] APEC, "APEC Regional Trends Analysis: What Goes Around Comes Around."

the poor who are affected (either a significant proportion of their consumption is energy or they are employed in energy-intensive industries). Economies could also work with investment companies and the private sector to ramp up efforts on green infrastructure by promoting green investments, for example, in solar energy, wind power, pollution control, waste reduction and treatment, geothermal energy, and organics (Box 2.1).

Economies could also provide subsidies for research in green technologies, funded in part by carbon taxes, to understand what is appropriate and feasible for the economy given domestic conditions and limited resources. A proper assessment of green investments could ensure efficient use of limited resources while ensuring that environmental targets are achievable.

Box 2.1 What are green investments?

The Global Sustainable Investment Alliance (GSIA) defines sustainable investing as an investment approach that integrates environmental, social and governance (ESG) factors in portfolio selection and management. The approach uses a combination of strategies to select sectors, companies, projects and practices to invest in, manage or include in the portfolio.

Sustainable investing includes, for example, investing in assets that exhibit strong ESG performance relative to industry peers or in projects deemed to impact positively on the environment and sustainability such as clean energy or green technology.

The GSIA tracks global sustainable investments in the world's major markets, five of which are APEC economies, namely, Australia; Canada; Japan; New Zealand; and the United States (the other market is Europe). Based on its latest trends report, aggregate sustainable investments in these markets went up by 34 percent in 2018 to USD 30.7 trillion from the level in 2016. [91]

Definitions of green investments vary across sectors, as shown in a 2012 Organisation for Economic Co-operation and Development (OECD) paper. [92] A macroeconomic perspective alludes to three main components of green investments: low-emission energy supply, energy efficiency, and carbon capture and sequestration. [93] International trade offers a narrower definition of 'green goods and services', relating to 'a matter of what you produce, not how you produce it or how use of the good affects the environment relative to substitutes for that good'. [94] In terms of 'green FDI', the OECD has proposed a two-part definition that includes FDI in ESG sectors and FDI in environmental-damage mitigation processes such as the use of energy-efficient technologies. [95]

[91] Global Sustainable Investment Alliance (GSIA), "Global Sustainable Investment Review" (GSIA, 2018), http://www.gsi-alliance.org/trends-report-2018/
[92] G. Inderst, C. Kaminker, and F. Stewart, "Defining and Measuring Green Investments: Implications for Institutional Investors' Asset Allocations" (OECD Working Papers on Finance, Insurance and Private Pensions no. 24, OECD Publishing, 2012), https://www.oecd.org/environment/WP_24_Defining_and_Measuring_Green_Investments.pdf
[93] L. Eyraud, A. Wane, Ch. Zhang, and B. Clements, "Who's Going Green and Why? Trends and Determinants of Green Investment" (IMF Working Paper WP/11/296, 2011), https://www.imf.org/external/pubs/ft/wp/2011/wp11296.pdf
[94] S. Golub, C. Kauffmann, and P. Yeres, "Defining and Measuring Green FDI: An Exploratory Review of Existing Work and Evidence" (OECD Working Papers on International Investment no. 2011/2, OECD Investment Division, 2011), https://www.oecd.org/daf/inv/internationalinvestmentagreements/WP-2011_2.pdf
[95] Inderst, Kaminker, and Stewart, "Defining and Measuring Green Investments."

The same OECD paper also draws attention to the different motivations for green investing. The motivations range from financial (based on return, risk and diversification criteria) to extra-financial (including ecological, scientific, religious, ethical and political considerations). The reputation of the investor/company is also a motivating factor as well as compliance to domestic law and regulations, international conventions, and voluntary codes such as industry, disclosure or good governance codes.

In September 2019, the Bank for International Settlements (BIS)[96] responded to the growing demand for climate-friendly investments from financial institutions with the launch of its first US-denominated green bonds. Green bonds are referred to as fixed income securities, the proceeds of which are used to finance new or existing eligible green projects, including projects that combat pollution, climate change or the depletion of biodiversity and natural resources.[97] The successful uptake of the green bond was followed by the launch of the Euro-denominated green bond fund for central banks in January 2021. The two BIS green funds will manage an estimated USD 2.0 billion worth of investments in high-quality bonds that comply with international green standards and finance environmentally friendly projects.[98]

Given the different definitions and motivations associated with green investments, it could be that having a standard, widely accepted definition of green investments is still a long way off, especially considering that this is a relatively new topic amid evolving conditions and priorities. What remains important is that there is a general understanding of the core elements of green investments, so as to be able to measure properly and monitor the impact of global investments in green assets and projects. This entails open and continuing discussions on green investments among investment companies, financial regulators, environmental organisations and other stakeholders.

2.7.4 Leverage regional cooperation for inclusive recovery

More than at any other time, the APEC region has to come together to do the work that needs to be done for the good of all. Exports of vaccines, treatments as well as related equipment and medical supplies have to flow from one border to another, freely and quickly. Sharing of COVID-19 related expertise, particularly on effective containment measures, contact tracing and other health protocols as well as on establishing travel corridors, has to continue to facilitate a gradual but steady reopening of borders. Start–stop strategies in economic reopening could be avoided if health measures everywhere are effective.

Individual APEC economies are at different stages of the pandemic as well as various phases of economic and technological development. Nonetheless, it could be helpful to implement a framework that considers these differences while ensuring that economic recovery is not only durable but also inclusive, leaving no one behind. The journey toward recovery for all could begin with the implementation of the Putrajaya Vision 2040.[99] This new APEC vision, launched during the APEC Economic Leaders' Meeting in November 2020 in Kuala Lumpur, charts the future of the region, taking off from APEC's strength of

[96] The Bank for International Settlements (BIS) acts as a bank for central banks, supporting monetary and financial stability objectives through international cooperation.
[97] T. Ehlers and F. Packer, "Green Bond Finance and Certification," BIS Quarterly Review, September 2017.
[98] BIS, "BIS Launches Second Green Bond Fund for Central Banks," press release, 25 January 2021, https://www.bis.org/press/p210125.htm
[99] APEC, "2020 Leaders' Declaration: APEC Putrajaya Vision 2040," accessed 8 May 2021, https://www.apec.org/Meeting-Papers/Leaders-Declarations/2020/2020_aelm/Annex-A

interconnectedness to fortify trade and investment as well as promote innovation and digitalisation to achieve growth that is resilient and inclusive.

APEC has multisectoral fora on trade, standards, intellectual property, digital economy, health, life sciences, business mobility, human resources, tourism and transportation, among others. Collaborative efforts within APEC could ensure that COVID-19 is effectively managed everywhere, ensuring access to vaccines, treatments and medical supplies for a healthier population and leading to a steady reopening of businesses and borders toward an economic recovery that is not only durable and sustainable, but especially, inclusive.