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REGIONAL ECONOMIC OUTLOOK

ASIA AND PACIFIC

Sailing into Headwinds

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World Economic and Financial Surveys

Regional Economic Outlook

Asia and Pacific

Sailing into Headwinds

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The *Regional Economic Outlook: Asia and Pacific* is published annually in the fall to review developments in the Asia-Pacific region. Both projections and policy considerations are those of the IMF staff and do not necessarily represent the views of the IMF, its Executive Board, or IMF Management.

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Definitions

In this *Regional Economic Outlook: Asia and Pacific*, the following groupings are employed:

- "ASEAN" refers to Brunei Darussalam, Cambodia, Indonesia, Lao P.D.R., Malaysia, Myanmar, the Philippines, Singapore, Thailand, and Vietnam, unless otherwise specified.

- "ASEAN-5" refers to Indonesia, Malaysia, the Philippines, Singapore, and Thailand.

- "Advanced Asia" refers to Australia, Hong Kong SAR, Japan, Korea, New Zealand, Singapore, and Taiwan Province of China.

- "Emerging Asia" refers to China, India, Indonesia, Malaysia, the Philippines, Thailand, and Vietnam.

- "South Asia" refers to Bangladesh, Bhutan, India, Maldives, Nepal, and Sri Lanka.

- "Asia" refers to ASEAN, East Asia, Advanced Asia, South Asia, and other Asian economies.

- "EU" refers to the European Union.

The following abbreviation is used:

ASEAN   Association of Southeast Asian Nations

The following conventions are used:

- In figures and tables, shaded areas show IMF projections.

- "Basis points" refer to hundredths of 1 percentage point (for example, 25 basis points are equivalent to ¼ of 1 percentage point).

As used in this report, the term "country" does not in all cases refer to a territorial entity that is a state as understood by international law and practice. As used here, the term also covers some territorial entities that are not states but for which statistical data are maintained on a separate and independent basis.

Executive Summary

The economies of Asia and Pacific have seen a strong rebound in 2021 and the first half of 2022 but are starting to show signs of a slowdown. While the region largely shrugged off a wave of Omicron infections in the first quarter, the pace of the recovery was somewhat slower than expected in the second quarter as growth of the Chinese economy came to a near standstill. After remaining relatively subdued last year, inflation has increased in 2022—and is now above central bank targets in most of the region. The outlook for Asia and Pacific faces three major headwinds. First, global financial conditions are tightening as major central banks persevere to tame inflation, with yields rising and exchange rates depreciating across Asia. Second, Russia's war in Ukraine is dragging out and provoking a marked slowdown in Europe that will hurt external demand for Asia's exports. Third, the Chinese economy is undergoing a sharp and uncharacteristic slowdown, with growth in 2022 forecast to be the second lowest since 1977.

Growth in Asia and Pacific is expected to decelerate to 4.0 percent in 2022, before rising to 4.3 percent in 2023. These forecasts have been revised down by 0.9 percentage point and 0.8 percentage point, respectively, since the April 2022 *World Economic Outlook*. Most of the region's economies will slow further in 2023. Inflation is expected to peak in late 2022, because of falling global commodity prices and less accommodative macroeconomic policies. Risks to the outlook stem from the intensification of the three headwinds. In this challenging environment, appropriate policies will vary across the region according to available policy space, the degree of economic slack, and the persistence of shocks. Gradual fiscal consolidation will be required to stabilize public debt in a well-articulated medium-term framework, while protecting the most vulnerable through targeted and temporary measures. To rein in rising inflation, monetary policy will need to continue to tighten (except in China and Japan).

This *Regional Economic Outlook* also draws on two studies that emphasize the medium-term challenges and risks facing the region. Chapter 2 documents the large medium-term output losses expected in Asian emerging market and developing economies, driven by lower investment, productivity growth, and labor force participation. The chapter provides new empirical evidence on the role of high corporate debt in amplifying investment losses after a recession, a channel which is likely to be especially relevant in Asia given high corporate leverage. Furthermore, lower human capital accumulation due to school closures and a decline in fertility may add to long-term scarring. A renewed structural reforms push is essential to boost potential output, with the analysis in the chapter highlighting the role of digitalization in boosting productivity and building resilience.

Chapter 3 focuses on the growing risk of geoeconomic fragmentation and its implications for Asia. Early signs of trade and financial fragmentation have been visible for several years, with trade policy uncertainty spiking and countries imposing ever more trade restrictions. The war in Ukraine has further raised geopolitical tensions, bringing to the fore risks that trade will increasingly be driven by geopolitical rather than economic considerations. Empirical analysis presented in the chapter highlights the adverse short-term macroeconomic outcomes associated with higher trade policy uncertainty. Furthermore, model simulations show that a sharper fragmentation scenario where the world divides into separate trading blocs would carry large, permanent output losses, highlighting the need for collaborative solutions.

1. Outlook for Asia and Pacific: Sailing into Headwinds

After the strong rebound of 6.5 percent posted in 2021, growth in Asia and Pacific is expected to moderate to 4.0 percent in 2022 amid an uncertain global environment and rise to 4.3 percent in 2023. Inflation has risen above most central bank targets, but is expected to peak in late 2022. As the effects of the pandemic wane, the region faces new headwinds from global financial tightening and an expected slowdown of external demand. While Asia remains a relative bright spot in an increasingly lethargic global economy, it is expected to expand at a rate that is well below the average rate of 5½ percent seen over the preceding two decades. Policy support is gradually being withdrawn as inflation rises and idle capacity is utilized, but monetary policy should be ready to tighten faster if the rise in core inflation turns out to be more persistent. The region's rising public debt levels call for continued fiscal consolidation, so interventions to mitigate global food and energy shocks should be well targeted, temporary, and budget neutral. Structural reforms are needed to boost growth and mitigate the scarring that is expected from the pandemic, especially making up for lost schooling through investments in education and training, promoting diversification, addressing the debt overhang from the pandemic, and harnessing digitalization. Strong multilateralism—including through international organizations, the Group of Twenty and regional processes—will be needed to mitigate geoeconomic fragmentation and deliver much needed progress on climate change commitments.

Asia's recovery from the COVID-19 pandemic continues in the face of multiple headwinds. But countries in the large and diverse region are on different tacks in their management of the pandemic and their outlook for growth and inflation.

Recent Developments

Growth during the beginning of 2022 was propelled by postpandemic recovery. Most countries have shifted toward treating COVID-19 as an endemic disease, and mobility indicators in those countries returned to prepandemic levels in late 2021 and have remained there, despite waves of infections. As countries emerge from the pandemic's disruptions, closures, and hardships, output gaps are shrinking and have already closed entirely in many of the region's advanced economies. The region (except for China) largely brushed off a wave of Omicron infections, with minimal delays to reopening plans. This allowed for continued recovery of the contact-intensive service sector that has been particularly strong in Association of Southeast Asian Nations (ASEAN) countries. Most countries have reopened their borders to foreign visitors, and tourist arrivals are on the rise. Domestic consumption also recovered and industrial production performed well amid strong demand for manufacturing exports. These factors led to growth in the first quarter that was generally stronger than expected in the April 2022 *World Economic Outlook* (Figure 1.1), particularly among ASEAN emerging markets and Taiwan Province of China.

However, the continued pickup in growth envisioned in the second quarter was somewhat weaker than expected. In China, the aggressive pandemic containment policy known as zero-COVID has met localized waves of infections with strict municipal and regional lockdowns, reducing demand and disrupting manufacturing and supply chains. These factors reduced China's growth to a sequential contraction in the second quarter and to just 0.4 percentage point year over year. The large contraction of Chinese import volumes has weakened momentum in neighboring Japan and Korea, but exports from the rest of Asia performed well in the first half of 2022, supported

Figure 1.1. REO 14: Growth Surprises
(Percentage points, April 2022 WEO forecast errors)
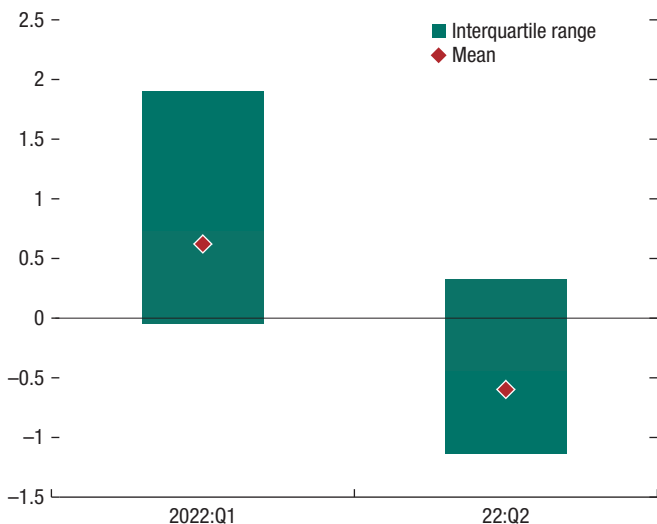
Sources: Haver Analytics; and IMF, April 2022 *World Economic Outlook*.
Note: REO 14 includes Australia, China, Hong Kong SAR, India, Indonesia, Japan, Korea, Malaysia, New Zealand, the Philippines, Singapore, Taiwan Province of China, Thailand, and Vietnam. WEO = *World Economic Outlook*.

Figure 1.2. Trade Volumes
(Percent, year-over-year change)
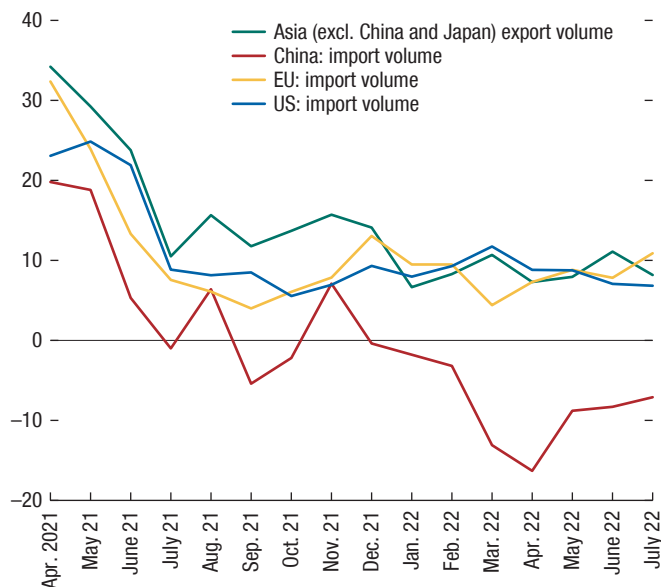
Sources: Haver Analytics; and IMF staff calculations.
Note: Asia includes Hong Kong SAR, India, Indonesia, Korea, Malaysia, the Philippines, Singapore, Taiwan Province of China, Thailand, and Vietnam. EU = European Union; US = United States.

Figure 1.3. Manufacturing and Services PMI
(Diffusion index, 50 = no change)
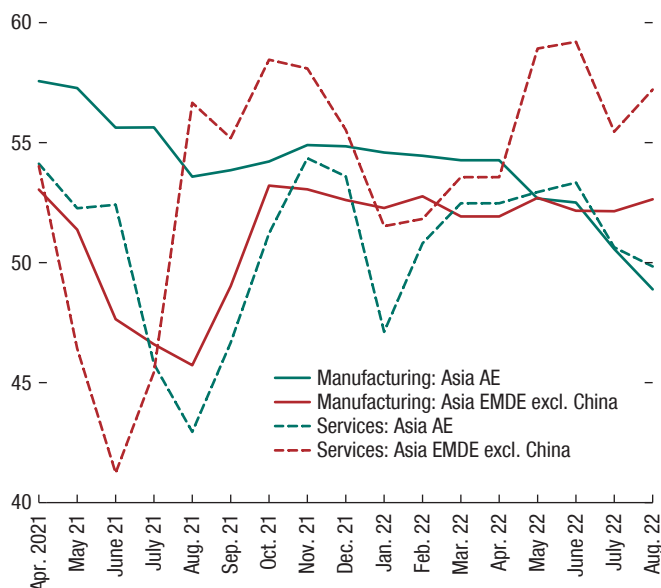
Sources: Haver Analytics; and IMF staff calculations.
Note: AE = advanced economy; EMDE = emerging market and developing economy; PMI = purchasing managers' index.

by sustained demand from Europe and the United States (Figure 1.2). As such, the impact of Russia's invasion of Ukraine recorded in the second quarter of 2022 has been felt in the region mostly through softening consumer demand because of higher commodity prices but not from weak external demand, as was initially feared (Kammer and others 2022). However, in recent months, there have been early signs that the war's global impact has begun to weaken orders for Asia's exports. Third-quarter manufacturing purchasing managers indexes are softening (Figure 1.3), and investment appears to be weakening in Asia as the regional and global economic outlook is becoming more uncertain (Chapter 3).

The Return of Inflation

Global inflation has repeatedly surprised on the upside—surging to multidecade highs—and is proving to be more persistent than initially anticipated (October 2022 *World Economic Outlook*, Chapter 1). In response, central banks in major advanced economies have embarked on

Figure 1.4. Headline Inflation
(Percentage points, deviations from central bank targets)
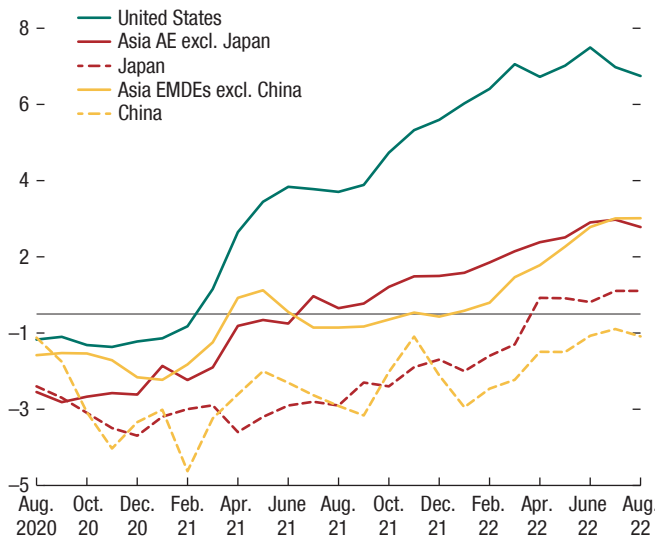
Sources: Haver Analytics; and IMF staff calculations.
Note: Asia AE excluding Japan includes Australia, Hong Kong SAR, Korea, Macau, New Zealand, Singapore, and Taiwan Province of China. Asia EMDEs excluding China includes India, Indonesia, Malaysia, the Philippines, Thailand, and Vietnam. For countries without an inflation target (Hong Kong SAR, Macau, Singapore, Taiwan Province of China), deviations are taken from the long-term average over 2010–19. AE = advanced economy; EMDE = emerging market and developing economy.

Figure 1.5. Contributions to Headline Inflation
(Percent)
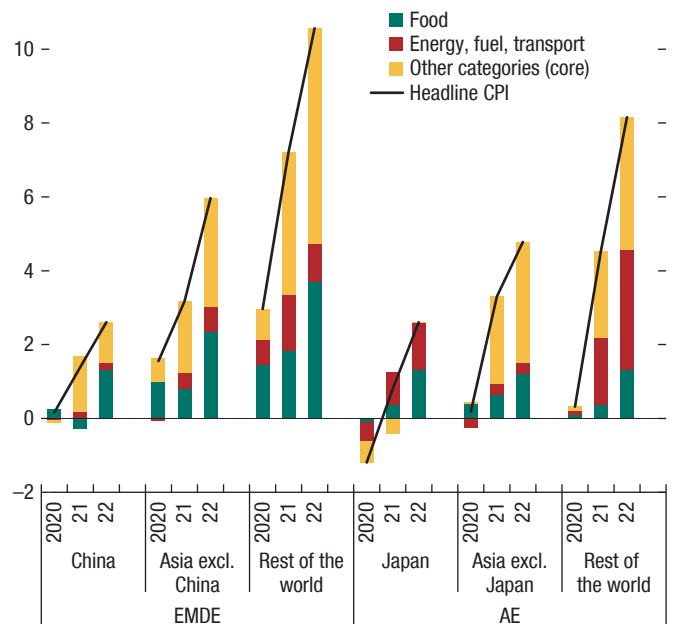
Sources: Haver Analytics; and IMF staff calculations.
Note: Core refers to CPI basket excluding food and energy, fuel, and transport. The exact categories used in the decomposition of these categories varies across countries. AE Asia includes AUS, HKG, KOR, MAC, NZL, SGP, and TWN. EMDE Asia includes IDN, IND, MYS, PHL, and THA. Other AE include BEL, CAN, CHE, DEU, FRA, GBR, ITA, NLD, SWE, and USA. Other EMDE include BRA, CHL, COL, HUN, MEX, and ZAF. Country abbreviations are International Organization for Standardization country codes. AE = advanced economy; CPI = consumer price index; EMDE = emerging market and developing economy.

tightening monetary policy to cool demand and tame inflation.

Although global inflation picked up sharply after the first quarter of 2021, it rose more modestly in Asia (Figure 1.4). Two important factors kept inflation lower in Asia than in other regions during 2021 (Carrière-Swallow, Deb, and Jiménez 2021). First, food prices in Asian emerging market and developing economies rose less than in other regions because of specific factors such as a solid harvest in India in 2021, a hog population rebound from the 2019 swine flu epidemic in China, and contained increases in rice prices (Asia's preferred staple food). Second, Asian emerging market and developing economies have been relatively more insulated from shocks to global oil prices, given their extensive use of fuel subsidies and administered price policies, and lower inflation in Asia's advanced economies largely reflects a more muted increase in energy prices than in other advanced economies,

particularly Europe, where gas prices have surged more than in other regions.

The sharp bout of volatility in global commodity markets after Russia's invasion of Ukraine in February put additional pressure on Asia's headline inflation in the first half of 2022. But the increase in headline inflation observed in 2021 and 2022 goes beyond food and energy price surges and reflects higher core inflation, which excludes volatile food and fuel categories (Figure 1.5).[1]

Core inflation has increased in both advanced and emerging Asia—though less than in the rest of the world—and now exceeds central bank targets in most Asian economies (Figure 1.6). In Asian emerging market and developing economies,

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[1]This chapter uses "core inflation" as shorthand for headline inflation excluding food and energy categories. National definitions of core inflation vary across countries.

Figure 1.6. Drivers of Core Inflation
(Percent, deviation from target; rolling window estimation)
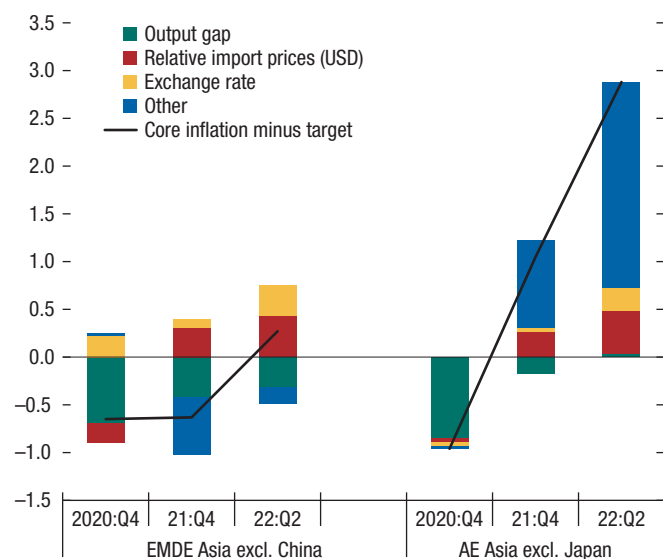
Source: IMF staff calculations.
Note: AE Asia includes Australia, Korea, New Zealand, and Singapore. EMDE Asia includes India, Indonesia, Malaysia, the Philippines, and Thailand. Decomposition is based on country-by-country Phillips curve estimations using data since early 1990s (see Annex 1). The figure shows simple average of contributions within country groups. For countries without an inflation target (Malaysia and Singapore), deviations are taken from the long-term average over 2010–19. AE = advanced economy, EMDE = emerging market and developing economy; USD = US dollar.

core inflation has increased from 2.3 percent in 2021 to 3.3 percent in July 2022. The increase reflects the pass-through of higher import prices—including the delayed transmission of the spike in global shipping costs that peaked in November 2021 (Carrière-Swallow and others 2022a)—to those of other goods and depreciating exchange rates, while still-wide output gaps have helped to contain pressure on core inflation.[2] In Asian advanced economies, core inflation has increased from 2.4 percent in 2021 to 3.5 percent in July 2022, reflecting both higher import prices and strong domestic demand in some countries (Australia, New Zealand), as well as a large role for unexplained factors. But in China and Japan—which together make up more than half of regional output—recent inflation has been much lower. In both, weak domestic demand and large output gaps have kept core inflation below central bank targets, with food and energy prices pushing

[2]See Annex 1 for technical details on the Phillips curve estimations that underpin Figure 1.6.

headline inflation above the Bank of Japan's 2 percent target (Figure 1.5).

Global and Regional Headwinds to Growth

The outlook for global economic activity, including notably for Asia and Pacific, reflects the impact of three important headwinds: global financial tightening, the war in Ukraine, and the sharp and uncharacteristic slowdown in China.

Global Financial Tightening

In response to surging inflation over the past year, the Federal Reserve and the European Central Bank have moved to tighten monetary policy, putting an end to a decade of quantitative easing. As a result of this shift in the policy stance, global financial conditions have tightened (October 2022 *Global Financial Stability Report*, Chapter 1), presenting a headwind for Asia's outlook. The yield on benchmark 10-year US Treasuries has risen by 275 basis points, and the US dollar has strengthened markedly against most global currencies.

Following the rise in US Treasury yields, sovereign yields have also risen across Asia in 2022 (Figure 1.7). Exceptions are China and Japan, where yields remain near the minimums reached during the pandemic, as monetary accommodation—including continued use of yield curve control in Japan—has kept financial conditions loose. Among other Asian advanced economies, local currency yields have risen by about 225 basis points on average and are generally about 100 basis points above their 2015–19 average levels. For most Asian emerging market and developing economies, local currency yields have also risen in line with US Treasuries, but they generally remain close to or below their historical averages. Financial conditions have also remained favorable for emerging market and developing economy Asia's issuers of US dollar–denominated sovereign and corporate bonds, where spreads have generally

Figure 1.7. Sovereign Borrowing Costs

1. Local Currency Yields
(Percent, 10-year sovereign yields)

2. Spreads on USD-Denominated Bonds
(Percent)
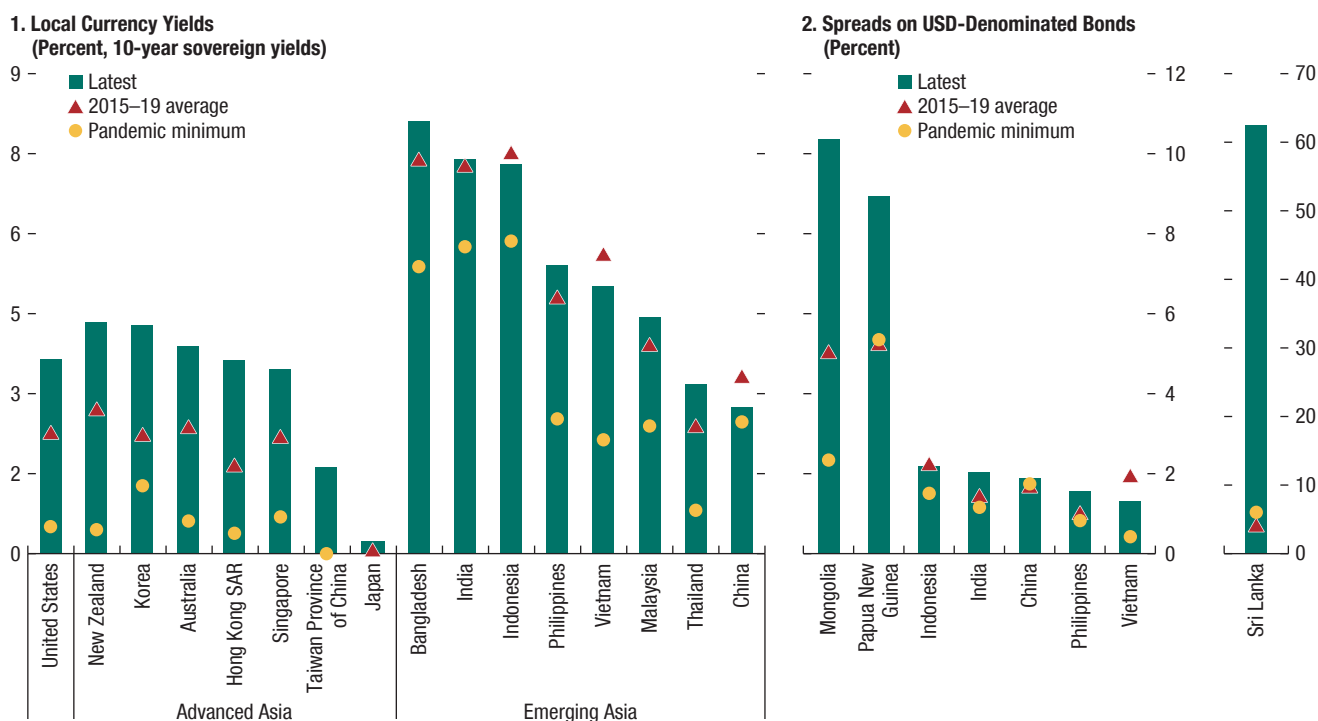
Sources: Bloomberg Finance L.P.; and IMF staff calculations.

risen by less than 50 basis points, particularly for debt issued by large firms.

Financial tightening in the region has been more pronounced in riskier asset classes. Yields have risen further for frontier market economies such as Mongolia, Papua New Guinea, and Sri Lanka; Sri Lanka's bonds trading at distressed levels after having defaulted in June for the first time in its history. Yields have also risen sharply on bonds issued by riskier firms in the region—including firms linked to the Chinese real estate sector such as property developers—and those with high leverage (Figure 1.8).

As the Federal Reserve tightens its policy rate, Asian exchange rates have broadly depreciated against the US dollar in 2022. The magnitude of each country's exchange rate depreciation is correlated with the change they have faced in the commodity terms of trade and has also been affected by interest rate differentials in some cases (Figure 1.9). Given the global nature of

Figure 1.8. JPM Asia Credit Index Corporate Z-Spreads
(Basis points)
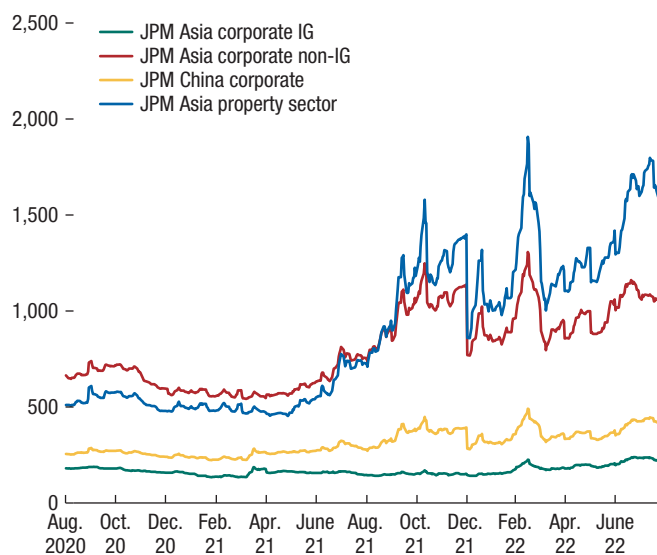
Sources: Thomson Reuters Datastream; and IMF staff calculations.
Note: IG = investment grade; JPM = J.P. Morgan.

Figure 1.9. Exchange Rate and Commodity Terms of Trade
(Percent, year-to-date change)
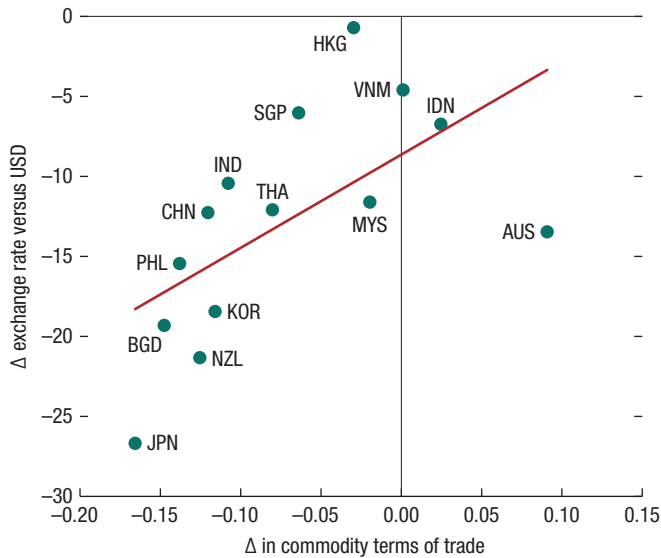
Sources: Bloomberg L.P.; Gruss and Kebhaj (2019); and IMF staff calculations.
Note: Country abbreviations are International Organization for Standardization country codes. USD = US dollar.

Figure 1.10. Contributions to Nominal Effective Exchange Rate Changes in 2022
(Percent)
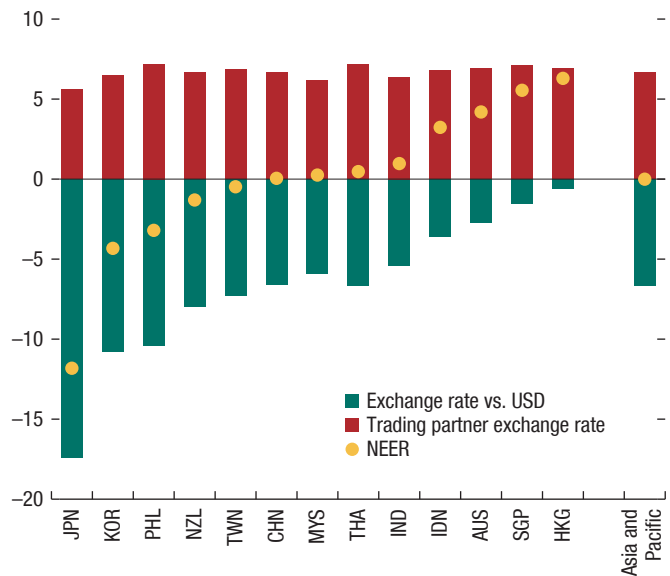
Sources: Information Notice System; and IMF staff calculations.
Note: Year-to-date percent change using monthly average through August. Country abbreviations are International Organization for Standardization country codes. NEER = nominal effective exchange rate; USD = US dollar.

the US dollar's strength, Asia's trading partners and competitors have tended to depreciate by a similar amount, limiting movements in nominal effective exchange rates (Figure 1.10). The largest depreciation among major currencies has been to the Japanese yen (–18 percent through end-August), which reflects the Bank of Japan breaking out of step with a highly synchronized global rate hike cycle in the absence of a persistent increase in domestic inflation.

There have also been significant portfolio outflows from Asia so far this year. At a regional level, the scale of the outflows from Asian emerging markets is comparable to previous episodes such as the 2013 taper tantrum and the 2020 onset of the COVID-19 pandemic (Figure 1.11). However, strong outflow pressures have been focused on a handful of economies (India, Taiwan Province of China), while the majority saw relatively moderate net outflows (Indonesia, Korea, Malaysia). Recent data point to outflows having stabilized and partially reversed in some cases (India), while others have experienced strong net inflows (Thailand)—that is, broad-based or sustained capital account pressures have not emerged yet

Figure 1.11. Cumulative Portfolio Outflows from EM Asia Akin to Previous Episodes of Stress
(Percent of IIP liabilities)
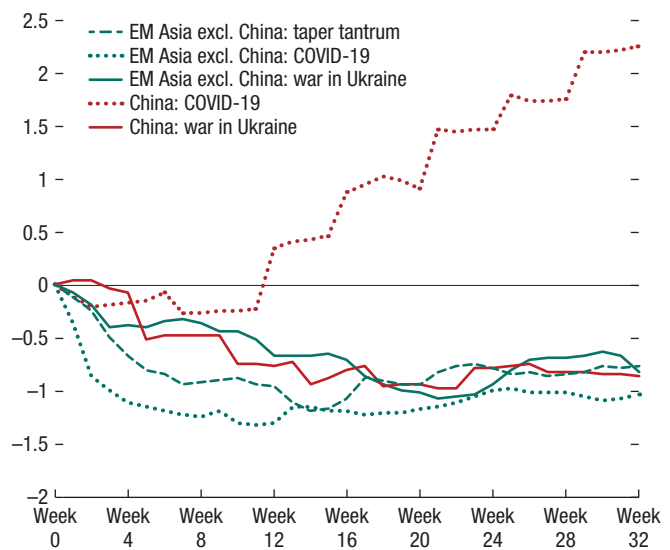
Sources: Haver Analytics; Institute of International Finance; International Financial Statistics; and IMF staff calculations.
Note: EM Asia includes India, Indonesia, the Philippines, Sri Lanka, and Thailand. EM = emerging market; IIP = international investment position.

across the region. In the countries facing the most volatility in net portfolio flows, these seem predominantly driven by equity instead of debt flows (India, Thailand). These flows and the differentiation of equity prices have responded to changes in growth expectations.

War in Ukraine

The second headwind affecting Asia's outlook is the war in Ukraine, which has several implications for the region. The invasion provoked a generalized spike in global commodity prices that lasted for several months, causing shocks to Asia's terms of trade and current accounts, and propelling inflation higher. The rise in crude oil, natural gas, coal, and agricultural commodity prices in the first half of 2022 has been a negative terms-of-trade shock for most of the region and placed strain on the external accounts of large net importers in ASEAN (Philippines, Thailand), South Asia (Bhutan, India, Maldives, Nepal, Sri Lanka), and the Pacific islands (Kiribati, Tonga, Vanuatu). With their large vulnerable populations and strong dependence on imported commodities, India, Nepal, and the Philippines have been hit hard by the spike in world food and fuel prices and shortages of fertilizer. But for the region's net commodity exporters (Australia, Brunei Darussalam, Indonesia, Malaysia, New Zealand), it has provided a windfall from higher export revenue and bolstered private consumption.

The war has also led to a significant downward revision to the outlook for growth in the euro area for 2023—from 2.3 percent in the April 2022 *World Economic Outlook* to 0.5 percent—amid gas and energy shortages. This will reduce external demand for Asian exports.

Finally, trade uncertainty has risen since the invasion, and risks of geoeconomic fragmentation have become more salient (Chapter 3).

Figure 1.12. Revisions to China's Growth
(Percent)
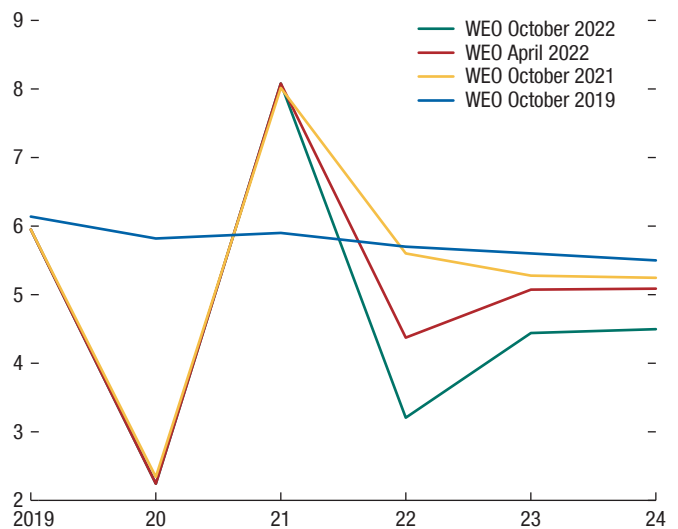
Source: IMF, World Economic Outlook database.
Note: WEO = *World Economic Outlook*.

The Sharp and Uncharacteristic Slowdown in China

The third headwind facing the outlook for Asia originates within the region. The outlook for China's growth in 2022 has been revised down substantially in successive editions of the *World Economic Outlook*, from 5.7 percent in October 2019 to 3.2 percent in October 2022 (Figure 1.12). This projected growth rate would be the second lowest since 1977. The government's strict adherence to the zero-COVID policy has led to repeated lockdowns of major cities, which has had an important incidence on mobility and activity.

At the same time, the turmoil in China's property sector has deepened, as property developers are facing exacerbated liquidity stress. With a growing number of property developers defaulting on their debt over the past year, the sector's access to market financing has become increasingly challenging. Liquidity conditions are further impaired by tighter control over the sale of units before construction (previously an important source of working capital) and has diminished developers' ability to execute new projects (Figure 1.13). Risks to the banking system

Figure 1.13. China: Real Estate Indicators
(Percent, 12-month moving sum year-over-year change)
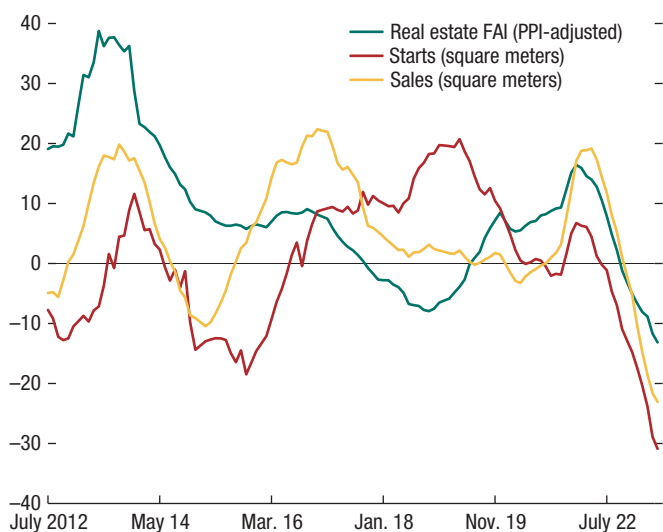
Sources: CEIC Data Limited; and IMF staff calculations.
Note: FAI = fixed asset investment; PPI = producer price index.

from the real estate sector are rising because of substantial exposure.

Both factors—extended lockdowns and the worsening property market crisis—have spread to other parts of the economy. The slowdown in China has now become broad-based across sectors, with activity indicators underperforming market expectations, reflecting a sluggish recovery in consumption and investment amid very low consumer confidence and stress in the property sector. Internal weakness is compounded by slowing external demand.

China's growth slowdown has important implications for regional supply chains because it is the main export market for many countries and an important source of imported inputs. Box 1.1 quantifies these spillovers for the region. It finds that impacts on growth are significant when the fall in Chinese activity is caused by shocks to supply and are more pronounced for countries that have stronger trade links, particularly Asia's advanced economies. Shocks from slowdowns to Chinese consumption or to investment in the real estate sector provoke similar-size spillovers, and these are more front-loaded, with impacts on regional growth that peak within the first year.

The Outlook for Asia and Pacific

The headwinds are contributing to a marked slowdown in global economic activity, including in Asia and Pacific, but the region continues to perform better than the rest of the world (Table 1.1).

After a very strong recovery of 5.7 percent in 2021, growth in the United States is expected to grind to a stall pace of 1.6 percent in 2022 and 1.0 percent in 2023, and a growing share of the world's economies are expected to be in a growth slowdown or outright contraction. Altogether, the global economy is expected to slow from 6.0 percent in 2021 to 3.2 percent in 2022 and 2.7 percent in 2023—its slowest pace in more than 20 years, excluding the global financial crisis and the COVID-19 pandemic.

Reflecting this, forecasts for GDP growth in Asia and Pacific, compared with projections in the April *World Economic Outlook*, are being downgraded by 0.9 percentage point in 2022—reflecting an envisioned slowdown in the second half—and by 0.8 percentage point in 2023.

However, there is considerable heterogeneity across Asia. Growth in the region's advanced economies remains above potential at 2.3 percent in 2022 and is expected to fall to 2.0 percent in 2023 and to 1.9 percent in 2024. By contrast, Asia's emerging market and developing economies will see a dip in growth to 4.4 percent in 2022—largely reflecting the slowdown in China—and will rise to 4.9 percent in 2023 and 5.2 percent in 2024.

China, Japan, and South Asia

After posting near-zero growth in the second quarter, growth in China will recover modestly in the second half of the year to reach 3.2 percent in 2022 and is expected to rise to 4.4 percent in 2023 as COVID-19 restrictions are gradually loosened and a moderate pickup of public investment is deployed. In Japan, growth is expected to remain at 1.7 percent in 2022 before slowing to 1.6

percent in 2023, weighed down by weak external demand. Consumption and private investment are expected to continue to recover, partly reflecting pent-up demand.

The strong recovery in South Asia is expected to take a breather, with India's economy expanding at 6.8 percent in 2022, revised down by 1.4 percentage points since the April 2022 *World Economic Outlook* because of a weaker-than-expected recovery in the second quarter and subdued external demand. A further slowdown of India's growth to 6.1 percent is expected in 2023 as external demand and a tightening in monetary and financial conditions weigh on growth. The war in Ukraine has dampened Bangladesh's robust recovery from the pandemic and put pressure on the balance of payments. The authorities have preemptively requested an IMF-supported program that will bolster the external position, and access to the IMF's new Resilience and Sustainability Trust to meet their large climate financing need, both of which will strengthen their ability to deal with future shocks. The economic crisis in Sri Lanka is expected to lead to a contraction in growth of 8.7 percent in 2022, before recovering gradually, contingent on its implementation of reforms and it reaching agreement with creditors on a debt restructuring consistent with the parameters of an IMF-supported Extended Fund Facility program. The import controls and rationing of essential goods and services, including fuel, is placing a heavy burden on the vulnerable, with further risks of social unrest. Maldives is recovering from the pandemic, with growth expected to reach 8.7 percent in 2022 supported by a strong resumption in tourism before moderating to 6.1 percent in 2023 reflecting global trends. However, vulnerabilities remain high from elevated public debt and declining international reserves, reflecting fiscal spending pressures and elevated food and fuel prices.

Association of Southeast Asian Nations

The recovery in the ASEAN is expected to be strong in 2022, because of robust consumption, services, and exports in the first half of the year, supported by high vaccination rates, border reopenings, and the gradual removal of pandemic restrictions. Growth is projected at slightly more than 5 percent in Cambodia, Indonesia, and Malaysia, and 6.5 percent in the Philippines. Vietnam is benefiting additionally from trade diversion from China and is expected to grow at 7 percent (Dabla-Norris, Díez, and Magistretti 2022). After a precipitous fall in output of almost 18 percent in 2021 amid a political and humanitarian crisis, Myanmar is expected to begin a moderate recovery, with growth of 2 percent in 2022 and rising to 3.3 percent in 2023. The outlook for Lao P.D.R. remains challenging, given elevated debt vulnerabilities and low reserves, resulting in foreign exchange shortages that hurt the poor and hamper the recovery.

The growth momentum is expected to moderate somewhat in 2023 for Indonesia, Malaysia, the Philippines, Singapore, and Vietnam. This reflects weaker external demand, supply chain disruptions, a pivot to macro policy normalization to contain price pressures and manage risks, and tighter financial conditions. Cambodia and Thailand will instead expand faster as the recovery in foreign tourism is now expected to be more vigorous.

Pacific Island Countries

Among the Pacific island countries, growth is expected to rise from 0.8 percent in 2022 to 4.2 percent in 2023.[3] Driving this rebound are tourism-based economies benefiting from a reopening of borders and easing of travel restrictions. However, economic recovery has proceeded slower than anticipated at the time of the April 2022 *World Economic Outlook*, with higher global fuel and food prices impacting the

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[3]The Pacific island countries' regional growth rate is calculated using a simple average across the 12 economies in the group.

Figure 1.14. Projected Inflation Revised Up Again
(Percent, year-over-year)
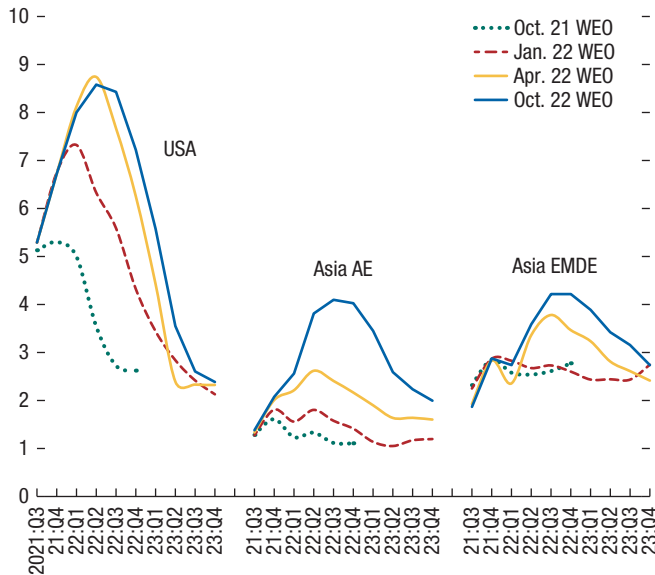
Source: IMF, World Economic Outlook database.
Note: Weighted average. Asia AEs include Australia, Hong Kong SAR, Japan, Korea, New Zealand, Singapore, and Taiwan Province of China. Asia EMDEs include China, India, Indonesia, Malaysia, Philippines, Thailand, and Vietnam. AE = advanced economy; EMDE = emerging market and developing economy; USA = United States; WEO = *World Economic Outlook.*

Figure 1.15. Medium-Term GDP Loss: Difference in Cumulative Growth Rates (2020–25)
(Projection relative to pre-COVID forecast, percentage points)
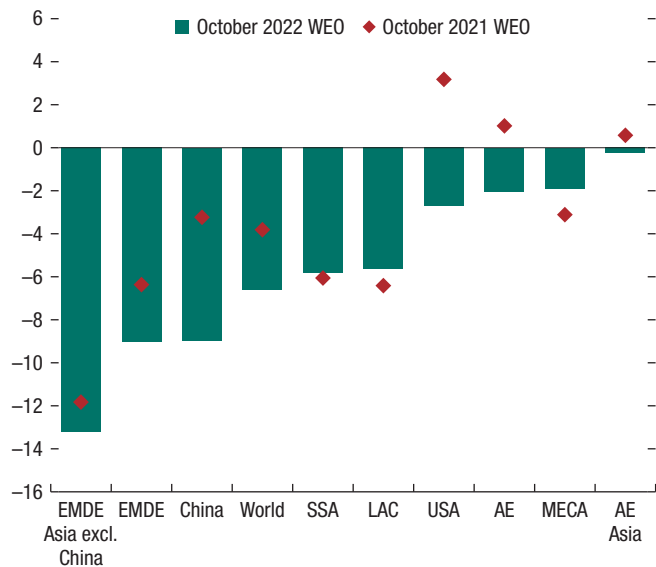
Sources: IMF, World Economic Outlook database; and IMF staff calculations.
Note: AE = advanced economy; EMDE = emerging market and developing economy; LAC = Latin American and Caribbean; MECA = Middle East and Central Asia; SSA = sub-Saharan Africa; USA = United States; WEO = *World Economic Outlook.*

import-dependent region through higher inflation and weaker current account balances.

An Uncertain Inflation Outlook

The outlook for inflation in the region also reflects another substantial upward revision with respect to previous *World Economic Outlooks* (Figure 1.14), though the size of the expected rise in inflation is more modest than has been seen in other regions. Inflation in Asia is expected to peak at an average of 4.2 percent in the third quarter of 2022—the same timing as other regions who saw earlier and larger price spikes. Inflation is expected to decelerate in 2023, reflecting tighter monetary policy and a reversal in the external drivers that led to the rise in 2022. Lower prices for crude oil and food commodities on global markets, and rapidly falling shipping costs should contribute to lower import price inflation in the second half of 2022 and 2023. However, the continued strength of the recovery and lower potential output from

pandemic scarring (see below) will continue to close output gaps, and strong domestic demand could put pressure on core inflation.

Prospects for the Medium Term—Greater Scarring from the Pandemic

The downgrade to the pace of Asia's postpandemic recovery means that IMF staff forecasts now expect Asia to suffer from more severe scarring than had been forecast at the time of the October 2021 *Regional Economic Outlook: Asia and Pacific*, with long-term output levels expected to remain substantially below those projected before the pandemic. The region's level of output is now expected to be more than 2 percent lower in 2025 than was forecast a year ago, when emerging market and developing economy Asia was already expected to experience the most scarring in the world (Figure 1.15). Notably, the degree of

scarring in China is now seen to be comparable to emerging market and developing economies outside Asia, whereas it had previously been seen as relatively more resilient in earlier forecasts.

The severe scarring expected in Asia partly reflects the region's high debt levels, which hamper the recovery in investment. The analysis in Chapter 2 concludes that lower rates of capital accumulation account for about one-quarter of Asia's expected medium-term output losses. Another one-quarter of the loss reflects lower employment, as population growth has slowed in advanced economies because of stalled migration, and labor force participation is expected to remain below prepandemic levels in emerging market and developing economies. In the longer term, these losses could build further as lower fertility affects population growth and the impact of school closures is felt in the human capital stock.

Risks to the Outlook Are to the Downside

The key risks to the outlook involve the intensification of the headwinds. In the short term, an intensification of the war in Ukraine could drive up commodity prices and make the slowdown in demand from the United States and European Union deeper and more persistent than expected. Likewise, the materialization of risks from China's property sector could deepen its slowdown and stretch it into 2023. Even though financial conditions have tightened in the baseline, they remain favorable, and there are risks of further repricing, particularly if the policy decisions of the Federal Reserve and the European Central Bank deviate from current market expectations, or if risk appetite worsens.

To quantify the impact from the joint materialization of these risks, a downside scenario was constructed using a version of the IMF's Flexible System of Global Models that is commonly used for scenario analysis of the Group of Twenty economies, but which has been tailored to provide additional granularity for Asia (Andrle

and others 2015). The model includes rich cross-country trade and financial links, and incorporates the typical fiscal and monetary policy responses in each country. The scenario includes three related layers of shocks:

- *Deeper slowdown in China.* The scenario assumes that a negative shock to investment reduces China's growth by 1 percentage point in 2023, producing a second consecutive year of growth below 3½ percent.

- *Global slowdown.* The global slowdown is assumed to become more pronounced, with weaker consumption and investment reducing growth in the United States and euro area by 1 percentage point in 2023. While this shock is smaller than one standard deviation of each country's growth data, it takes US and euro area growth essentially to zero in 2023 and reduces global growth to below 2 percent, which most observers denote a global recession.

- *Tighter financial conditions.* The scenario assumes that the US term premium returns to its historical average (+200 basis points) and that this leads to higher term premiums in Asia, according to historical correlations. Such a tightening could reflect unexpected market reactions following the reversion of 10 years of quantitative easing by major central banks, which coincided with very favorable pricing of duration and risk assets. Sovereign and corporate spreads in Asia (excluding China and Japan) also rise by an additional 150 basis points as risk assets are repriced.

The simulated impact of this scenario on the outlook for Asian growth is illustrated in Figure 1.16. At a regional level, growth is lower in 2023 by about 1 percentage point, falling to a level of about 3½ percent. While the shocks are calibrated to be transitory, they have a persistent impact on regional growth that decays through 2025 and thus leads to a permanent fall in the level of output that worsens scarring, compared with the baseline.

Figure 1.16. Impact of a Global Downside Scenario on Growth in Asia and Pacific

1. Impact on Real Growth
(Percentage points)

2. Impact on Real GDP Growth
(Percentage points)
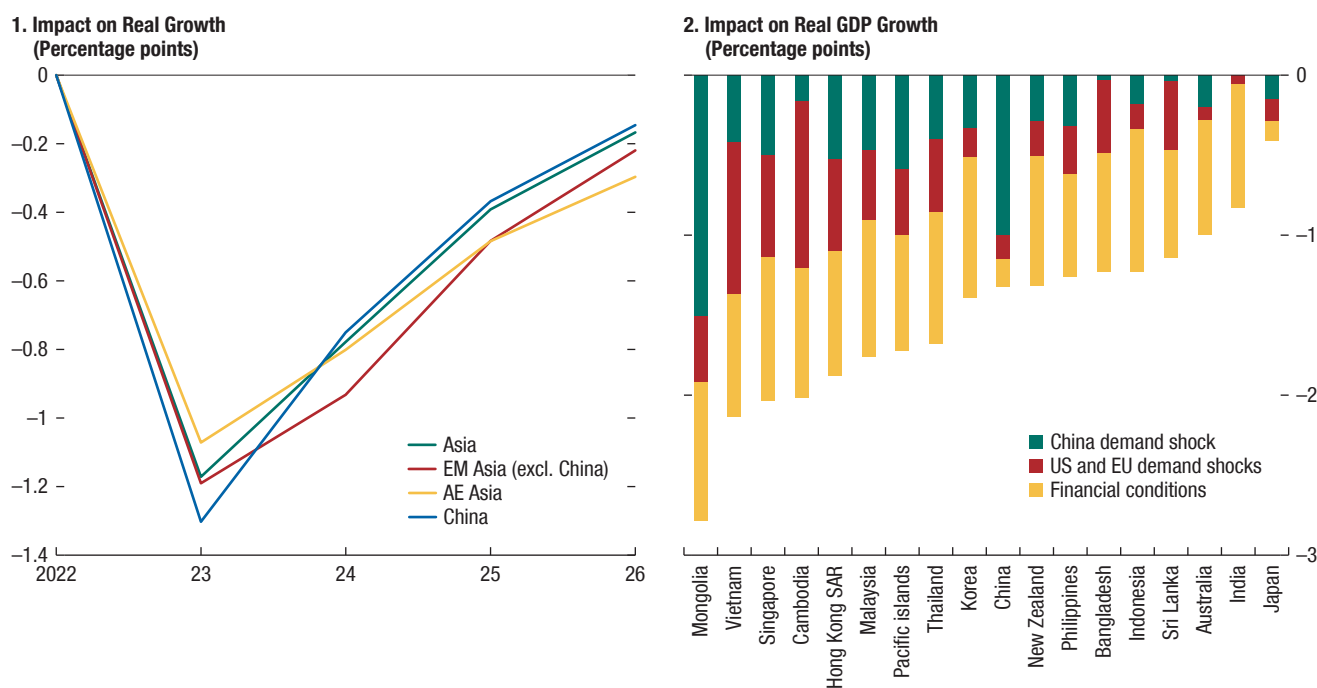
Source: IMF staff calculations based on simulations using the Asia and Pacific module of the Flexible System of Global Models described in Andrle and others (2015).
Note: AE = advanced economy; EM = emerging market.

The fall in growth is more pronounced and more persistent in the region's emerging markets, particularly in the ASEAN economies, where the impact of lower external demand has a larger incidence than in the advanced economies. The shock's impact through financial conditions is large and more uniform, reducing growth in most countries by a bit less than 1 percentage point. But even in this severe global scenario, all Asian economies maintain positive growth in 2023.

Beyond the Conjunctural Downside Risks

In the medium to long term, risks stem from geoeconomic fragmentation of the global economy into regional blocks. This is expected to have substantial implications for global value chains and the efficient allocation of capital, as cross-border investment and trade patterns are increasingly disrupted. As a region that has benefited greatly from globalization and trade openness over the past 30 years, Asia and Pacific has a lot to lose in

such a scenario (Chapter 3). To avoid these losses and support long-term growth, the region must continue to prioritize maintaining open and stable trading relationships.

Recent natural disasters such as extreme heatwaves and droughts in China and South Asia underscore the human and economic impacts of climate change. These costs are expected to build over time without appropriate policies to support the transition to carbon neutrality (October 2022 *World Economic Outlook*, Chapter 3).

Policies

Asia's authorities are setting policy under heightened global uncertainty and face difficult trade-offs among supporting growth, lowering inflation, and managing financial stability risks. Most Asian central banks have continued to use multiple tools to respond to global shocks, considering the trade-offs across policy objectives that occur because of their economies'

Figure 1.17. Fiscal and Monetary Policy in Asia
(Percent)
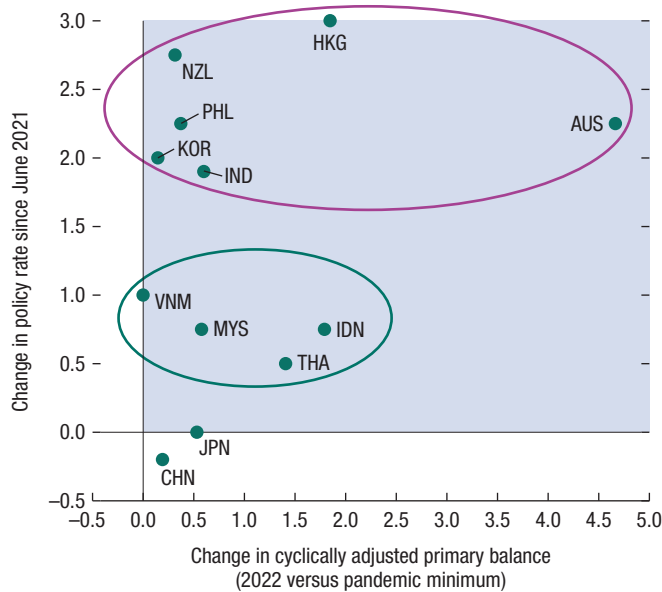
Sources: Haver Analytics; and IMF, World Economic Outlook database.
Note: Country abbreviations are International Organization for Standardization country codes.

Figure 1.18. Core Inflation and Output Gaps
(Percent)
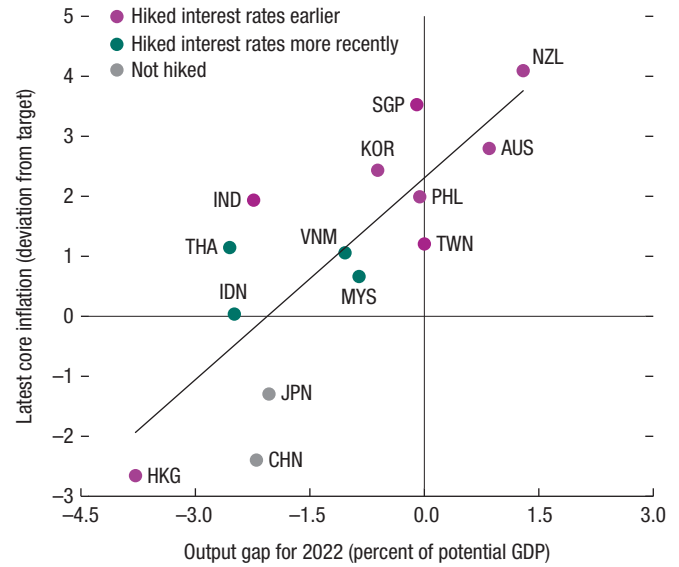
Source: Haver Analytics; IMF, World Economic Outlook database; and IMF staff calculations.
Note: For inflation targeting countries, deviation from target or midpoint of the inflation target range is used. For countries without an inflation target (Hong Kong SAR, Malaysia, Singapore, Taiwan Province of China), deviations are taken from the long-term average over 2010–19. Solid line is from fitted linear regression. Country abbreviations are International Organization for Standardization country codes.

characteristics (Finger and López Murphy 2019, Adrian and others 2022).

Withdrawal of policy support in the postpandemic phase is proceeding across most of the region (Figure 1.17, shaded quadrant), but countries are placing different burdens of adjustment on monetary and fiscal policies. Approaches reflect substantial heterogeneity in the inflation and growth outlooks across the region, and the degree of space available for each instrument within the limits of policy frameworks.

Monetary Policy

For economies where output gaps remain large and core inflation was slower to surpass central bank targets or long-term averages (Figure 1.18)—including Indonesia, Malaysia, Thailand, and Vietnam—monetary policy has started tightening more recently (Figure 1.17, green oval). And in the case of China and Japan, rates have remained accommodative. But for the Asian economies where output gaps are closing or have already done so, and where inflation has risen well above central

bank targets (including most advanced economies) monetary policy rates were hiked earlier (purple oval). Central banks in Korea and New Zealand were the first to start tightening monetary policy in the region, leading what has since become an increasingly synchronized global hiking cycle, and they have broadly matched the Federal Reserve's pace. Australia initiated its hiking cycle in the second quarter of 2022 and has since implemented a steep rate path to curb excess demand amid accelerating and increasingly broad-based inflation. Among the emerging economies in this group, the Philippines has hiked rates by 225 basis points and India by 190 basis points since June 2021.

In economies that have fixed exchange rate regimes, such as Hong Kong Special Administrative Region, policy has been appropriately tightened in lockstep with the Federal Reserve, and should continue doing so as dollar rates continue to rise, with fiscal policy calibrated to supporting a balanced recovery.

Figure 1.19 Professional Forecasts of Inflation in Asia
(Deviation from target, year-over-year)
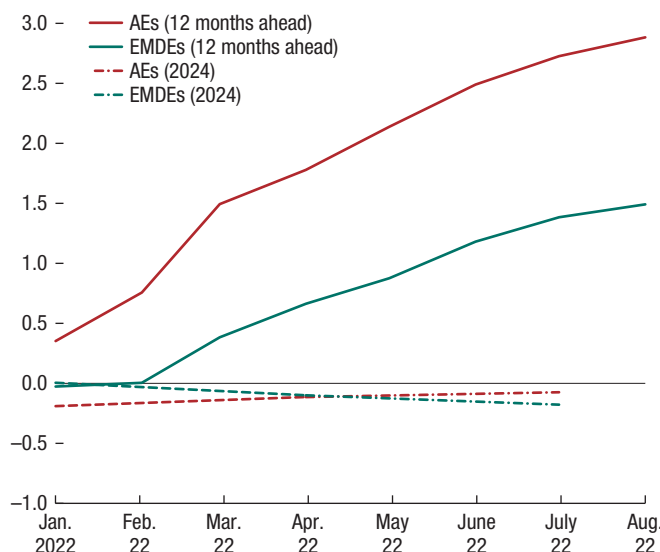
Source: Consensus Forecasts; and IMF staff calculations.
Note: Asia AE includes Australia, Japan, Korea, New Zealand, Singapore, and Taiwan Province of China. Asia EMDE includes China, India, Indonesia, Malaysia, the Philippines, Thailand, and Vietnam. AE = advanced economy; EMDE = emerging market and developing economy.

Figure 1.20 Estimated Persistence of Core Inflation
(Coefficient on autoregressive term in Phillips curve; deviation from global mean)
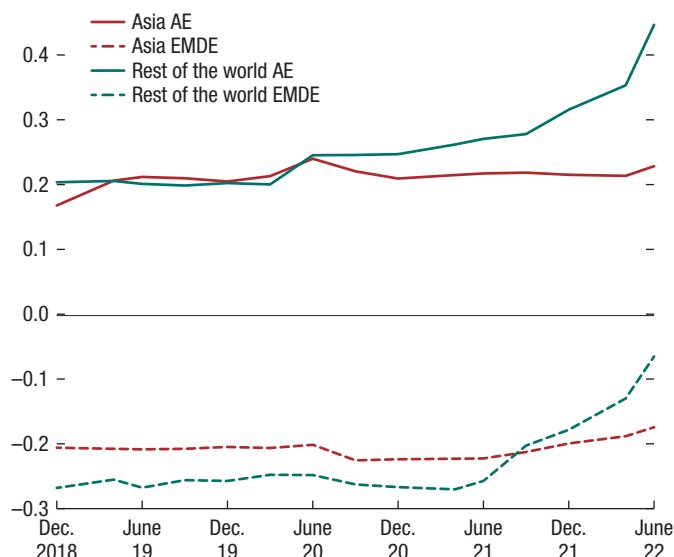
Source: IMF staff calculations.
Note: Asia AE include AUS, JPN, KOR, HKG, NZL, SGP, and TWN. Asia EMDE include CHN, IDN, IND, MYS, PHL, and THA. Rest of the world AE include CAN, GBR, DEU, FRA, CHE, and USA. Rest of the world EMDE include BRA, COL, CHL, CZE, PER, MEX, HUN, POL, and ZAF. Country abbreviations are International Organization for Standardization country codes. AE = advanced economy; EMDE = emerging market and developing economy.

Singapore, with an exchange-rate-based monetary policy framework, was the first to initiate monetary policy normalization in the ASEAN and has tightened four times so far in 2022 in response to rising inflation because of domestic and external pressures.

Markets expect the size of the hiking cycle in Asia to be relatively modest. For Asia's emerging markets, expected hikes are much less than what has been observed in other regions, such as Latin America and eastern Europe, where central banks have or are expected to hike rates between 500 and 1,000 basis points. An implication is that currently negative real interest rates in Asia are expected to rise only gradually to positive territory but not to become contractionary.

The modest degree of monetary tightening needed to tame inflation is predicated on a few important assumptions. First is that the contribution of global oil and food prices will turn negative in late 2022 as commodity markets and supply chains normalize. There are early signs that this is taking place, with crude oil and many agricultural commodities trading below the prices

that prevailed prior to the invasion of Ukraine. Second is the limited magnitude of second-round effects—that is, the pass-through of volatile prices to wages and core inflation—which tends to be the case when inflation expectations remain well anchored to central bank targets.

Could second-round effects materialize and lead to entrenched high inflation in Asia? Available indicators suggest that inflation expectations in the region are well anchored to central bank targets. While professional forecasters expect inflation to remain well above central bank targets in most Asian countries at a one-year horizon, they expect inflation to return to central bank targets by 2024 (Figure 1.19). But the region has important data gaps in the collection of surveys about the inflation expectations of households and firms, which makes it difficult to make conclusive assessments about anchoring in some countries. Given the importance of monitoring inflation expectations for guiding policy, central banks should urgently address these data gaps

Figure 1.21 Response of Asian Core Inflation to Global Shocks
(Percentage points)
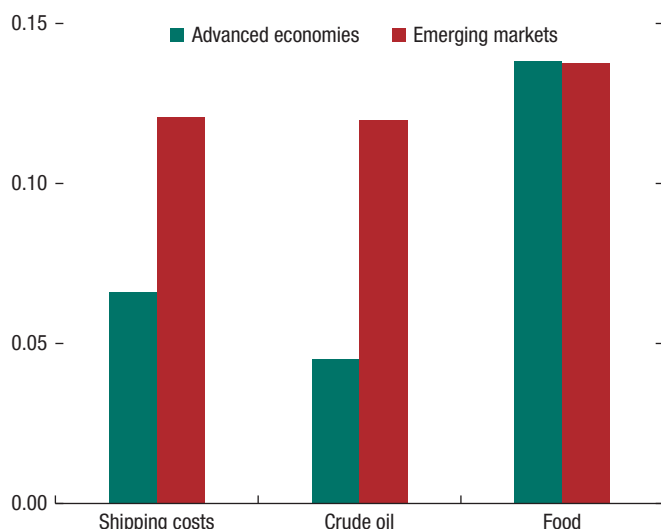
Sources: Haver Analytics; and IMF staff calculations.
Note: Estimations documented in Carrière-Swallow and others (2022b). Bars show the maximum response of core inflation (year-over-year) following a one standard deviation increase in each global variable.

Figure 1.22. Impact of a Global Inflation Expectations Shock Scenario on Asia
(Percentage points)

1. Impact on Real Growth

2. Impact on Headline Inflation

3. Impact on Policy Interest Rate
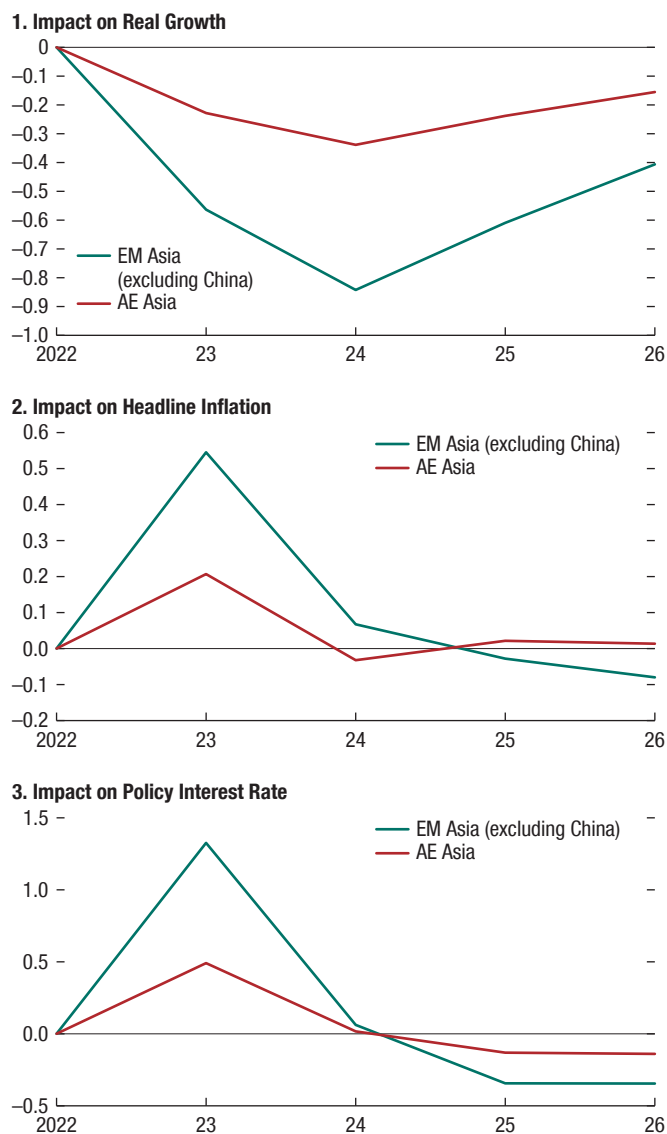
Source: IMF staff calculations based on simulations using a regional block of the model in Andrle and others (2015).
Note: AE = advanced economy; EM = emerging market.

(Box 1.2). In addition, Phillips curves estimated on historical data reveal that core inflation has generally been persistent in Asian emerging market and developing economies, though this persistence does not seem to have increased during the pandemic as it has in other regions (Figure 1.20). Estimates also show that core inflation in Asia tends to respond strongly to global shocks to volatile prices such as those associated with shipping, food, and oil (Figure 1.21, based on Carrière-Swallow and others 2022b). Thus there is a risk that these recent shocks could trigger a more pronounced and long-lasting rise in core inflation than is anticipated in the baseline. In countries where these risks are more likely to materialize, a prudent policy may involve more monetary tightening than is currently anticipated by markets.

The impact of a scenario of rising medium-term inflation expectations and core inflation was simulated using the same regional variant of Andrle and others (2015) described previously (Figure 1.22).[4] In such a scenario, Asia's central banks would be expected to implement a more aggressive monetary policy response by hiking policy rates further than is currently envisioned to revert the rise in inflation. The result would be a slower recovery for Asia, with growth falling substantially below the baseline in 2023–25.

[4]The scenario assumes that inflation expectations rise by 1 standard deviation (about 1.4 percentage points) in 2023 for all countries except for China and Japan. This leads to a more persistent rise in core inflation.

Figure 1.23. Asia: Cyclically Adjusted Primary Balance
(Percent of potential GDP)
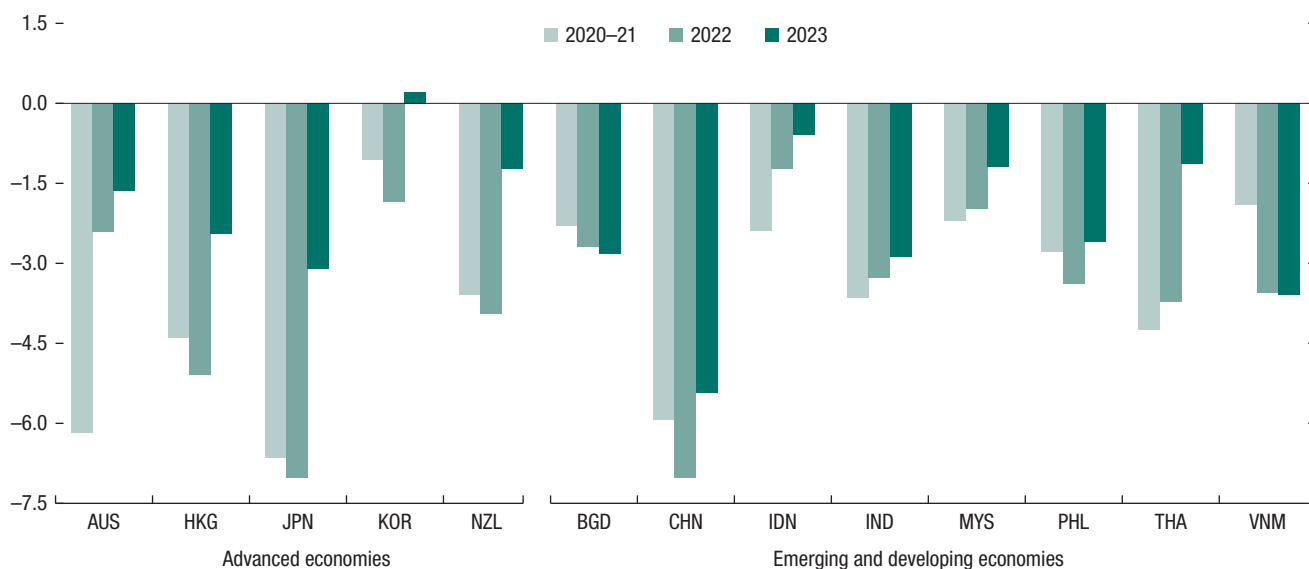
Source: IMF, World Economic Outlook database.
Note: Bangladesh and Vietnam use Primary Adjusted Balance. Country abbreviations are International Organization for Standardization of country codes.
2020–21 = simple average.

The impacts of greater second-round effects and de-anchoring are larger in emerging market Asia (excluding China), where a larger increase in rates is required, provoking a more severe slowdown.

Is There a Role for Intervention?

Exchange rates have also adjusted in response to financial and real shocks, such as the initial terms-of-trade decline after Russia's invasion of Ukraine. Several Asian emerging market and developing economies have seen a decumulation of their international reserves—between 3 and 10 percent of their holdings in the first half of 2022 in India, Indonesia, the Philippines, and Thailand—especially during periods of intense external financial shocks. Given adequate buffers, this is broadly in line with the Integrated Policy Framework's recommendations (Adrian and others 2020; Basu and others 2020). Specific responses depend on country characteristics—including the presence of financial frictions—and the nature of shocks affecting the economy, with detailed analysis of policy combinations under alternative

scenarios being explored in recent Article IV consultations (Indonesia, Thailand).

Responding to a downside scenario in which inflation expectations show signs of de-anchoring after a shock to financial conditions could involve the use of policy rate hikes in combination with intervention in foreign exchange markets to mitigate overshooting and pass-through to inflation. The judicious use of foreign exchange intervention should allow for macroeconomic adjustment to take place and could temporarily ease the burden on monetary policy, allowing it to stay focused on stabilizing domestic demand. This tool could be particularly useful among Asia's shallower foreign exchange markets where interventions are potentially more effective and can help avoid a de-anchoring of inflation expectations (for instance, Philippines), and in those economies where currency mismatches on bank or corporate balance sheets give rise to risks from exchange rate volatility (for instance, Indonesia). Foreign exchange intervention should be temporary to avoid side effects from sustained use, which may include increased risk-taking in the private sector (Tong and Wei 2021).

The Stance of Fiscal Policy

Most economies in Asia and Pacific—including ASEAN-5, Australia, and India—are consolidating fiscal policy alongside monetary policy following substantial support during the pandemic. However, there has also been heterogeneity in the pace of fiscal policy adjustment (Figure 1.23). Some economies—including Australia and Indonesia—have implemented large fiscal adjustments from 2020 to 2022 as they withdrew pandemic support.

Several countries deployed fiscal support packages in 2022 in the face of adverse shocks. China and Hong Kong Special Administrative Region temporarily reversed their consolidation paths in 2022 as large fiscal support packages were needed to respond to outbreaks under the zero-COVID policy. China has announced fiscal easing in 2022 in response to a marked slowdown and a moderate pickup in public investment in 2023 that will support the expected increase in growth to 4.4 percent. The country enjoys some policy space, such that monetary and fiscal accommodation can be maintained, and there is scope for more vigorous support targeted to vulnerable households, which could boost consumption and provide substantial regional benefits. In Japan, the authorities announced modest fiscal support packages to mitigate the impact of external shocks on the local population, and continued accommodation remains appropriate, preferably through more targeted measures. New Zealand has also announced fiscal support packages to respond to new infection waves and other headwinds, while implementing relatively aggressive monetary tightening.

The spikes in global food and energy markets during the first half of 2022 contributed to inflation and threatened to abruptly raise the cost of living across the region, with particularly strong implications for the real incomes of lower-income households that spend more of their disposable income on these commodities (Box 1.3). In response to these developments, many countries across Asia deployed fiscal and quasi-fiscal policy support, including subsidies, administered prices,

Figure 1.24. Asia: General Government Debt
(Percent of GDP)
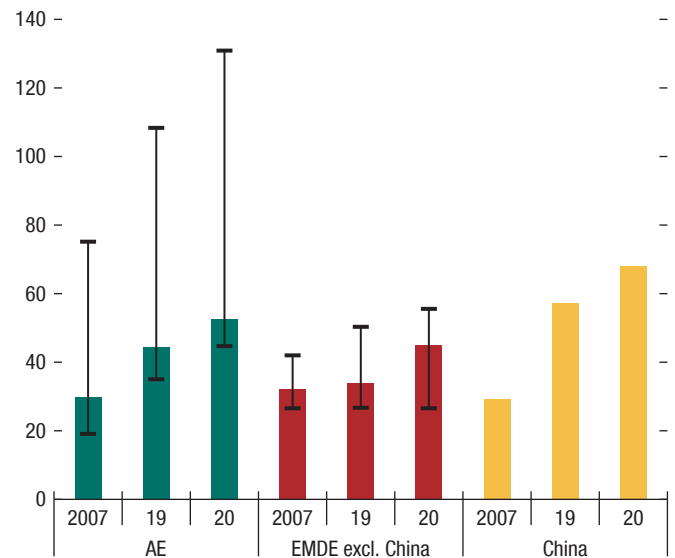
Sources: IMF, Global Debt Database; and IMF staff calculations.
Note: Upper (lower) horizontal lines represent the 75th (25th) percentiles of the distribution. Bars represent the 50th percentile. Asia AE includes Australia, Japan, Korea, New Zealand, Singapore, and Taiwan Province of China. EMDE excluding China includes Cambodia, India, Indonesia, Kiribati, Malaysia, the Marshall Islands, Micronesia, Nauru, the Philippines, Thailand, and Vietnam. AE = advanced economy; EMDE = emerging market developing economy.

and direct transfers. For example, Indonesia kept administered fuel prices frozen throughout 2021 and the first half of 2022, which moderated the rise in inflation, but then raised them by 30 percent in September 2022 to contain mounting subsidies as the authorities prioritized their objective of restoring the fiscal deficit ceiling in 2023.

Given high debt levels, it will be important for these measures to be targeted and temporary to preserve scarce fiscal resources for other important priorities. In Asia's low-income countries, fully covering the income loss suffered by vulnerable households is likely to pose too large a fiscal cost, given very limited space, so support should be budget neutral. Importantly, the prolonged use of fuel and energy subsidies mutes the price signals needed to accelerate the green transition and meet the region's commitments to reduce carbon emissions.

In the medium term, an appropriate objective for fiscal policy should be the stabilization of public

debt, which has risen substantially in Asia over the past 15 years—particularly in the advanced economies and China—and rose further during the pandemic (Figure 1.24). This is crucial to safeguard adequate buffers that can be deployed in the event of future shocks. With both China and Japan having experienced large increases in public debt since 2007 and facing demographic headwinds, articulating commitments to fiscal frameworks that anchor debt dynamics in the medium term remains crucial. Even in countries where debt remains relatively low (Korea), demographics and health care for aging populations will significantly raise public debt, requiring a long-term strategy to ensure debt sustainability.

Across Asia, public debt dynamics have deteriorated since the pandemic's onset. Interest rates on sovereign bonds have risen substantially from their pandemic trough and over time will raise the cost of servicing debt. Medium-term output levels and growth rates have been revised down, and debt levels are up.[5] These factors have raised the primary balance that is needed to stabilize public debt, thus eroding the fiscal space that is available for non-interest expenditures. Of 17 Asian countries with access to Poverty Reduction and Growth Trust resources, 9 are now assessed as being at high risk of debt distress, and Sri Lanka's sovereign bonds are trading at distressed levels.

Overcoming long-term policy challenges will create new spending pressures, such that preserving fiscal buffers requires mobilizing additional resources. For example, India would need to spend 6.2 percent of GDP each year to achieve the Sustainable Development Goals in 2030, and these resource requirements are compounded by less favorable debt dynamics.[6] Tax revenue ratios generally remain low in Asia—particularly in ASEAN (Indonesia, Philippines)

and South Asia—leaving scope to raise revenues through rationalizing income tax holidays in line with the global agreement on minimum corporate taxation rates (Gaspar, Hebous, and Mauro 2022) and through digitalization (Dabla-Norris and others 2021). Prompt creditor cooperation is essential for countries in need of sovereign debt restructuring, such as Sri Lanka.

Rising Corporate Vulnerabilities and the Role for Financial Policies

Nonfinancial corporate debt has also increased across Asia since 2007, and it rose further during the pandemic in the advanced economies and in China. The pandemic also saw a sharp rise in the share of this debt that is issued by vulnerable firms with low interest coverage ratios (Figure 1.25). Additional risks stem from balance sheet mismatches that leave firm balance sheets exposed in the context of strong exchange rate depreciation. Where leverage is high, firms will face a challenging period as interest rates rise and earnings become sluggish amid a global slowdown in 2023. Financial supervisors in these economies should ensure that loan classification and provisioning rules precisely reflect credit risk and losses, and that banks have adequate risk-management capacity and capital buffers to mitigate financial stability risks.

Financial policies—particularly macroprudential measures that safeguard financial stability—should strike a balance between containing the buildup of vulnerabilities and avoiding procyclicality. In both advanced and emerging Asia, credit-to-GDP gaps became strongly positive during the pandemic—reflecting the sharp increase in private debt and fall in output—and had reverted to a smaller positive position by the end of 2021 as monetary and fiscal policy support was withdrawn and output recovered (Figure 1.26). Broadly speaking, the financial cycle in Asia calls for a gradual withdrawal of the exceptional loosening of financial policies that were deployed during the pandemic.

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[5]The more modest inflation surprises across Asia have also meant that the region did not accrue substantial falls in their debt-to-GDP ratios, as were observed in many advanced economies (October 2022 *Fiscal Monitor*).

[6]Prepandemic estimates for total spending needs to achieve a high Sustainable Development Goal performance in 2030. See García-Escribano and others (2021) for details.
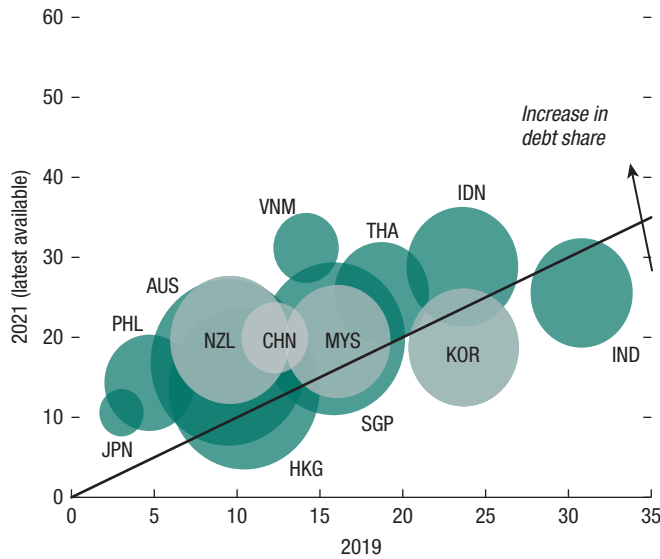
Figure 1.25. Share of NFC Debt in Vulnerable Firms
(Percent of total debt in NFCs with ICR less than 1)

Source: IMF staff calculations.
Note: Includes publicly traded NFCs in operation. Width of the bubble represents the share of NFCs with ICR less than 1 in total number of NFCs in the sample. Based on latest available quarterly data. Country abbreviations are International Organization for Standardization country codes. ICR = interest coverage ratio; NFC = nonfinancial corporation.

Figure 1.26. Credit-to-GDP Gap
(Percent)
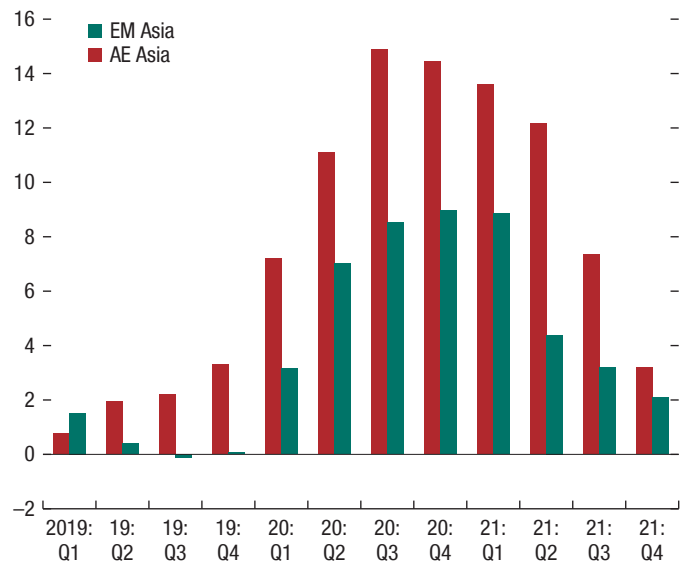
Sources: Bank for International Settlements; and IMF staff calculations.
Note: Simple average across country groups. AE Asia includes Australia, Hong Kong SAR, Japan, Korea, New Zealand, and Singapore. EM Asia includes China, Indonesia, India, Malaysia, and Thailand. AE = advanced economy; EM = emerging market economy.

Last year, policymakers in Asia's advanced economies such as Australia, Korea, and New Zealand tightened macroprudential tools to address a marked increase in risks from surging real estate prices (Deb and others, forthcoming). As interest rates rise, these markets have shown signs of cooling, reducing price misalignments. If these trends continue, there may be space to loosen these measures as systemic risk moderates, since risks in the banking system remain contained.

In China, authorities should take prompt actions to arrest the deepening crisis in the real estate sector. Authorities should facilitate the efficient and orderly restructuring of distressed property developers; ensure the completion of unfinished, presold housing to boost confidence; and prepare to deal with systemic spillovers to the financial system. In the rest of emerging Asia, the global stress test has found that the domestic banking sector may have limited capital buffers under certain adverse scenarios (October 2022 *Global Financial Stability Report,* Chapter 1). This partly reflects rising exposures to sovereign debt on bank balance sheets, in a context of deteriorating public debt dynamics.

Cryptoization and the Need for Greater Regulation

Asia is at the forefront of global crypto asset adoption. The region, led by Japan and Korea, now accounts for a large share of global crypto-asset volumes and is holding a similar value of crypto assets as the Americas and Europe (Figure 1.27). Since the pandemic, the correlation between the performance of the region's equity markets and crypto assets such as Bitcoin and Ethereum has increased, suggesting growing interconnectedness across these markets (Choueiri, Gulde-Wolf, and Iyer 2022). As the IMF has warned previously, while widespread adoption of crypto assets can present opportunities for consumers, it may introduce risks to domestic monetary policy as they substitute away from local currency, and may facilitate the circumvention of national laws and regulations (IMF 2020). The growing popularity of US dollar–denominated stablecoins could

Figure 1.27. Total Crypto Asset Volume
(Billions of US dollars)
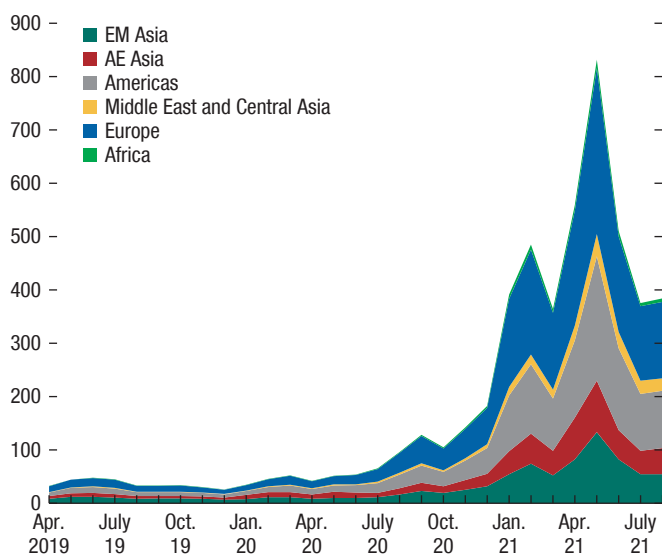
Sources: Chainalysis; and IMF staff calculations.
Note: AE = advanced economy; EM = emerging market.

present a backdoor form of dollarization in Asia if left unchecked and publicly supported digital assets (such as central bank digital currencies) are not facilitated.

These and other concerns have recently led authorities in Asia to implement a range of policy responses. Singapore introduced a strong regulatory regime to manage risks in the sector, while China and Indonesia issued outright bans on crypto currency transactions by regulated financial firms. India introduced a 30 percent tax on income derived from crypto trading and is currently developing a regulatory framework, like many countries in the region. Regulation of crypto assets should adopt a comprehensive, consistent, and coordinated approach (Adrian, He, and Narain 2021). An important aspect of the policy response should include investments to modernize digital payment systems—including cross-border integration—and the eventual issuance of central bank digital currencies, which could offer consumers many of the benefits of crypto without the risks.

Boosting the Region's Productive Potential

Structural policies should seek to boost long-term growth, particularly in emerging market and developing economies where scarring from the pandemic is expected to be most significant (Chapter 2). Digitalization can significantly mitigate scarring during downturns—for instance by facilitating virtual education, remote work, and contactless sales—while also improving productivity and innovation during expansions (Dabla-Norris and others 2021). The lower labor force participation rate observed since the pandemic could also be addressed through labor market reforms to reallocate workers across sectors.

Education reforms will be especially important to address the long-term effect of school closures, which were substantial in Asia and Pacific during the pandemic. These closures are expected to have significant long-lasting impacts on human capital (Chapter 2). This is expected to be particularly severe in the region's low-income countries, where students lost an average of 382 days of classroom instruction during 2020–21, and where poor internet connectivity precluded effective remote education.[7] For economies with large gaps in internet penetration rates, investments in digital infrastructure could protect the economy in the event of a future pandemic.

A difficult set of short-term headwinds should not detract from efforts to meet Asia's climate change mitigation commitments under the Paris Agreement. Implementation gaps must be closed to meet nationally defined contributions, particularly among the region's largest emitting countries. It is crucial that foreign green financing is made available to finance these efforts in the region's emerging market and developing economies. In the Pacific islands and other small island states (Maldives), policy should be focused on adaptation, and large infrastructure investment needs will require much greater international support.

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[7]A bright spot in this dimension was observed in the Pacific Island Countries, which experienced only limited school closures during the pandemic because they avoided local transmission of COVID-19 until vaccines became available.

Table 1.1. Asia: Real GDP Growth
(Percent; year-over-year change)

	Actual and Latest Projections					Difference from July 2022 WEO Update			Difference from April 2022 WEO		
	2020	2021	2022	2023	2024	2022	2023	2024	2022	2023	2024
Asia	**−1.1**	**6.5**	**4.0**	**4.3**	**4.6**	**−0.2**	**−0.2**	**−0.2**	**−0.9**	**−0.8**	**−0.3**
Advanced economies	**−2.6**	**3.7**	**2.3**	**2.0**	**1.9**	**0.0**	**−0.2**	**−0.1**	**−0.4**	**−0.7**	**0.2**
Australia	−2.1	4.9	3.8	1.9	1.8	0.0	−0.3	−0.6	−0.4	−0.6	−0.5
New Zealand	−2.1	5.6	2.3	1.9	2.0	−0.4	−0.7	0.1	−0.4	−0.7	0.1
Japan	−4.6	1.7	1.7	1.6	1.3	0.0	−0.1	0.1	−0.7	−0.7	0.5
Hong Kong SAR	−6.5	6.3	−0.8	3.9	3.0	−1.3	−0.6	0.1	−1.3	−1.0	0.1
Korea	−0.7	4.1	2.6	2.0	2.7	0.3	−0.1	−0.1	0.1	−0.9	0.1
Taiwan Province of China	3.4	6.6	3.3	2.8	2.1	0.1	−0.1	−0.1	0.1	−0.1	−0.1
Singapore	−4.1	7.6	3.0	2.3	2.6	−0.7	−0.3	0.0	−1.0	−0.6	0.0
Emerging markets and developing economies[1]	**−0.6**	**7.2**	**4.4**	**4.9**	**5.2**	**−0.2**	**−0.2**	**−0.2**	**−1.0**	**−0.7**	**−0.4**
Bangladesh	3.4	6.9	7.2	6.0	6.5	0.8	−0.7	−0.7	0.8	−0.7	−0.7
Brunei Darussalam	1.1	−1.6	1.2	3.3	3.2	−4.6	0.7	1.1	−4.6	0.7	1.1
Cambodia	−3.1	3.0	5.1	6.2	6.6	0.0	0.0	0.0	0.0	0.3	0.5
China	2.2	8.1	3.2	4.4	4.5	−0.1	−0.2	−0.2	−1.2	−0.7	−0.6
India[2]	−6.6	8.7	6.8	6.1	6.8	−0.6	0.0	−0.4	−1.4	−0.8	−0.2
Indonesia	−2.1	3.7	5.3	5.0	5.4	0.0	−0.2	0.0	−0.1	−1.0	−0.4
Lao P.D.R.	−0.4	2.1	2.2	3.1	3.7	0.0	0.0	0.0	−1.0	−0.4	−0.1
Malaysia	−5.5	3.1	5.4	4.4	4.9	0.3	−0.3	0.0	−0.2	−1.1	0.0
Myanmar	3.2	−17.9	2.0	3.3	3.4	0.4	0.3	0.3	0.4	0.3	0.3
Mongolia	−4.6	1.6	2.5	5.0	7.0	0.5	−2.0	0.5	0.5	−2.0	0.5
Nepal	−2.4	4.2	4.2	5.0	5.1	0.1	−1.1	−0.6	0.1	−1.1	−0.6
Philippines	−9.5	5.7	6.5	5.0	6.0	−0.2	0.0	−0.5	0.0	−1.3	−0.5
Sri Lanka	−3.5	3.3	−8.7	−3.0	1.5	−11.3	−5.7	−1.3	−11.3	−5.7	−1.3
Thailand	−6.2	1.5	2.8	3.7	3.6	0.0	−0.3	0.0	−0.5	−0.6	−0.2
Vietnam	2.9	2.6	7.0	6.2	6.6	0.0	−0.5	−0.3	1.0	−1.0	−0.4
Pacific island countries[3]	**−3.6**	**−1.9**	**0.8**	**4.2**	**3.7**	**−1.1**	**−0.7**	**0.3**	**−1.1**	**−0.7**	**0.3**
Fiji	−17.0	−5.1	12.5	6.9	5.7	5.7	−0.8	−0.7	5.7	−0.8	−0.7
Kiribati	−0.5	1.5	1.0	2.4	2.8	−0.1	−0.4	0.2	−0.1	−0.4	0.2
Marshall Islands	−1.6	1.7	1.5	3.2	2.0	−0.5	0.0	−0.6	−0.5	0.0	−0.6
Micronesia	−1.8	−3.2	−0.6	2.9	2.8	−0.1	0.1	0.0	−0.1	0.1	0.0
Nauru	0.7	1.6	0.9	2.0	2.4	0.0	0.0	0.0	0.0	0.0	0.0
Palau	−8.9	−13.4	−2.8	12.3	9.1	−10.9	−6.5	6.2	−10.9	−6.5	6.2
Papua New Guinea	−3.5	1.2	3.8	5.1	3.0	−1.0	0.8	0.0	−1.0	0.8	0.0
Samoa	−3.1	−7.1	−5.0	4.0	4.2	−5.0	0.0	0.2	−5.0	0.0	0.2
Solomon Islands	−3.4	−0.2	−4.5	2.6	2.4	−0.5	−0.6	−0.7	−0.5	−0.6	−0.7
Tonga[4]	0.5	−2.7	−2.0	2.9	2.7	−0.4	−0.1	−0.3	−0.4	−0.1	−0.3
Tuvalu	1.0	2.5	3.0	3.5	4.0	0.0	0.0	0.0	0.0	0.0	0.0
Vanuatu	−5.4	0.4	1.7	3.1	3.5	−0.5	−0.3	0.0	−0.5	−0.3	0.0
ASEAN[5]	**−3.2**	**3.1**	**5.0**	**4.7**	**5.1**	**−0.1**	**−0.2**	**−0.1**	**−0.1**	**−0.9**	**−0.3**
ASEAN-5[6]	**−4.4**	**3.8**	**4.9**	**4.5**	**4.9**	**0.0**	**−0.2**	**−0.1**	**−0.2**	**−0.9**	**−0.3**
EMDEs excluding China and India	**−2.4**	**3.2**	**5.0**	**4.8**	**5.3**	**−0.2**	**−0.4**	**−0.2**	**−0.2**	**−1.0**	**−0.3**

Sources: IMF, World Economic Outlook database; and IMF staff estimates and projections.

Note: Shaded columns denote IMF staff projections.

[1]Emerging market and developing economies excluding Pacific island countries and other small states.

[2]India's data are reported on a fiscal year basis. Its fiscal year starts from April 1 and ends on March 31.

[3]Pacific island countries aggregate is calculated using simple average, all other aggregates are calculated using weighted average.

[4]Tonga's data are reported on a fiscal year basis. Its fiscal year starts from July 1 and ends June 30.

[5]ASEAN comprises Brunei Darussalam, Cambodia, Indonesia, Lao P.D.R., Malaysia, Myanmar, the Philippines, and Singapore.

[6]ASEAN-5 comprises Indonesia, Malaysia, Philippines, Singapore, and Thailand.

Box 1.1. Growth Spillovers to the Rest of the World from a Slowdown in China

A moderation in Chinese growth poses headwinds for the region. China plays a central role in regional trade, which has grown significantly in the past decade. Chinese supply shocks tend to have significant spillovers that are more pronounced for countries with higher export exposure to China and thus are larger for the region.

Growth in China is projected to moderate from 8.1 percent in 2021 to 3.2 percent in 2022 and remain below 5 percent for the following five years, and this is expected to generate spillovers globally, especially in Asia. Intraregional trade has grown significantly in the past decade to more than half of total Asian trade. Chinese demand absorbs one-quarter of the region's exports, with 20 percent absorbed by final demand and 5 percent re-exported.[1] Similarly, the recent slowdown in the property sector may lead to regional spillovers, as value added absorbed by China's final demand for real estate averages about 0.6 percent of GDP.

Spillovers from Chinese growth are estimated using a panel local projections model (Jordà 2005) with data covering 50 advanced and emerging economies.[2] The analysis follows recent studies, which have used a broad range of indicators to proxy domestic activity (Barcelona and others 2022; Fernald, Hsu, and Spiegel 2021) in using the Federal Reserve Bank of San Francisco's China Cyclical Activity Tracker (developed by Fernald, Hsu, and Spiegel 2021) to measure overall Chinese activity.[3] The results suggest that a one standard deviation (equivalent to 2.3 percentage points of GDP) decline in Chinese growth results in only moderate short-term effects but medium-term effects of about a 0.7 percent reduction in GDP in other countries (Box Figure 1.1.1). These results are in line with the literature, in which spillovers from a 2.3 percentage point decline in Chinese growth have been estimated to be in the range of 0.3 to 0.9 percentage point.[4]

The size and persistence of spillovers depends on the type of shock driving activity. Recent shocks to Chinese activity, such as COVID-19 lockdowns and supply chain issues, affect supply and may have different spillovers

Box Figure 1.1.1. China Activity Spillovers by Shock
(Percent, cumulative decline in GDP)
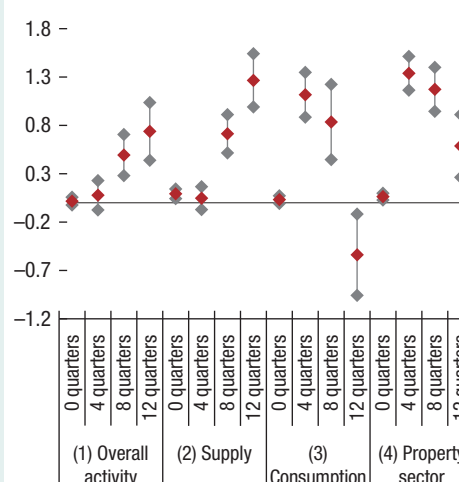
Sources: Fernald, Hsu, and Spiegel (2021); and IMF staff calculations.
Note: Figure shows the cumulative GDP response to several shocks: (1) the overall activity measure of Fernald, Hsu, and Spiegel (2021), (2) the supply component from a structural vector autoregression decomposition, (3) a shock to private final consumption, and (4) the value added in the property sector. Diamonds represent mean response in a panel of 50 countries (excluding China); lines are 68 percent confidence intervals. Shocks are one standard deviation. One standard deviation corresponds to 2.75 percent decline for consumption and a 9.8 percent decline for property value added.

This box was prepared by Chris Redl.

[1] Data are 2018 figures from the Organisation for Economic Co-operation and Development Trade in Value Added database.

[2] This model controls for country fixed effects, lags of GDP growth, financial conditions, the Chicago Board Options Exchange Volatility Index, world export-weighted GDP growth, and a time trend.

[3] Such as exports, imports, air passengers, electricity consumption, credit extension, rail use, retail sales, industrial production, government revenue, and highway usage.

[4] Rescaling estimates to the 2.3 percent of GDP we examine here, Cashin, Mohaddes, and Raissi (2016) and Dizioli and others (2016) find a 0.5 percentage point decline in global growth and 0.6 percentage point decline in growth for ASEAN–5 economies. Duval and others (2014) find spillovers for Asia of 0.7 percent compared with 0.3 percent for other economies. Furceri, Jalles, and Zdzienicka (2017) estimate an average decline of 0.9 percent in GDP after three years.

Box 1.1. Growth Spillovers to the Rest of the World from a Slowdown in China *(continued)*

from fluctuations in overall activity. We decompose the China Cyclical Activity Tracker into demand and supply components with a structural vector autoregression model for China that includes consumer prices and the China Cyclical Activity Tracker, where supply movements are identified by opposite movements in prices and activity, and demand via those variables moving in the same direction. Repeating the global spillovers analysis but using the supply component of activity rather than overall activity suggests larger effects—about 1.3 percent in the medium term (Box Figure 1.1.1)—in part because of the larger and more persistent effect of supply shocks relative to demand shocks on Chinese activity.

Consumption and property sector spillovers. Reduced consumption spending is a significant part of the deceleration in Chinese growth between 2021 and 2022, related to its zero-COVID policy. In parallel, financial stress in the property sector has broadened beyond a few large developers and sales have been sharply weaker. The analysis uses the residual in a regression of consumption and property value added on their own past values as a measure of the shock to Chinese activity and repeat the cross-country panel regressions to estimate growth spillovers. Spillovers to the rest of the world from a slowdown in consumption and the property sector are similar to the estimates for a supply shock, but the effects are more front-loaded and, for the case of consumption, less persistent.[5]

Box Figure 1.1.2. Differential Effect of Trade Exposure
(Cumulative percentage decline in GDP)

Sources: Fernald, Hsu, and Spiegel (2021); and IMF staff calculations.
Note: Bars represent the additional drag on GDP from adding an interaction term between the supply shock and trade exposure to China (export and import) to the model used in Box Figure 1.1.1. The left bars are the peak coefficient on this interaction term multiplied by difference in trade exposures at the 75th and 25th percentile. The country group results are the coefficient from a three-way interaction of the supply shock, trade exposures, and a group inclusion variable.

Trade exposures and regional spillovers. Trade links are a key channel of the magnitude of growth spillovers (Furceri, Jalles, and Zdzienicka 2017). Exports to China are an important source of demand for the region, while imports from China are an important source of inputs for the region's exporters. The additional drag on GDP from trade exposures to China is examined by adding an interaction term between the supply shock and imports or export exposures to China (measured as exports to, and imports from, China as a share of a country's GDP). A country moving from the 25th percentile to the 75th percentile of trade exposure (measured as exports to China as a share of the country's GDP) experiences an additional 0.35 percentage point reduction in GDP from a China supply shock (Box Figure 1.1.2). In general, emerging markets face greater exposure to a slowdown via this link, with an additional drag on GDP of 0.41 percentage point via the export channel and 0.46 percentage point for imports. However, Asia faces a larger hit from export exposures than from import exposures, and contrary to the general result, in Asia advanced economies are more heavily exposed than emerging economies, due to relatively higher imports from, and exports to, China.

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[5] The consumption and property value-added shocks declined earlier and rebounded more quickly during the global financial crisis of 2008–09 than the supply shock, which may explain the different timing and persistence in their spillovers to other countries.

Box 1.2. How Are Inflation Expectations Measured in Asia?

Central banks use various inputs to guide their monetary policy decisions. Surveys of inflation expectations are a key source of information for gauging current and prospective economic conditions. This box describes the availability and characteristics of inflation expectation surveys in Asia and Pacific and offers comparisons to surveys from other regions, identifying two data gaps that should be addressed.

An assessment of expectations provides important insights about how economic agents expect the economy to evolve, and thus plays an important role in policymaking. Asia's central banks frequently invoke the degree of anchoring of inflation expectations in their monetary policy statements.

A comprehensive assessment of inflation expectation surveys in Asia points to several considerations (Annex Table 1.1). The region's surveys tend to focus on surveying households, which is common among global central banks. The available sample period is also on par with the rest of the world, with most surveys offering comparable data starting at about 2000.

However, the region has a few important data gaps. First, only 10 central banks in Asia and Pacific collect and publish regular surveys of inflation expectations. As 17 economies are included in the Consensus Economics survey of professional forecasters, this leaves seven central banks to rely exclusively on commercial information (Bangladesh, China, Hong Kong Special Administrative Region, Myanmar, Sri Lanka, Taiwan Province of China, and Vietnam). Another group of economies—including all Pacific Island Countries—has no available information on inflation expectations from any source.

Second, available surveys tend to ask about expectations at short horizons of up to 12 months. Among emerging market central banks, only Malaysia collects information about expectations at longer horizons, but this is common among peers in Latin America and eastern Europe. This impedes the ability of policymakers to assess the degree to which inflation expectations are well anchored and aligned with inflation targets (Weber and others 2022). Finally, some countries administer surveys once per quarter but hold monetary policy meetings more frequently (the Philippines, Thailand). This may affect the ability of policymakers and market participants to monitor the evolution of inflation expectations before each decision.

This box was prepared by Daniel Jiménez.

Box 1.3. The Effect of Food and Energy Price Inflation on Households in Asia

Rising food and energy price inflation is likely to have significant negative distributional implications on households in low-income countries and emerging markets. Under different scenarios for food and energy price growth over the course of this year, the share of households living below half of median annual income per capita may increase up to 1 percentage point in some countries. As a result, consumption inequality is likely to increase over the medium term, unless policies succeed in altering historical patterns.

As in most of the world, inflation in many economies in the Asia and Pacific region is rising largely because of higher energy and food prices. This is a concern for many households because food and energy constitute the largest item in their consumption baskets (about 52 percent and up to 61 percent including transportation), especially for poorer households in lower-income countries (Box Figure 1.3.1).[1] Households in the lowest consumption segment (the lowest 50th percentile of the income distribution) in low-income countries are the most vulnerable to food and energy price fluctuations, with about 59 percent of their income spent in food and another 10 percent for energy and transportation (Box Figure 1.3.2). By contrast, the richest household group in Asian emerging market and developing economies (above the 91st percentile) spend less on food (16 percent) and energy (2 percent) and more on transportation (21 percent).

Higher inflation will erode real income and push more households below the poverty line (Box Figure 1.3.3). Results based on household surveys for selected Asian emerging market and developing economies and on July 2022 *World Economic Outlook Update* inflation projections suggest that relative poverty may increase by about 1 percentage point in Cambodia and Vietnam and about 0.2 percentage point in China.[2] Differences across countries reflect higher inflation forecasts in Cambodia and Vietnam, and the different shapes of income distributions, since the greater the number of households clustering just above the relative poverty threshold, the larger the changes in poverty shares.[3] These effects would almost double under a scenario in which the magnitude of inflation of energy and food prices is assumed to be twice as large as in the baseline, and are likely to be even larger for households in many Asia low-income countries, where people's exposure to changes in the prices of these goods is more substantial.

The rise in food and energy price would also lead to persistent increases in consumption inequality unless

Box Figure 1.3.1. Share of Food, Energy, and Transportation in Total Expenditure across Regions and Household Income Groups
(Simple averages, percent)
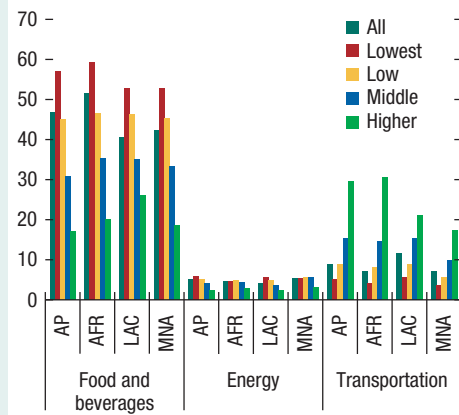
Sources: World Bank Global Consumption Database; and IMF staff calculations.
Note: Lowest, low, middle, and higher are consumption segments based on global income distribution percentile thresholds. The lowest consumption segment corresponds to the bottom half of the global income distribution, or the 50th percentile and below; the low to the 51st–75th percentiles; the middle to the 76th–90th percentiles; and the higher to the 91st percentile and above. AP = Asia and Pacific; AFR = sub-Saharan Africa; LAC = Latin America and the Caribbean; MNA = Middle East and North Africa.

This box was prepared by Alessia De Stefani, Giacomo Magistretti, Anh Thi Ngoc Nguyen, and Modeste Some.

[1]Data from the World Bank Global Consumption database, a data set based on national household expenditure surveys between 2000–11.

[2]The simulation assumes an income elasticity to headline inflation equal to one and an identical consumption basket, equal to the consumer price index basket, for all households. It also assumes no wage adjustment or government interventions to compensate for real income losses.

[3]The baseline relative poverty shares (defined as the proportion of households living below half of median annual income per capita) are estimated to be 24.5 percent in Cambodia, 21 percent in China, and 19 percent in Vietnam.

Box 1.3. The Effect of Food and Energy Price Inflation on Households in Asia *(continued)*

Box Figure 1.3.2. Share of Food, Energy, and Transportation in Total Expenditure in Asia and Pacific across Country and Household Income Groups
(Simple averages, percent)

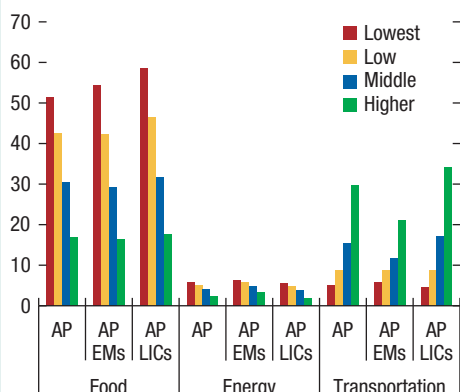Sources: World Bank Global Consumption Database; and IMF staff calculations.
Note: Lowest, low, middle, and higher are consumption segments based on global income distribution percentile thresholds. The lowest consumption segment corresponds to the bottom half of the global income distribution, or the 50th percentile and below; the low to the 51st–75th percentiles; the middle to the 76th–90th percentiles; and the higher to the 91st percentile and above. AP = Asia and Pacific; EM = emerging market; LIC = low-income country.

Box Figure 1.3.3. Effects of Food and Energy Prices on Relative Poverty
(Percentage points change)
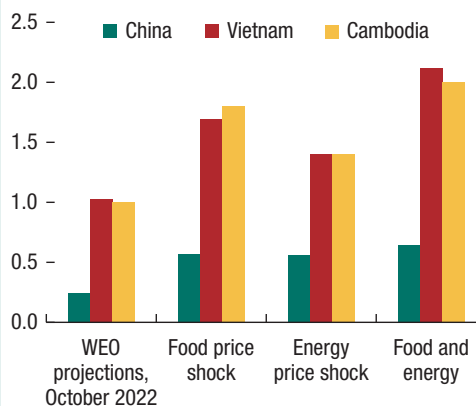
Source: IMF staff calculations.
Note: WEO = *World Economic Outlook*.

Box Figure 1.3.4. Impact of Food and Energy Price Increases on Consumption Inequality
(Percent)
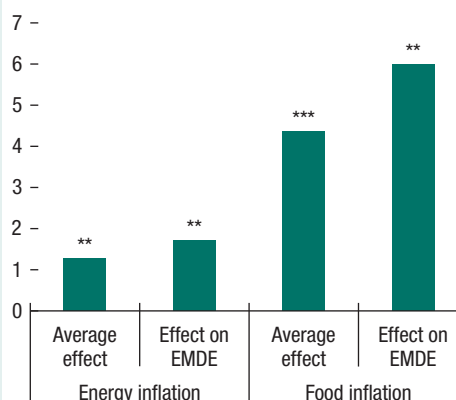
Source: Bettarelli and others (forthcoming).
Note: Inequality is captured by the Gini coefficient. The bars denote the effect of an increase of two standard deviations in energy and food price inflation. EMDE = emerging market and developing economy. **$p < 0.05$; ***$p < 0.01$.

policies succeed in altering historical patterns. Bettarelli and others (forthcoming) provide evidence that major increases in these prices over the past five decades have led to persistent increases in the Gini coefficient and lowered the consumption shares of lower-income households. They find that a major increase in food and energy prices, such as that observed after the Russian invasion of Ukraine, have been historically associated with an increase in the Gini coefficient of consumption inequality of about 4.4 and 1.3 Gini points, respectively, corresponding to about two and 0.6 standard deviations of the annual change in the Gini, respectively (Box Figure 1.3.4). These distributional effects vary across countries and are larger in emerging market and developing economies, in which food and energy represent a larger share of the consumption basket.

Although some countries have deployed fiscal measures to support vulnerable consumers, this might not be enough to offset the substantial loss in income because of high inflation. Higher inflation could translate into

Box 1.3. The Effect of Food and Energy Price Inflation on Households in Asia *(continued)*

proportional fiscal costs if governments decide to support vulnerable households for the income losses experienced because of inflation. For example, compensating all vulnerable households under the baseline projections would cost 0.15 percent of GDP in Cambodia, 0.06 percent in Vietnam, and 0.03 percent in China (Box Figure 1.3.5).[4] Costs would double under a more severe combined food and energy price shock in all countries. While these burdens may be small in absolute value, they are likely to be challenging to shoulder for low-income countries and lower-middle-income emerging market economies coming out of the pandemic with higher debt burdens and limited fiscal space.

Box Figure 1.3.5. Cost of Shielding Vulnerable Households from Rising Prices
(Percent of 2021 GDP)
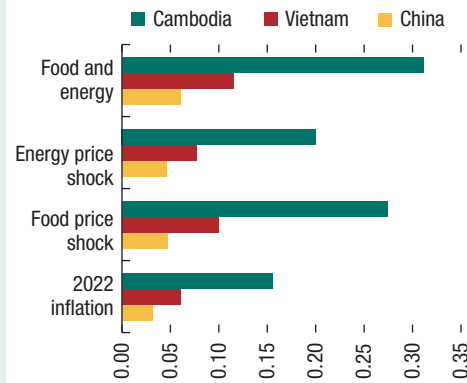
Source: IMF staff calculations.

[4]The fiscal compensation cost is calculated assuming that each household falling below the (preshock) relative poverty threshold under a given scenario will receive a transfer exactly equal to the amount of income "lost" to inflation. The frequency-weighted sum of these amounts yields overall expected fiscal costs.

Annex 1. Estimated Drivers of Core Inflation

This annex describes the analysis used to generate Figures 1.6 and 1.20. Following the October 2016 *World Economic Outlook*, the following Phillips curve equation for core inflation is estimated:

$$\pi_t^c = \gamma + \rho\pi_{t-1}^c + (1 - \rho)\pi_t^e + \Theta\bar{y}_t + \varphi e_t + \partial\left(\pi_t^I - \frac{1}{4}\sum_{l=1}^{4}\pi_{t-l}^c\right) + \varepsilon_t$$

where π_t^c is the annualized growth rate of the core consumer price index; π_t^e are inflation expectations—measured by the three years ahead inflation expectations reported in Consensus Forecasts; $\bar{y}_t$ is the output gap—computed as the cyclical deviation from trend estimated by the Hodrick-Prescott–filtered quarterly real output series; e_t is the annualized growth rate of the bilateral exchange rate versus the US dollar (expressed as local currency units per US dollar); and π_t^I is the annualized growth rate of the import price index in US dollars.[1]

The model is estimated separately for each of 12 Asian and Pacific economies at the quarterly frequency using data since 1992 (or when the first data are available).[2] Recursive estimates are produced since 2018:Q4 to allow for changes in the parameters.

To calculate the contribution of each component in driving core inflation over 2020–22, the analysis follows Yellen (2015) and the October 2016 *World Economic Outlook*. The contributions are computed as the difference between realized core inflation and counterfactuals obtained by setting each of the independent variables to zero.[3] The simulations consider deviations of core inflation from the central bank's inflation target, or in the absence of an explicit target (for example, Malaysia and Singapore), the long-term average rate of headline inflation.

Counterfactuals for the output gap are computed by substituting the model's Hodrick-Prescott–filtered estimate with the forecasts reported in the October 2022 *World Economic Outlook*, to avoid end-point problems and ensure consistency with the forecasts discussed in this chapter.

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[1]Import prices are expressed as a relative price by subtracting the lagged year-over-year growth rate of the core consumer price index.

[2]The sample includes Australia, Hong Kong Special Administrative Region, India, Indonesia, Korea, Malaysia, New Zealand, the Philippines, Singapore, Taiwan Province of China, and Thailand.

[3]The counterfactual incorporates the original model residuals ε_t.

Annex Table 1.1. Surveys of Inflation Expectations

Country	Respondent	Survey	Entity	Year Started	Frequency	Sample Size	Horizons
			Asia and Pacific				
Australia	F	Quarterly Business Survey	National Australia Bank	1989	Quarterly		3M
	H	Survey of Consumer Inflationary and Wage Expectations	Melbourne Institute	1995	Monthly	1,200	1Y
	P	Quarterly Survey of Union Officials	Reserve Bank of Australia	1993	Quarterly		1Y, 2Y
	P	Quarterly RBA Survey of Market Economists		1996	Quarterly		1Y, 2Y
India	H	Households' Inflation Expectations Survey	Reserve Bank of India	2008	Bimonthly	6,000	3M, 1Y
Indonesia	F	Business Survey	Bank Indonesia	2013	Quarterly		1Y
	H	Consumer Expectation Survey		1999	Monthly	4,600	3M, 6M, 1Y[1]
Japan	F	TANKAN (Short-Term Economic Survey of Enterprises in Japan)	Bank of Japan	2014	Quarterly	2,800	1Y, 3Y, 5Y
	H	Bank of Japan Opinion Survey		2004	Quarterly		1Y, 5Y
	H	Consumer Confidence Survey	Economic and Social Research Institute: Cabinet Office	2004	Monthly		1Y
Korea	H	Consumer Survey Index (CSI)	Bank of Korea	2006	Monthly		1Y
Malaysia	H	BNM Consumer Sentiment Survey	Bank Negara Malaysia	2013	Monthly	1,000	1Y, 2Y, 3Y
Mongolia	H, F, P	Citizens Inflation Expectations	Bank of Mongolia	2017	Quarterly		3M, 1Y
New Zealand	H	Household Inflation Expectations Survey	Reserve Bank of New Zealand	1995	Quarterly	1,000	1Y, 5Y
Philippines	F	Business Expectations Survey	Bangko Sentral ng Pilipinas	2013	Quarterly	600	3M, 1Y
	H	Consumer Expectations Survey		2007	Quarterly	5,500	1Y
Singapore	H	Singapore Index of Inflation Expectations	DBS Bank and SMU	2011	Quarterly	500	1Y, 5Y
	F	MAS Survey of Professional Forecasters	Monetary Authority of Singapore	2000	Quarterly		1Y, 2Y (EOP)
Thailand	F	Business Sentiment Survey (BSI)	Bank of Thailand	2007	Monthly		1Y

(continued)

Annex Table 1.1. Surveys of Inflation Expectations *(continued)*

Country	Respondent	Survey	Entity	Year Started	Frequency	Sample Size	Horizons

Country	Respondent	Survey	Entity	Year Started	Frequency	Sample Size	Horizons
		Rest of the World					
Brazil	H	Consumer Confidence Survey	Instituto Brasileiro de Economia	2002	Monthly	2,000	6M
	P	Market Expectations – Focus Survey	Banco Central do Brasil	1999	Monthly	140	1Y, 2Y
Canada	H	Canadian Survey of Consumer Expectations	Bank of Canada	2014	Quarterly	1,000	1Y, 2Y, 5Y
	F	Business Outlook Survey		2001	Quarterly	100	2Y
Chile	P	Encuesta de Expectativas Económicas	Banco Central de Chile	2001	Monthly	70	1Y, 2Y
Colombia	P	Encuesta mensual de expectativas de analistas económicos	Banco de la República	2003	Monthly		1Y, 2Y
	H	Encuesta de opinión al consumidor	Fedesarrollo	2001	Monthly		1Y
Czech Republic	H	Quarterly Survey of Households	Czech National Bank	1999	Quarterly	600	1Y, 3Y
	P	Financial Market Analysts		1999	Monthly	15	1Y, 3Y
Mexico	H	National Survey on Consumer Confidence	Institutio Nacional de Estadística y Geografía	2017	Monthly	400	1Y
	F	Encuestas Sobre las Expectativas de los Especialistas en Economía del Sector Privado		1999	Monthly		1Y
	P	Encuestas Sobre las Expectativas de los Especialistas en Economía del Sector	Banco de México	1999	Monthly		1Y
South Africa	H, F, P	Inflation Expectation Survey	South African Reserve Bank/ Bureau for Economic Research	2000	Quarterly	2,500[2]/500	1Y[2],2Y,5Y
Sweden	H	Consumer Tendency Survey	National Institute of Economic Research	2001	Monthly	1,500	1Y
	P	Inflation Expectations Survey	Prospera	1995	Quarterly		1Y, 2Y, 5Y
United Kingdom	H	Inflation Attitudes Survey	Bank of England/ Ipsos	1999	Quarterly		1Y, 2Y, 5Y
United States	H	Survey of Consumers (MSC)	University of Michigan	1978	Monthly	500	1Y, 5Y
	H	Survey of Consumer Expectations (SCE)	New York Federal Reserve	2013	Monthly	1,300	1Y, 2Y, 5Y

Source: IMF staff compilation based on national agencies.

Note: Respondent takes values of H (households), F (firms), and P (professional forecasters). EOP = end of period; M = month; Y = year.

[1]Indonesia's Consumer Expectation Survey of inflation expectations was discontinued in March 2020.

[2]Denotes value for household survey.

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2. Medium-Term Output Losses after COVID-19 in Asia: The Role of Corporate Debt and Digitalization

The COVID-19 crisis has opened deep economic scars in the Asia and Pacific region that are unlikely to heal even in the medium term. The first section of this chapter documents the expected magnitude of output losses and sheds light on the factors contributing to this phenomenon, highlighting the role of lower investment, employment, and productivity growth. Next, the chapter does a deep dive into the factors that are especially relevant for Asia in influencing the magnitude of output losses. First is the high level of nonfinancial corporate debt in Asia, which is expected to drag investment down in the medium term. Second is the role of education losses and the decline in fertility in reducing labor growth in the long term. Finally, the chapter focuses on policies to mitigate these scarring effects. Although reform priorities will depend on country-specific circumstances, tackling the corporate debt overhang and mitigating human capital losses will be key for many countries in the region. In addition, digitalization has emerged as a focus area in the aftermath of the pandemic, and faster adoption can boost productivity and improve resilience.

Expected Output Losses after the COVID-19 Crisis: Magnitudes and Determinants

The short-term economic losses from the COVID-19 pandemic were the largest since the Great Depression, as stringent lockdowns and disruption of supply chains led global GDP to contract by 3.3 percent in 2020. Given the unique and protracted nature of the crisis, coupled with additional shocks (most notably the Russian invasion of Ukraine), output losses are likely to persist.

Indeed, according to the latest IMF projections, global medium-term output losses—computed as the percent deviation between prepandemic (January 2020) and latest GDP projections for 2024—are expected to be about 5.3 percent on average (Figure 2.1, panel 1). Losses are expected to be much larger in emerging market and developing economies (6.3 percent) than in advanced economies (1.4 percent), and across regions, more pronounced in Asia (9.1 percent). Losses in Asian emerging market and developing economies are much larger than other emerging market and developing economies (11 percent versus 5 percent), while losses for Asian advanced economies are expected to be similar to other regions (Figure 2.1, panel 2). Within Asian emerging market and developing economies, there is significant heterogeneity in expected output losses, with tourism-dependent countries (Pacific islands, Maldives, Philippines, Thailand) experiencing larger losses on average, potentially reflecting effects from bankruptcies and permanent closures of tourism-dependent businesses and structural shifts in travel, especially business travel. Several Asian emerging market and developing economies also had more stringent lockdowns than average, and while the lockdowns helped contain the spread of the virus, they have also been associated with larger output losses (India, Philippines).[1]

The magnitude of medium-term output losses is similar when using different forecast sources such as the Economist Intelligence Unit or Consensus Forecasts, with Asian emerging market and developing economies consistently

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[1] The importance of tourism and stringency in explaining output losses is consistent with previous literature—for example, the October 2020 *Regional Economic Outlook: Asia and Pacific*; the April 2021 *World Economic Outlook*, Chapter 2; Furceri and others (2021); and Goretti and others (2021). A cross-sectional regression using the latest data on expected output losses for 130 countries also reveals stringency of containment measures and tourism to GDP as significant contributors to scarring, while fiscal support partly mitigates output losses.

Figure 2.1. Output Losses in Asia

*Asia is expected to experience the largest medium-term output losses after COVID-19 ...*

1. Output Losses per Region
(Percent, deviation in GDP from prepandemic projections, 2024)
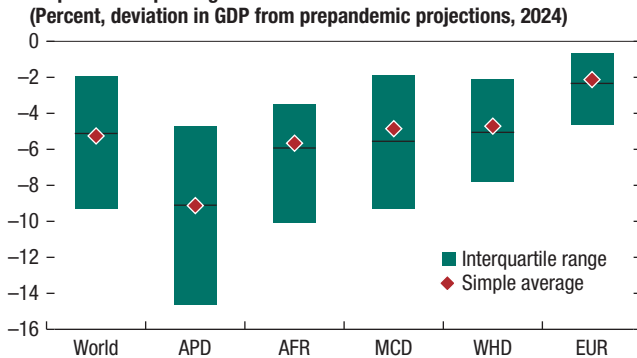
Source: IMF, World Economic Outlook database.
Note: The figure shows the difference in GDP between prepandemic (January 2020) and postpandemic (August 2022) projections for each region.
AFR = Africa; APD = Asia and Pacific; EUR = Europe; MCD = Middle East and Central Asia; WHD = Western Hemisphere.

Projected output losses are consistent in magnitude across different forecast sources and benchmarks ...

**3. Asia Output Losses: Different Forecasts**
(Simple average, percent)
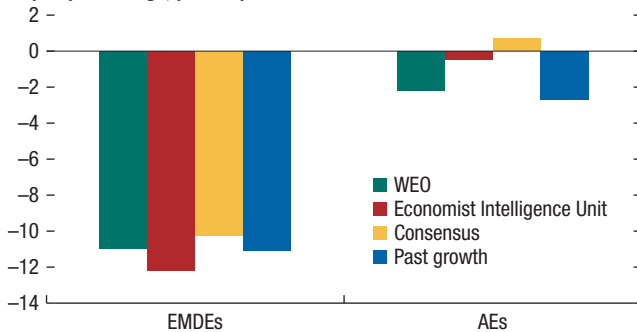
Sources: Economic Intelligence Unit; IMF, *Consensus Forecasts*; and IMF, World Economic Outlook database.
Note: Compares prepandemic GDP projection for 2024 to latest projections from the World Economic Outlook database, Economist Intelligence Unit, and *Consensus Forecasts*. "Past growth" compares latest projections to the level of GDP that would have prevailed in 2024 if the growth rate from 2020 to 2024 was the same as for the period 2015 to 2019. AEs = advanced economies; EMDEs = emerging market and developing economies; WEO = *World Economic Outlook*.

... with losses most pronounced in emerging market and developing economies.

2. Output Losses: by Income Group
(Percent, deviation in GDP from prepandemic projections, 2024)
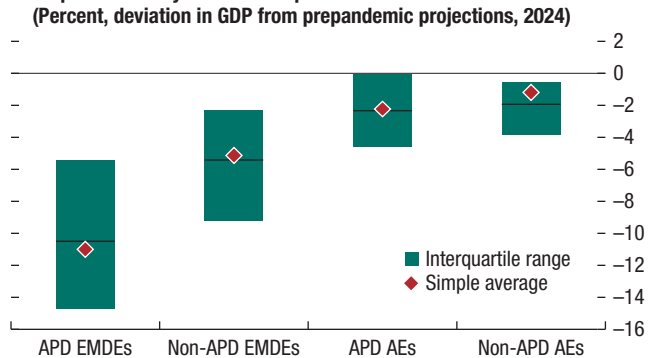
Source: IMF, World Economic Outlook database.
Note: The figure shows the difference in GDP between prepandemic (January 2020) and postpandemic (August 2022) projections for each region and income group. AEs = advanced economies; APD = Asia and Pacific; EMDEs = emerging market and developing economies.

... with cyclical factors playing only a limited role.

4. Output Losses and Potential Output in Asia
(Simple average, percent)
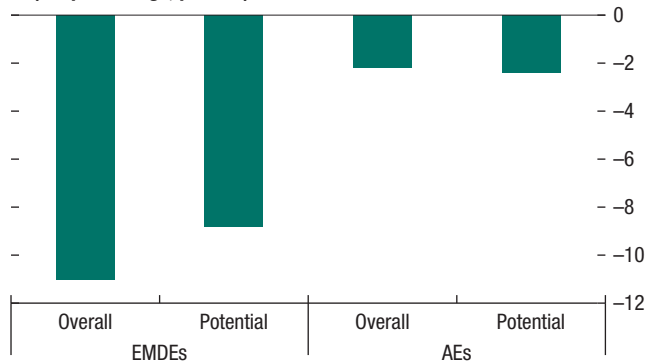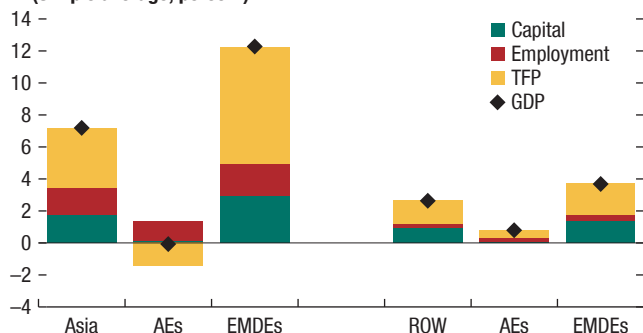

Source: IMF, World Economic Outlook database.
Note: Baseline shows the difference in GDP between prepandemic (January 2020) and postpandemic (August 2022) projections. "Potential" shows the same but for potential output. AEs = advanced economies; EMDEs = emerging market and developing economies.

showing the largest losses. Calculating output losses by using average GDP growth from 2015 to 2019 as the benchmark instead of prepandemic projections also yields similar results, indicating that potential optimism regarding prepandemic GDP projections is not responsible for the large expected losses (Figure 2.1, panel 3).

Furthermore, output losses are likely to persist in the long term: Most of the estimated medium-term decline in output after the pandemic is because of an envisioned decline in potential output (Figure 2.1, panel 4), suggesting that output losses will likely persist unless countries implement reforms to push supply. Indeed, while long-term forecasts are inherently more

Figure 2.1. Output Losses in Asia (continued)

Lower investment after the pandemic accounts for about 25 percent of output losses in Asian emerging market and developing economies, with potential spillovers to total factor productivity ...

5. Output Loss Contributions
   (Simple average, percent)

... with investment ratios expected to remain low in Asian emerging market and developing economies.

6. Capital Investment Losses from COVID-19
   (Simple average, percentage points)

Sources: IMF, World Economic Outlook database; Penn World Table; and IMF staff calculations.
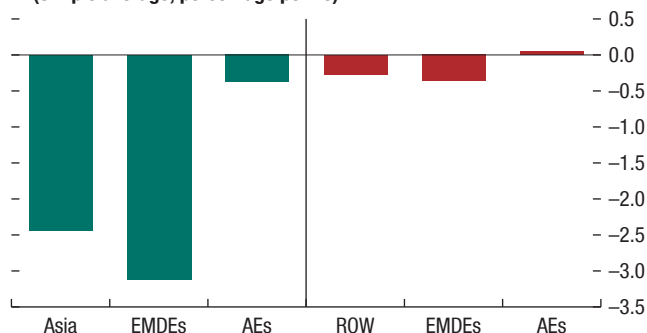Note: Output loss contributions are derived from a growth decomposition approach, using both historical and projected data for output and employment. Historical data are used for capital stock accumulation and are projected using forecasts of investment data from the World Economic Outlook database. AEs = advanced economies; EMDEs = emerging market and developing economies; ROW = rest of the world; TFP = total factor productivity.

Sources: IMF, World Economic Outlook database; Penn World Table; and IMF staff calculations.
Note: Bars denote the difference between projected prepandemic and postpandemic investment ratios for 2024. AEs = advanced economies; EMDEs = emerging market and developing economies; ROW = rest of the world.

uncertain, 10-year-ahead projections available from Economist Intelligence Unit and Consensus Forecasts indicate protracted output losses in the long term: by 2029, output is expected to remain well below (more than 6 percent) prepandemic trends for Asian emerging market and developing economies.

To identify the channels through which scarring is expected to occur, the chapter employs a growth decomposition approach using historical and forecast data to quantify the contributions of capital stock, employment, and total factor productivity in expected output losses. The results suggest that the direct contribution from lower capital accumulation is about 1.8 percent for Asia and about 3 percent in Asian emerging market and developing economies. To the extent that lower investment is likely to reduce total factor productivity growth in the future and considering the difficulty in accurately measuring and projecting capital stock, the true contribution of lower capital accumulation is likely larger. Lower employment growth contributes about 2 percent to expected output losses in emerging market and developing economies and 1.2 percent in Asian

advanced economies. The residual is attributed to losses in total factor productivity (Figure 2.1, panel 5).

The next sections explore some of these factors affecting the persistent decline in investment and employment.

Lower Investment in Asia: The Role of Corporate Debt in Amplifying Output Losses

Investment in Asia is expected to be reduced significantly after the COVID-19 pandemic: compared with prepandemic projections, investment as a share of GDP in 2024 is expected to be more than 3 percentage points lower in Asian emerging market and developing economies, compared with only a 0.5 percentage point decline in other regions (Figure 2.1, panel 6).

While cyclical conditions—such as lower demand, heightened uncertainty, and the global rise in interest rates seen in 2022—are the key contributors to the decline in investment in the

Figure 2.2. Corporate Debt and Education Losses during COVID-19: Implications for Asia

*Corporate debt is Asia was higher than peers heading into the pandemic ...*

1. Nonfinancial Corporate Debt, 2019
   (Percent of GDP; simple average)
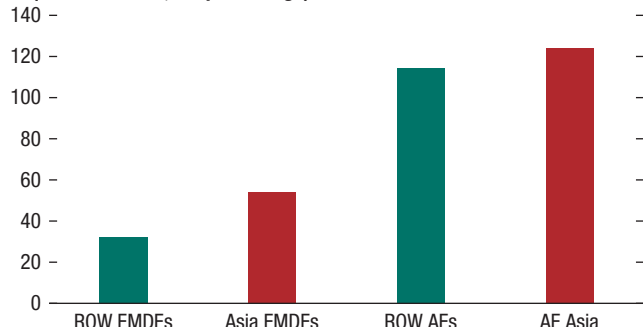
Sources: International Institute of Finance; and IMF, World Economic Outlook database.
Note: Regional aggregates are computed as a simple average. AEs = advanced economies; EMDEs = emerging market and developing economies; ROW = rest of the world.

... and worsened rapidly with the onset of COVID-19.

2. Nonfinancial Corporate Debt
   (Percent of GDP; 2021 versus 2019)
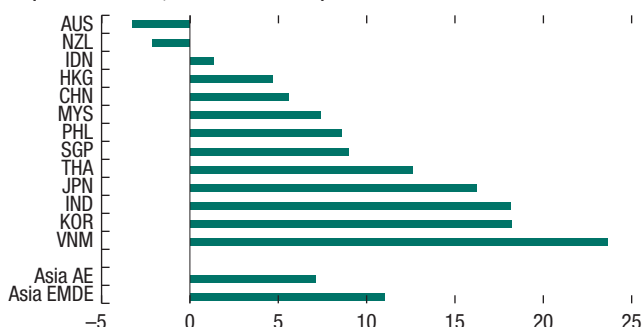
Sources: International Institute of Finance; and IMF staff calculations.
Note: Simple average. Country abbreviations are International Organization for Standardization country codes. AE = advanced economy; EMDE = emerging market and developing economy.

The pandemic's effect differed across sectors, with the worst-hit industries seeing significant rise in corporate debt.

3. Change in Yearly Average Debt to Assets
   (Percentage points; asset weighted)
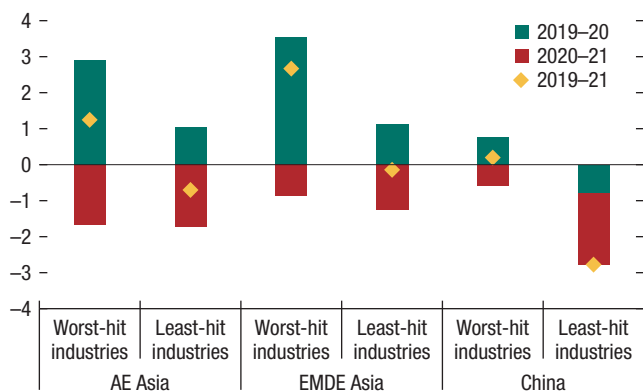
Sources: Capital IQ database; and IMF staff calculations.
Note: Worst- (least-)hit industries are defined as those having the largest (smallest) declines in revenue between 2019 and 2020, and 2020 and 2021, respectively. AE = advanced economy; EMDE = emerging market and developing economy.

Scarring is more severe in high-debt firms, as they see a larger reduction in investment compared with low-debt firms after a recession ...

4. Decline in Investment Following Recessions, High-Debt Firms
   Relative to Low-Debt Firms
   (Percentage points)
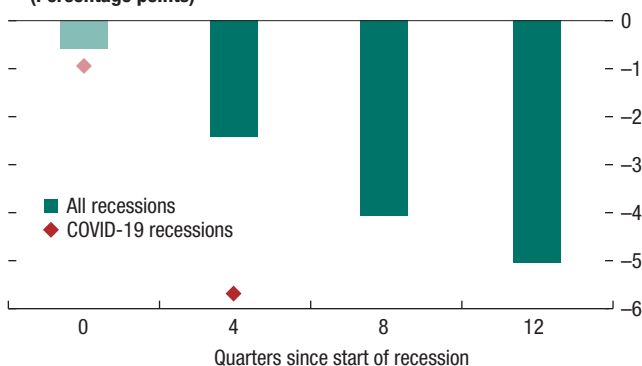
Source: Estefania-Flores and others (forthcoming).
Note: The empirical analysis is based on a difference-in-difference estimate, comparing the decline in capital expenditure for high-debt firms relative to low-debt firms for different horizons since the start of a recession, where a firm is defined to be high debt if its debt-to-asset ratio is above the industry median. The bar charts correspond to the decline in investment at a specified horizon. All recessions are defined as start of technical recession. COVID-19 recessions are defined as start of technical recession after 2019:Q4.

short term, one key structural factor is likely to contribute to investment scarring in Asia: the elevated level of nonfinancial corporate debt.

Indeed, high corporate leverage has been typically found in the literature to be associated with lower levels of capital spending, as highly leveraged firms find it more difficult to finance investment projects (for example, Myers 1977; Campello, Graham, and Harvey 2010; Albuquerque 2021; April 2022 *World Economic Outlook*), and the current crisis occurred in a context of historically high nonfinancial corporate debt in Asia—much higher than in other parts of the world, especially in Asian emerging market and developing

Figure 2.2. Corporate Debt and Education Losses during COVID-19: Implications for Asia (continued)

... especially high-debt firms that are more financially constrained.

5. Impact of High Debt on Investment, Interaction with Other Firm Characteristics
**(Percentage points)**
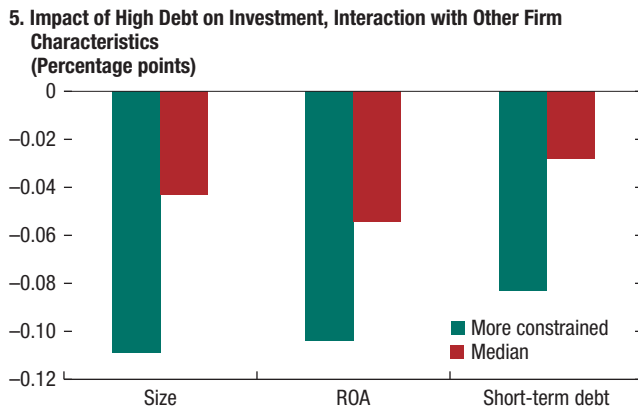
Source: Estefania-Flores and others (forthcoming).
Note: The figure shows how debt interacts with financial constraints to determine the extent of scarring after recessions. Financial constraint is proxied using three variables: size (log assets), profitability (return on asset [ROA]) and maturity structure (share of short-term debt). Red bars denote the differential impact of recessions on investment for high-debt firms and low-debt firms at the median level of each variable, and green bars show the differential effect at the 25th percentile for size and ROA and the 75th percentile for share of short-term debt.

In the long term, losses from school closures are likely to add to scarring ...

6. School Closures Due to COVID-19
(Average days with closed schools)
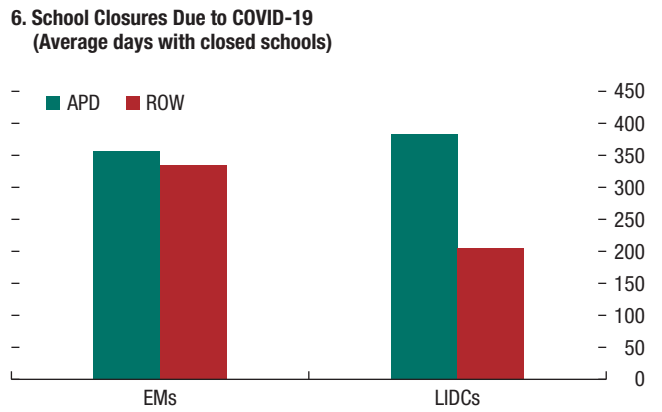
Sources: United Nations Educational, Scientific, and Cultural Organization; and IMF staff calculations.
Note: Analysis excludes Pacific island countries. APD = Asia and Pacific; EMs = emerging markets; LIDCs = low-income developing countries; ROW = rest of the world.

... as is lower population growth driven by lower fertility after the pandemic.

7. Total Fertility Rate Losses
(Percent)
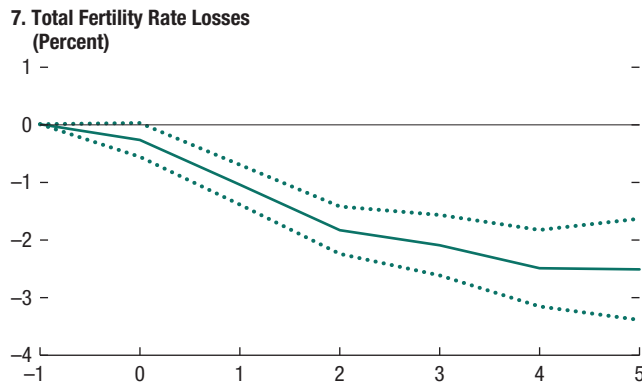
Sources: Furceri, Pizzuto, and Yarveisi (forthcoming); and IMF staff calculations.
Note: The figure shows the impulse response of fertility rate to a dummy variable that takes value 1 for the start of an epidemic. Based on annual data for 177 countries from 1969 to 2019.

economies (Figure 2.2, panel 1). While China has one of the highest levels of corporate debt among emerging market and developing economies, average leverage in the ASEAN and South Asian countries was also higher than the global emerging market and developing economies average heading into the crisis.

Corporate leverage has increased further after the pandemic. The increase has been large in Asian advanced economies and emerging market and developing economies, rising by about 6 percent of GDP on average between 2019 and 2021 (Figure 2.2, panel 2).[2] It has also been concentrated

[2]The decline in corporate leverage in Australia and New Zealand between 2019 and 2021 potentially reflects lower debt levels for

in industries such as consumer services and transportation that were worst hit by COVID-19, while less-hit industries (like pharmaceutical and biotechnology firms, semiconductor producers) recorded a contraction in their debt levels (Figure 2.2, panel 3). This divergence is starker in emerging market and developing economies than in advanced economies, with leverage ratios higher by an additional 1 percentage point in the worst-hit industries in emerging market and developing economies, as government financial support was also likely lower for these firms during the pandemic.

To quantify the potential role of corporate leverage in shaping medium-term investment losses from the crisis, the chapter uses a rich and novel firm-level quarterly database to assess the scarring effect of high corporate debt on investment after recessions.[3] The results suggest that while recessions have a large negative and persistent impact on firm-level investment in the medium term, this effect is especially larger in highly indebted firms: investment declines by an additional 2.5 percentage points within four quarters of the beginning of a recession in high-debt firms relative to low-debt firms, with the effect increasing to more than 5 percentage points by 12 quarters (Figure 2.2, panel 4). These results and back-of-the-envelope calculations suggest that that firms' debt accounts for at least 28 percent of the average medium-term decline of investment after past recessions.

The results also suggest that the decline in investment is larger for high-debt firms that are smaller in size, less profitable, and with a higher share of short-term debt. This likely reflects

difficulty in raising external funding because of lack of collateral, limited internally generated funds, and problems in rolling over debt, respectively, making it more difficult to invest in new projects (Figure 2.2, panel 5).

Finally, early data suggests that the role of corporate debt—the differential impact for high-debt firms versus low-debt firms—has been more than two times larger during the pandemic, possibly because of the high level of corporate debt heading into the crisis and the large magnitude of the shock.

Decline in Labor Inputs in Asia: Implications for the Long Term

Another concerning trend after the pandemic is the decline in employment growth, which is expected to contribute to output scarring in Asia by 1.5 percentage points. Different factors contribute to employment scarring. In advanced economies, the decline in employment is mainly driven by a lower population, as border closures brought migration to a standstill in countries like Australia and New Zealand. Meanwhile, in emerging market and developing economies, the main driver is lower labor force participation, potentially caused by worker disengagement and greater economic dislocation, which highlight the risk of long-term losses in employment for the economies.

Scarring via the employment channel is likely to persist beyond 2024 as the quantity and quality of the labor force may decline in the very long term. Regarding the quality of the labor force, education losses engendered by protracted school closures are expected to lead to significant losses in human capital and therefore productivity in the long term (April 2022 *World Economic Outlook*, Chapter 2). This is particularly concerning for Asia, where school closures stand out in duration compared with other regions and are especially pronounced in lower-income countries (Figure 2.2, panel 6).

Meanwhile, a population decline after the pandemic is also expected to reduce the labor

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commodity producers that have benefited from high commodity prices.

[3]The detailed quarterly balance sheet data on firm leverage and investment allow for better identification of the impact of recessions. The analysis uses Jordà's (2005) local projection method on a firm-level database for 75 countries, over the period from the first quarter of 2001 to the fourth quarter of 2020, to estimate the scarring effects of recessions and how they are amplified by the level of debt. In a first step, it estimates the average (unconditional) effect of recessions on firms' investment, and in the second step, it uses a difference-in-differences specification to analyze how this investment response after a recession varies for high-debt firms versus low-debt firms. See Estefania-Flores and others (2022) for details.

force and engender scarring in the very long term: Fertility rates have declined during the pandemic—especially in countries with stricter lockdown and economic losses such as Asian emerging market and developing economies—and are unlikely to recover in the medium term. Furceri, Pizzuto, and Yarveisi (forthcoming) provide evidence that major pandemic recessions over the past two decades, even though smaller in scale than COVID-19, have led to persistent declines in fertility rates of about 2.5 percent (Figure 2.2, panel 7).

Policies to Mitigate Scarring

Given the large output losses facing the Asia and Pacific region after the COVID-19 pandemic, an urgent push for structural reform is needed to boost productivity and potential output, improve labor outcomes, and encourage investment. While exact reform priorities will depend on country-specific circumstances, tackling the corporate debt overhang and mitigating human capital losses will be important for a wide range of countries in the region. In addition, faster adoption of digital technologies can mitigate the adverse effects of recessions on productivity and improve resilience in the labor market.

Tackling corporate debt overhang: To reduce corporate leverage and increase the resilience of economies to shocks, policymakers in the region need to adopt improved frameworks to restructure viable firms and liquidate unviable firms to avoid zombification, while promoting the reallocation of capital and labor toward more productive firms. Unwinding the government support extended to firms during the early phase of the pandemic will also be essential to ensure adequate reallocation of resources.

Mitigating human capital losses: A focus on mitigating the effects of school closures on education is needed by assessing learning losses and increasing financing to remediate students' skills (through additional in-person and teachers' training, extended school years, and so on). Policies that return people to the labor force

(retraining programs and worker reallocation policies, for example) can also help offset labor market scarring after the COVID-19 crisis.

Potential role of digitalization: In addition, policies that promote digitalization are likely to be especially important in a post–COVID-19 world to protect and enhance the education system's preparedness for future pandemics, boost productivity, and increase firms' resilience to future shocks.[4] Firms and industries harnessing digital technologies can unlock productivity gains, for instance, through automation (Aghion and others 2020; Dabla-Norris and others, forthcoming; Koch, Manuylov, and Smolka 2019) and are better able to connect with distant customers and employees (Bloom and others 2015; Brynjolfsson, Hui, and Liu 2019). Digitalization also improves the ability to work remotely or sell without contact, which are capabilities that have shielded workers and firms from the pandemic's negative effects (October 2020 *Regional Economic Outlook: Asia and Pacific*; Abidi, El Herradi, and Sakha 2022; Pierri and Timmer 2020). Companies have adopted new digital technologies rapidly during the current crisis, ranging from teleconferencing software to e-commerce platforms. Capitalizing on such innovations—both technological and organizational—can help alleviate the pandemic's medium-term scarring effects.

Before the pandemic, progress across various forms of digitalization has been mixed in Asia. While Asian advanced economies and China have seen significant progress in digitalization and are now at the world frontier, digitalization in Asian emerging market and developing economies has lagged (Figure 2.3, panel 1), amplifying the COVID-19 shock's immediate effect in many of these economies (Figure 2.3, panel 2).[5] In Asian advanced economies, the share of the population

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[4]Digitalization is a broad concept, including use of digital technologies, data, and interconnection that results in new activities or changes to existing activities (OECD 2019). Reflecting the breadth of this concept, there is not yet a single generally accepted measure of digitalization (OECD 2021). We therefore draw on a range of measures, as described in the following and in Copestake, Estefania-Flores, and Furceri, forthcoming.

[5]For example, Furceri and others (2021) find that the effect of similar increases in lockdown stringency measures have been

Figure 2.3. Digitalization in Asia

Internet connectivity has increased rapidly, but digitalization has lagged in Asian emerging market and developing economies ...

1. Internet Connection
(Individuals using internet, percent of population, simple average)
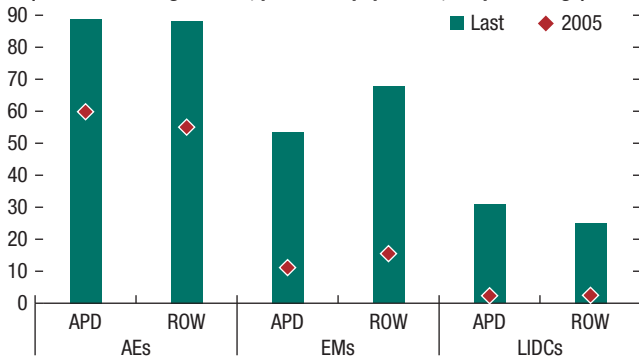
Source: UNESCO; and IMF staff calculations.
Note: AEs = advanced economies; APD = Asia and Pacific; EMs = emerging markets; LIDCs = low-income developing economies; ROW = rest of the world.

Asia has become an innovation powerhouse, with Asian advanced economies and China accounting for more than half of global patents.
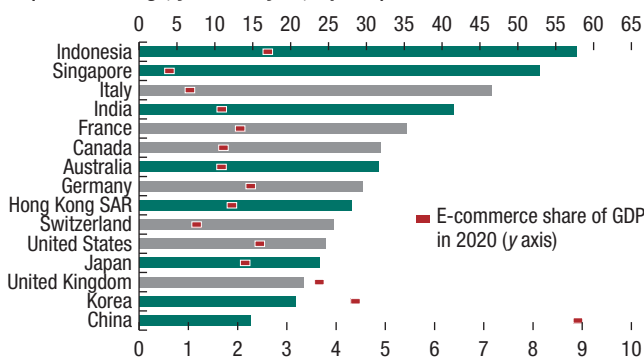
3. Asia: Share of World Patents
(Percent)
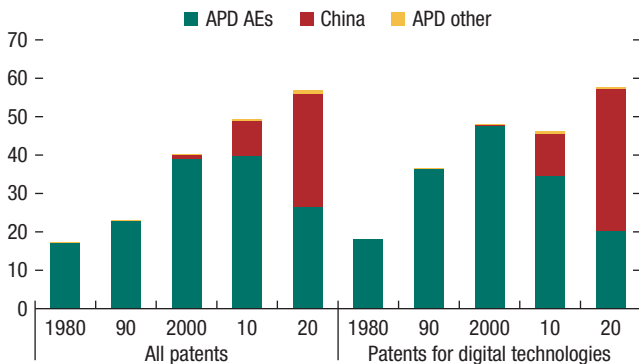
Sources: Dabla-Norris and others (forthcoming); and World Intellectual Property Organization.
Note: AEs = advanced economies; APD = Asia and Pacific.
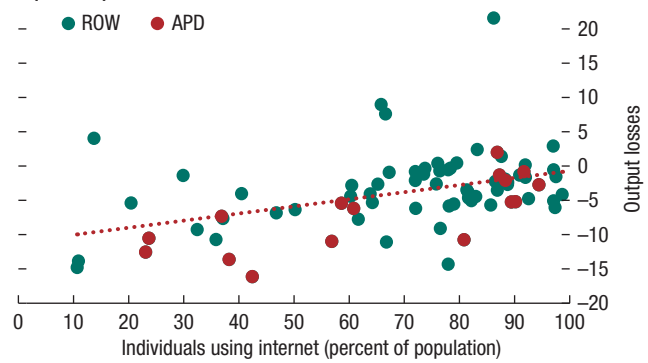
... with the pandemic accelerating e-commerce growth ...

5. Asia: E-Commerce Revenue Growth across Countries, 2020
(Percent change, year-over-year, top axis)

Sources: Dabla-Norris and others (forthcoming); and Statista.

... heightening the risks of scarring.

2. Output Losses and Internet Connectivity
(Percent)

Sources: World Bank database; and IMF, World Economic Outlook database.
Note: APD = Asia and Pacific; ROW = rest of the world.

E-commerce has expanded rapidly in recent years, though Asian emerging market and developing economies lag China and advanced economies ...

4. Asia: E-Commerce Revenue
(Percent of GDP)
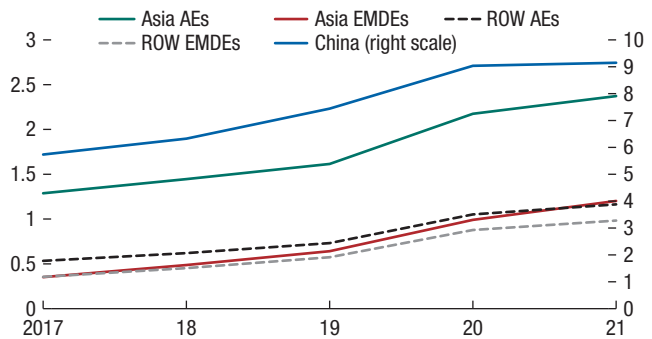
Sources: Dabla-Norris and others (forthcoming); and Statista.
Note: AEs = advanced economies; EMDEs = emerging market and developing economies; ROW = rest of the world.

... and raising demand for tech workers, particularly in Asian emerging market and developing economies.

6. Asia: Vacancy Posts
(Indexed to Jan.–Feb. 2020 level; 30-day MA)
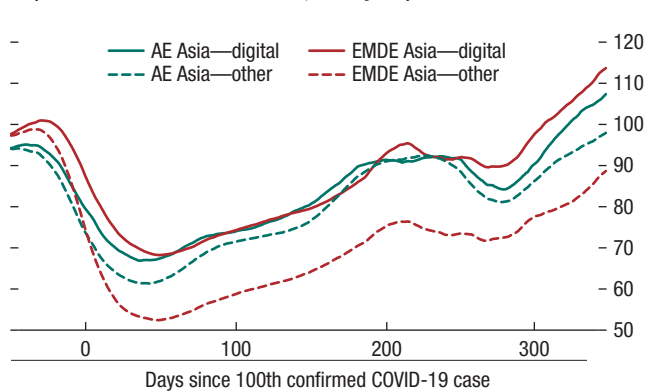
Sources: Indeed; and IMF staff calculations.
Note: AE = advanced economy; EMDE = emerging market and developing economy; MA = moving average.

using the internet has increased significantly over the last two decades, reaching almost 90 percent before the crisis. By contrast, there are still many people without internet access in Asian emerging markets and low-income developing countries. Similarly, Asian advanced economies and China have become an innovation powerhouse, accounting for about 57 percent of all world patents and 58 percent of patents for digital technologies in 2020, but other Asian emerging market and developing economies lag considerably in the field of innovation, contributing only 1 percent and 0.3 percent, respectively (Figure 2.3, panel 3). Moreover, e-commerce revenue has reached more than 2 percent of GDP in Asian advanced economies and China, but it accounts for only about 1 percent of GDP in Asian emerging market and developing economies (Figure 2.3, panel 4).

The pandemic has accelerated digitalization around the world, including in many Asian emerging market and developing economies. For example, e-commerce revenues have increased, with particularly rapid expansion in some emerging markets such as India and Indonesia (Figure 2.3, panel 5). Labor market developments during the pandemic also skewed toward digital sectors. Using novel high-frequency data on job vacancy posts from Indeed, the chapter finds that vacancies in digital sectors fell less than in other sectors after the pandemic and recovered more rapidly, especially in emerging market and developing economies, driven partly by firms' need to adapt to the new pandemic environment (Figure 2.3, panel 6).[6]

To quantify the role of digitalization in reducing scarring, the chapter uses several complementary analyses. The first approach, similar to that used for the role of corporate debt, looks at the ability of digitalization to increase the resilience of revenue to typical recessions. The results suggest that firms in more digitalized industries (for

instance, the software industry) recorded sales 1.4 percent higher two years after past recessions compared with industries that are less digital (for example, textiles and apparel; Figure 2.4, panel 1).[7]

The second set of analyses looks specifically at the COVID-19 shock. The results, as expected, suggest that digitalization plays a larger role in the context of the current crisis, with firm revenue after the outbreak being 3.4 percent higher in more digitalized industries. Additional analysis also shows that digitalization supported resilience in employment: hiring rates are higher in industries using more digital skills, and those industries also attract larger net inflows of workers (Figure 2.4, panel 2).[8]

Conclusion

The analysis presented in the chapter shows that the Asia and Pacific region is expected to suffer significant long-term output losses after the pandemic because of lower investment, productivity growth, and labor force participation. A renewed structural reforms push is essential to mitigate the pandemic's scarring effects, especially in emerging market and developing economies. Addressing investment scarring stemming from higher corporate debt by promoting orderly deleveraging and mitigating education losses from school closures should be a priority. The analysis in the chapter also shows that digitalization can be a powerful force in mitigating scarring, beyond

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much larger in emerging market and developing economies than in advanced economies.

[6]The data set provides daily counts of job posts for 64 occupational categories and 35 countries between January 2018 and July 2022.

[7]The analysis follows a similar approach as Estefania-Flores and others (forthcoming) and uses a difference-in-differences specification to analyze how the firms' revenue response varies with the level of sectoral digitalization. The results are consistent across a range of measures of digitalization, including (1) that of Calvino and others (2018), who combine information and communications technology input shares, robots per employee, and online sales shares; (2) information technology goods and services input shares from national input-output tables; and (3) firm-level intangibles shares. See Copestake, Estefania-Flores, and Furceri (forthcoming) for details.

[8]The analysis of hiring rates and worker transitions again adopts a difference-in-differences approach, in this case using monthly data from LinkedIn covering 20 broad industries across 40 countries between 2016 and 2022. Hiring rates are calculated using the share of LinkedIn members adding a new employer to their profile in the same month that the job begins, and digital skills usage is calculated using the proportion of such skills listed by users within a particular country-industry pair.
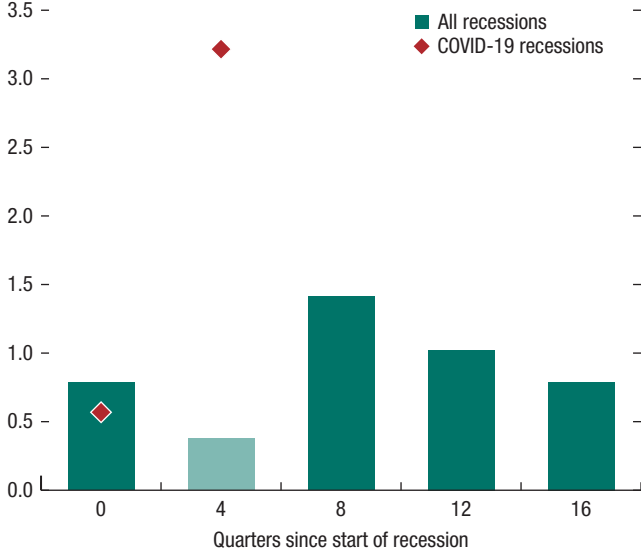
Figure 2.4. Digitalization and Resilience

*Sales by firms in more digitalized industries are more resilient through recessions, particularly after COVID-19.*

1. Differential Impact of Recession on Revenue in Highly Digitalized Firms vs. Average
   (Percentage points)

Industries using more digital skills also had higher hiring rates and larger net inflows after the pandemic.

2. Differential Impact of COVID-19 on Hiring Rates and Transitions into/out of Industries Using More Digital Skills vs. Average
   (Percentage points, two years after the start of COVID-19 recession)

Source: Copestake, Estefania-Flores, and Furceri (forthcoming).
Note: Light-shaded areas indicate that results are not significant at 90% confidence intervals. All recessions are defined as start of technical recession. COVID-19 recessions are defined as start of technical recession after 2019:Q4.
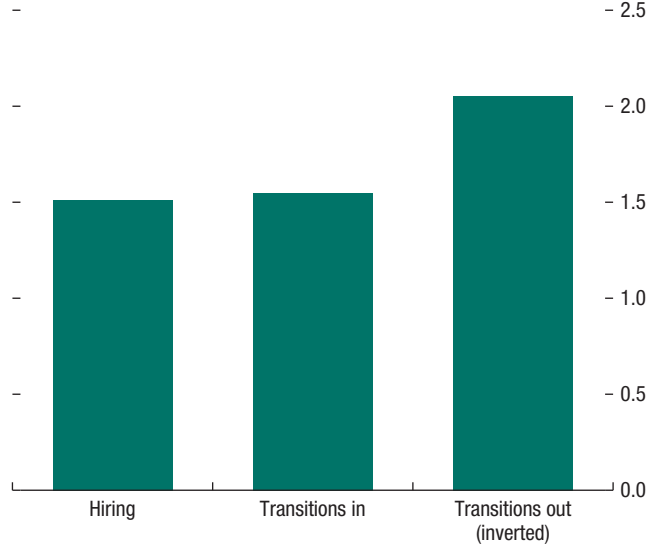
Source: Copestake, Estefania-Flores, and Furceri (forthcoming).
Note: Transitions out is inverted, so positive values reflect fewer workers leaving the industry.

boosting productivity growth (Dabla-Norris and others, forthcoming), and while Asia has invested rapidly in this area, there is scope for further reforms. Investment to enhance digital connectivity and capabilities should be a priority, especially in low-income developing countries and for disadvantaged groups and regions. Countries with low digitalization outcomes and in which labor markets were affected significantly during the pandemic should invest in training and upskilling their labor forces to enhance resilience to future shocks.

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3. Asia and the Growing Risk of Geoeconomic Fragmentation

Trade has been an engine of growth for Asia and the world. The rise of geopolitical tensions in recent years—first amid US-China trade tensions and now accelerating in the wake of Russia's invasion of Ukraine—has brought concerns that this engine of growth could go into reverse as strategic competition and national security considerations take precedence over the shared economic benefits of global trade. This chapter documents early signs of trade fragmentation in the form of rising trade restrictions and uncertainty and provides empirical analyses showing that higher trade policy uncertainty leads to adverse macroeconomic outcomes. Longer-term, model simulations suggest that a sharp fragmentation scenario, in which the world divides into separate trading blocs, would carry large, permanent output losses that are especially high for Asia, given its significant role in global manufacturing and trade. There are also early signs of financial fragmentation, which would add to the costs of fragmenting trade.

Trade Fragmentation: What Is at Stake and Early Signs

Greater trade integration has raised productivity and living standards around the world over the past few decades. The growth of global value chains has also resulted in economies becoming increasingly interdependent. This trend toward increased integration and interdependence has played a key role in the economic success of Asian economies but has now also left the region especially vulnerable to fragmentation risks.

What is at stake: Asia has come to play a key role in global production, with value added originating from the region satisfying about 50 percent of external demand in North America and 35

percent in Europe in 2018, up from 41 percent and 28 percent, respectively, in 2000 (Figure 3.1, panel 1). As a result of becoming a global production hub, Asia is also now a key trading partner for commodity exporters around the world who depend crucially on Asian demand for raw materials. For example, Asia accounts for close to 50 percent of global demand in key commodities, including mineral fuels and green transition minerals (Figure 3.1, panel 2).

Asia's ability to supply the world is largely underpinned by well-developed regional value chains. Almost two-thirds of intra-Asian trade consists of trade in intermediate goods, which is significantly higher than the global average (Figure 3.1, panel 3).

Early signs: Rising geopolitical tensions over the past few years have been accompanied by growing signs of trade fragmentation around the world, raising concerns that trade flows may increasingly be driven by strategic competition and national security considerations, potentially at the expense of economic efficiency.
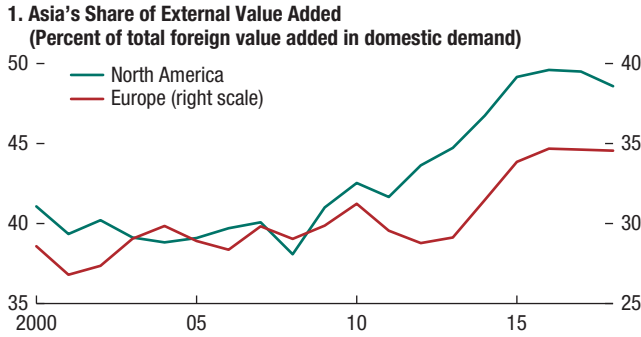
Even though trade outturns have recently been strong, including due to the temporary pandemic driven reorientation of demand away from services and toward goods (August 2022 *External Sector Report: Pandemic, War, and Global Imbalances*), early signs of trade fragmentation pressures are clearly visible in data on trade-related uncertainty, which spiked in 2018 amid US-China trade tensions. After moderating temporarily, trade uncertainty increased again with Russia's invasion of Ukraine, as sanctions on Russia created uncertainty around future trade relations (Figure 3.1, panel 4).

Actual trade restrictions imposed by countries have also been on a rising trend, with data from Global Trade Alert showing a significant increase in new restrictions since 2018, mirroring the increase seen in trade-related uncertainty (Figure 3.1,

Figure 3.1. Trade Fragmentation: What Is at Stake and Early Signs

Asia plays a central role in global production, with its exports satisfying a growing share of global external demand ...

1. Asia's Share of External Value Added
   **(Percent of total foreign value added in domestic demand)**

Source: Organisation for Economic Co-operation and Development Trade in Value Added Database.

Furthermore, the high share of intermediate goods trade within Asia highlights the interdependence in economic activity across countries in the region.

3. Gross Exports of Intermediate Goods
   (Percent of total gross exports, 2021)

Sources: UN Comtrade; and IMF staff calculations.

*... and the number of trade restriction measures imposed by countries increasing significantly ...*

5. Harmful Trade Restrictions Imposed
   (Number)
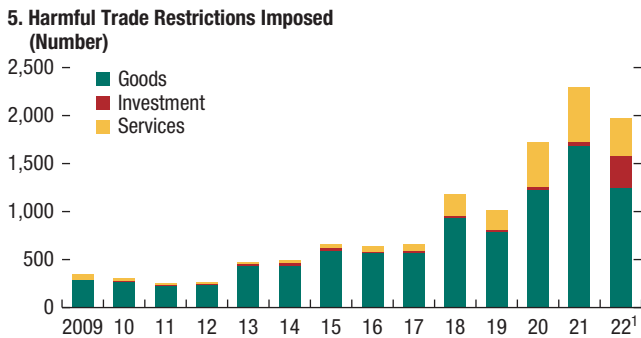
Source: Global Trade Alert.
Note: Data for all years adjusted for reporting lag as of the last day of the year.
[1]For 2022, data as of July 29 are scaled up based on number of measures reported by the same day in 2021 relative to total measures reported for 2021.

... and Asian countries depend heavily on global trade to meet their demand for key commodities.

2. Asian Imports of Selected Commodities
   **(Percent of global imports)**
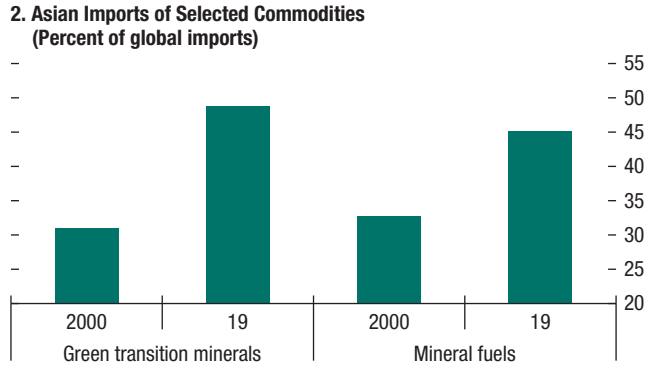
Sources: UN Comtrade; and IMF staff calculations.
Note: Green transition minerals includes copper, lithium, nickel, manganese, cobalt, graphite, zinc, rare earths, and silicon. Mineral fuels include coal and oil.

Signs of fragmentation in trade are appearing, with trade-related uncertainty spiking in recent years ...

4. Trade Uncertainty
   (Contributions to the index, left scale; overall index, right scale)
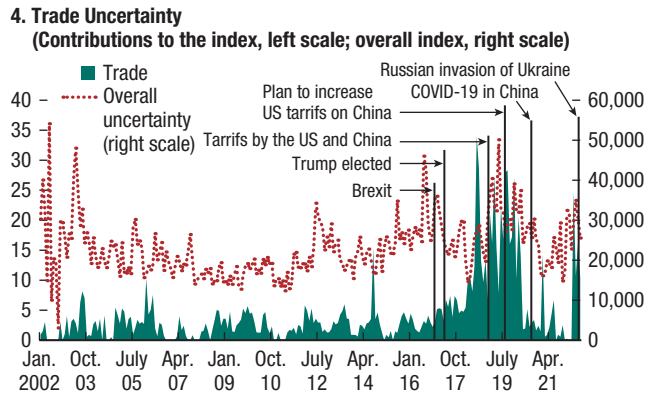
Source: Ahir, Bloom, and Furceri 2022.

... especially in the high-tech and energy sectors.

6. Trade Restrictions on High-Tech and Energy Sector
   (Percent of total goods restriction)
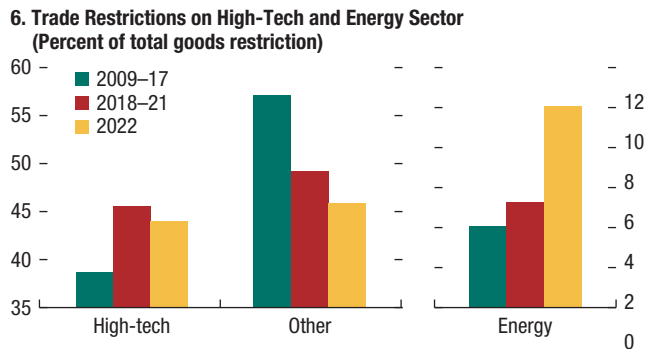
Source: Global Trade Alert.
Note: Sectors identified from CPC Version 2.1 UN (2015). "High tech" includes all sectors classified as high technology or medium-high technology in Organisation for Economic Co-operation and Development (2011). Energy includes coal, petroleum, and natural gas, among others.

panel 5).[2] Furthermore, the sectoral composition of trade restrictions has been rotating. The share of restrictions that target high-tech sectors has been steadily increasing since the global financial crisis, potentially reflecting the increasingly prominent role of these sectors in both economic competition and national security.[3] Restrictions targeting the energy sector increased sharply in the wake of Russia's invasion of Ukraine, while those aimed at high-tech sectors also remained high (Figure 3.1, panel 6).

The Effect of Trade Policy Uncertainty

Increased trade-related uncertainty as seen in recent years is concerning because even in the absence of actual new policy actions toward fragmentation, uncertainty can dent economic activity. In particular, uncertainty around trading relationships creates an incentive to "wait and see," leading firms to pause investment and reduce firm entry into exporting (Caldara and others 2020; Handley and Limão 2022). Higher trade uncertainty can also increase inflation by raising import prices (Handley and Limão 2017) or by inducing firms to increase their markups (Fernández-Villaverde and others 2015).

The analysis uses the country-specific measures of trade policy uncertainty taken from the World Trade Uncertainty Index from Ahir, Bloom, and Furceri (2022) and local projection methods (Jordà 2005) to extend the empirical evidence on the macroeconomic impact of trade policy uncertainty to a panel of countries.[4] The results

suggest that an increase of one standard deviation in trade policy uncertainty, which corresponds approximately to the increase seen between March and June 2018 in the buildup to US-China tariffs, reduces investment by about 2.5 percent within three years (Figure 3.2, panel 1). Higher trade policy uncertainty is also associated with a decline in broader economic activity, with GDP falling by 0.4 percent and the unemployment rate rising by 1 percentage point. Notably, exchange rates depreciate in countries that see an increase in uncertainty, as foreign exchange markets incorporate higher risk premiums (Engel and West 2005), leading import prices to rise (Figure 3.2, panel 2). The analysis controls for changes in nontariff barriers; a simultaneous increase in trade uncertainty and actual trade barriers is likely to result in even more adverse macroeconomic outcomes.[5]

Evidence from a large cross-country panel of firms corroborates trade policy uncertainty's large and significant impact on investment and allows exploration of heterogeneity in the effect of trade policy uncertainty across countries and firm characteristics.[6] The analysis shows that average firms' investment declines by about 5 percent two years after an increase of one standard deviation in the World Trade Uncertainty Index.[7] The effect is

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[2]Global Trade Alert tracks announcements made by governments that unilaterally change the relative treatment of foreign versus domestic commercial interests. The restrictions covered include those related to the rise in bilateral tariffs between China and the United States, which previous estimates suggest cut global GDP in 2022 by about 0.4 percent compared with a counterfactual without the imposition of these barriers (see Scenario Box 1.2 in Chapter 1 of the October 2019 *World Economic Outlook*).

[3]High-tech sectors include all sectors classified as high technology or medium-high technology in OECD (2011).

[4]To date, the empirical evidence on the impact of trade uncertainty has focused on the United States (Caldara and others 2020). The country-level model includes controls for growth expectations, the index measuring trade restrictions from Estefania-Flores and

others (2022), the world uncertainty index of Ahir, Bloom, and Furceri (2022), credit to nonfinancial corporations, lags of GDP and changes in the dependent variable, and country and time fixed effects.

[5]See Estefania-Flores and others (2022) and the October 2021 *Regional Economic Outlook: Asia and Pacific*, Chapter 4.

[6]The firm-level model also estimates impulse responses for investment based on Jordà (2005), controlling for firm-quarter and country-sector fixed effects and lags of investment spending. In a first step, it estimates the average (unconditional) effect of an increase in World Trade Uncertainty Index on firms' investment. In the second step, it uses a difference-in-difference specification to analyze how this investment response after a World Trade Uncertainty Index shock varies for country and firm characteristics by interacting the World Trade Uncertainty Index with a dummy variable that equal to 1 when countries are classified as emerging market and developing economies, and when companies' mean trade exposure, liquidity, or debt to asset are above or below the median value within its industry.

[7]There are several reasons why the effect is larger than in the country-level results. First, firms included in the sample used for the firm-level analysis are only listed firms that are typically more "global" and exposed to trade. Second, the average effect on firms' investment varies substantially across firms and tends to be larger for smaller firms (which accounts less in overall value added) that are more credit constrained. Finally, the country and time coverage

Figure 3.2. Impact of Trade Policy Uncertainty

*An increase in trade policy uncertainty reduces investment ...*

1. Evolution on Investment Following a WTUI Shock
   (Percent)
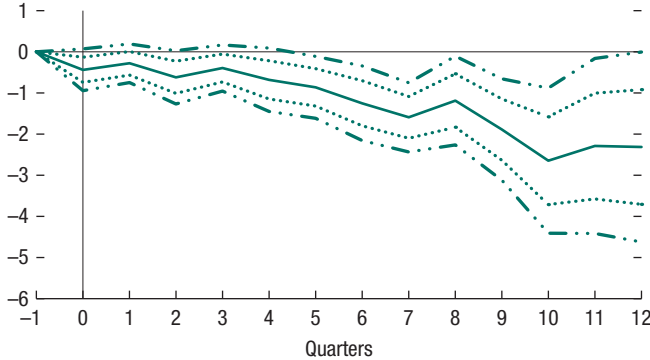
Sources: Ahir, Bloom, and Furceri 2022; and IMF staff calculations.
Note: Dotted lines are 68 and 90 percent confidence intervals. WTUI = World
Trade Uncertainty Index.

*Analysis with firm-level data confirms the negative effect of the World
Trade Uncertainty Index on investment ...*

3. Evolution of Firm-Level Investment Following a WTUI Shock
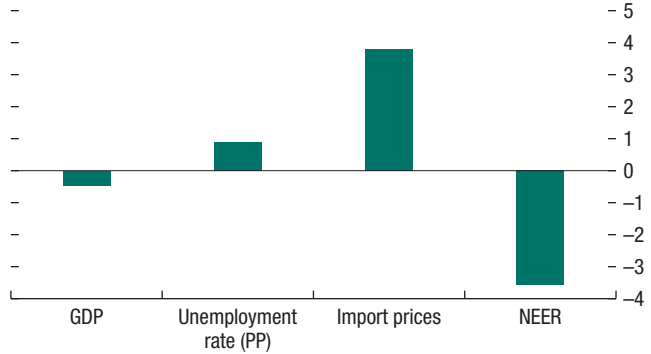   **(Percent)**
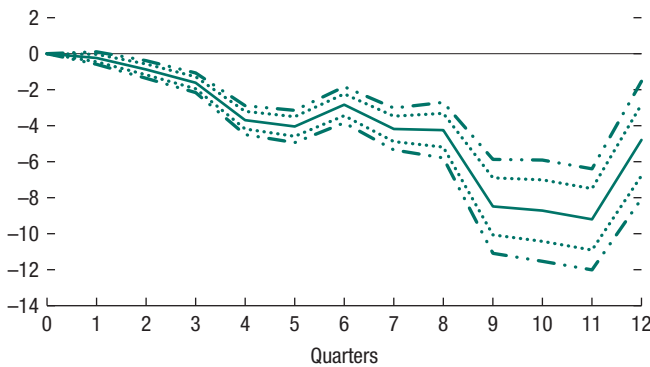
Sources: Ahir, Bloom, and Furceri 2022; and IMF staff calculations.
Note: Impulse response function based on local projection methods following
Jordà (2005) using firm-level quarterly data from 75 countries for the period
from the first quarter of 2001 to the fourth quarter of 2020. The solid line shows
the point estimate for the impact on investment for different horizons, while the
dotted lines are the 68 and 90 percent confidence intervals. Standard errors are
clustered at two-way at the firm and country-time level. WTUI = World Trade
Uncertainty Index.

... and GDP, while raising price levels and unemployment.

2. Impact of WTUI on Macro Variables
   (Percent, peak of cumulative effect)

Sources: Ahir, Bloom, and Furceri 2022; and IMF staff calculations.
Note: NEER = nominal exchange rate; PP = percentage point; REER = real
exchange rate; WTUI = World Trade Uncertainty Index.

*... with the effects larger in emerging market and developing
economies and in more open economies, and also in more financially
constrained firms.*

**4. Medium-Term Differential Effect of Trade Uncertainty on (log)
   Investment Depending on Country and Firm Characteristics
   (Percent)**
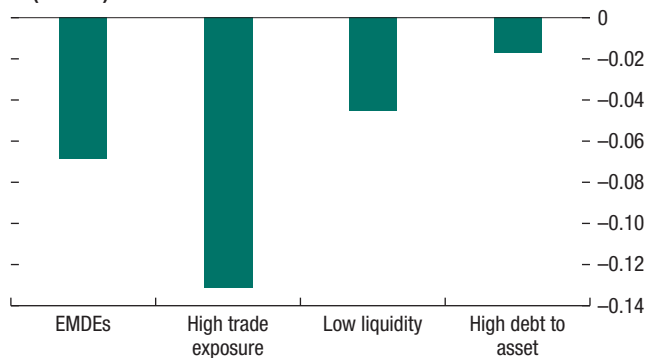
Sources: Ahir, Bloom, and Furceri 2022; and IMF staff calculations.
Note: Based on local projection methods following Jordà (2005) using firm-level
quarterly data from 75 countries for the period from the first quarter of 2001 to
the fourth quarter of 2020. The figure plots the coefficient on the interaction
term between the World Trade Uncertainty Index and different dummy variables
equal to 1 when countries are classified as EMDEs, and when companies' mean
trade exposure, liquidity, or debt to asset are above or below the median value
within its industry. EMDEs = emerging market and developing economies.

even larger for emerging market economies, where
uncertainty tends to have a larger impact on credit
extension, amplifying the decline in investment
(Carrière-Swallow and Céspedes 2013), and for
countries with a higher level of trade openness
(Figure 3.2, panel 4). Financial constraints also

amplify the real effects of uncertainty, with a larger
impact for firms with low liquidity and high debt
to assets because the cost of and access to external
finance deteriorates (Alfaro and others 2019;
Caggiano and others 2021).[8]

[8]The results are generally robust to changes in the sample of econ-
omies. For example, the results on investment (both country-level
and firm-level) are unchanged if China and its closest trading part-
ners are removed. Similarly, the results are robust when the spike in

in the firm-level analysis is smaller than that of the country-level
analysis.

Long-Term Losses from a World Divided into Trading Blocs

Higher trade policy uncertainty is already having negative economic effects in the short term, but how much larger could losses be in the long term if more severe fragmentation scenarios divide the world into trading blocs? To answer this question, some illustrative fragmentation scenarios were simulated using a sectoral, computable, general equilibrium model with firm heterogeneity and input-output links. The model captures long-term productivity losses as trade is cut off between economies, with gains from specialization and scale being unwound and some firms being forced to exit (Caliendo and others 2017). Because the model does not capture all possible channels through which trade fragmentation can affect output, estimates should be taken as a lower bound of the potential loss associated with fragmentation in trade.[9] TThe analysis focused initially on the fragmentation of trade in two broad sectors that have seen an increase in restrictions in recent years and that are closely related to energy and broader national security concerns, respectively: extractive industries (which include fossil fuel extraction) and high-tech manufacturing (which encompasses electrical machinery and equipment and transport equipment). Fragmentation in these sectors is defined as the elimination of sectoral trade between countries in different blocs.

Any discussion of the longer-term consequences of trade fragmentation will need to make some assumption about the dividing lines that might arise. There are multiple possible scenarios, none of which are necessarily more likely or unlikely than another. In this spirit, the following describes the consequences of a purely hypothetical global economy divided along the lines implied by

the votes cast on the March 2, 2022, United Nations General Assembly motion to condemn Russia's invasion of Ukraine. The general features that emerge, and the order of magnitude of the losses under sharp fragmentation are similar across a range of other scenarios, including those considered in Cerdeiro and others (2021).

The starting point is fragmentation in energy and high tech between Russia and positive-voting countries, with negative-voting and abstaining countries assumed to continue trading with both Russia and positive-voting countries in these sectors. Long-term changes in GDP from this scenario are negligible for Asia and Pacific countries and the world, with large losses experienced only in Russia because the country is cut off from high-tech trade and loses export markets. Losses are, on the other hand, substantial in a further downside scenario in which the world divides into two blocs, with trade in high-tech and energy sectors cut off between countries casting a positive vote and those casting a negative vote or abstaining. Under this scenario, permanent global annual losses are estimated at 1.2 percent of GDP, with larger losses in Asia and Pacific countries at 1.5 percent of GDP, reflecting the key role trade plays in Asia (Figure 3.3, panel 1, green color). Although a handful of Asia and Pacific economies may see benefits from trade diversion as competitors lose access to some of their key destination markets, the vast majority experience significant, permanent declines in output. Losses are larger in countries where trade with the other bloc is significant in the affected sectors (including China, Korea, and Vietnam) because of both the lost access to export markets and the splintering of complex production networks that currently straddle both blocs (Figure 3.3, panel 2). More generally, most of the long-term losses stem from restricting high-tech trade, given the relatively low elasticity of substitution of these sectors, while energy exporters (such as Australia and Indonesia) see smaller losses, given the higher elasticity of substitution of their exports.

Concerns have recently focused on the energy and high-tech sectors, but it is also possible that
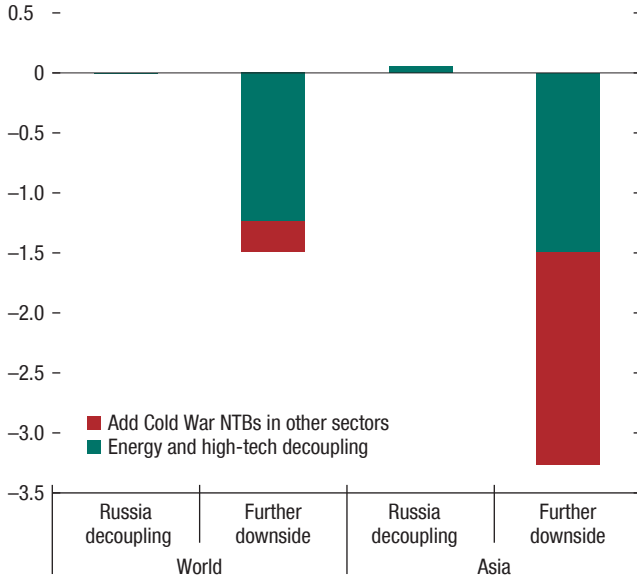
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trade uncertainty associated with the US-China tensions is excluded from the sample. Finally, the results on the differential impact for emerging market and developing economies, trade openness, and firms' financial constraints are similar but smaller in magnitude.

[9]Other channels include, for example, short-term losses stemming from fragmenting energy markets (Albrizio and others 2022) and from demand shortfalls, and long-term losses because of lower knowledge diffusion (Cerdeiro and others 2021).

Figure 3.3. Long-Term Losses from Fragmenting World Trade along the Lines of the UN Vote on Ukraine

Model simulations for illustrative scenarios suggest that permanent output losses from global trade fragmentation can be large ...
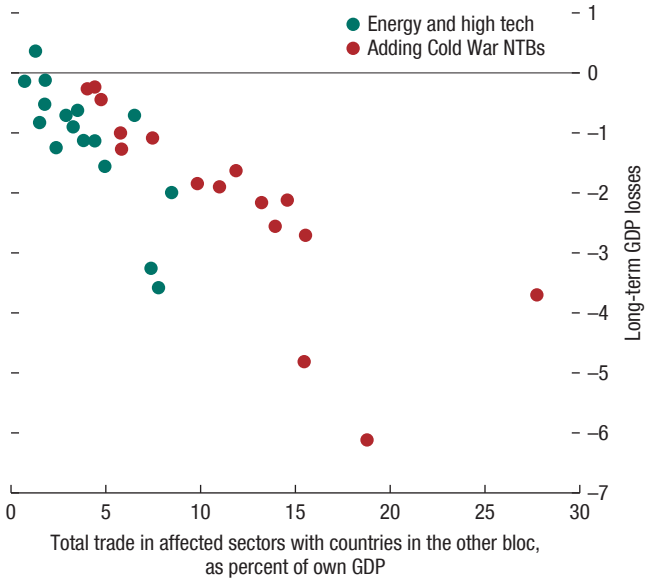
... with the vast majority of Asia and Pacific countries experiencing losses across scenarios, especially in countries where trade with the other bloc is significant in affected sectors.

1. Estimated Aggregate GDP Losses
   (Percent)

2. GDP Losses by Exposure to Other Bloc, Asian Countries
   (Percent)

Sources: UNCTAD-Eora Global Value Chain database; and IMF staff calculations based on the model by Caliendo and others (2017).
Note: "Russia decoupling" refers to the scenario where only Russia's trade with countries that voted positive in the UN vote is impacted. "Further downside" is the scenario where trade fragments between the group that voted positive in the UN resolution and the group that voted negative or abstained. NTB = nontariff barrier.

Sources: Eora data; and IMF staff calculations based on the model by Caliendo and others (2017).
Note: Each point in the chart represents an Asian economy. Red dots are for the scenario in which trade in energy and high-tech sectors is affected. Green dots are when NTBs are raised to Cold War levels in all other sectors. NTB = nontariff barrier.

restrictions could be applied more broadly. To assess this possibility, the analysis considers a scenario in which nontariff barriers in other sectors are also increased between blocs, in addition to the elimination of trade in the energy and high-tech sectors. The increase in nontariff barriers in other sectors is calibrated to match the level of nontariff barrier restrictiveness estimated to have prevailed at the height of the Cold War, between the end of World War II and the late 1970s (that is, before nontariff barriers started to come down during the 1980s).[10] Annual permanent global losses in this case are estimated at 1.5 percent of GDP, with losses for Asia and Pacific countries

mounting to 3.3 percent of GDP (Figure 3.4, panel 1, red color). For some economies, these losses would unwind all the gains from worldwide tariff reductions since 1990, including the Uruguay Round and preferential tariff reductions (Caliendo and others 2017). Several Asia and Pacific economies are affected more severely by this second layer, relative to when restrictions were limited to energy and high-tech sectors, because Asia's export basis goes well beyond those two sectors, particularly in South and Southeast Asia.

Will Financial Fragmentation Add Further Downside Risks?

Although the chapter focuses on trade fragmentation, there is also a growing concern regarding financial fragmentation. Like most countries, Asian economies have become more

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[10]Estimates of nontariff barriers are from Estefania-Flores and others (2022). The analysis used the elasticity of exports to tariffs and the nontariff barrier index to translate the nontariff barrier index into ad valorem equivalents. The median ad valorem equivalent stood at about 75 percent between 1950 and 1980, about twice as large as the median of about 40 percent for 2019.

Figure 3.4. Financial Fragmentation: What Is at Stake and Early Signs

Asia has become increasingly financially integrated with the rest of the world ...

1. Total Cross-Border Assets and Liabilities
   **(Percent of GDP)**
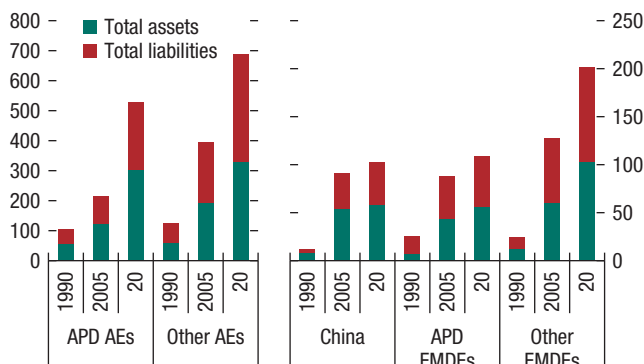
Sources: Brookings Institution, External Wealth of Nations database; and IMF staff calculations.
Note: AEs = advanced economies; APD = Asia and Pacific; EMDEs = emerging market and developing economies.

Early signs of financial fragmentation are also appearing, with a surge in restrictions on foreign direct investment inflows ...

**3. FDI Inflow Tightening Measures**
   (Number)
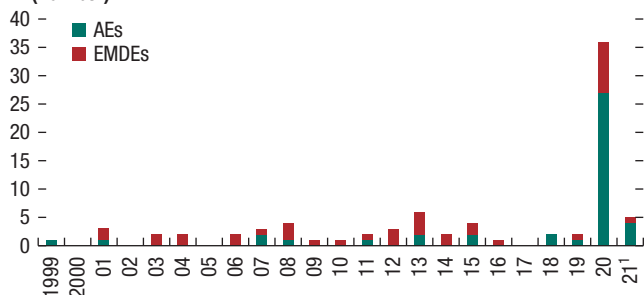
Sources: IMF, Annual Reports on Exchange Arrangements and Exchange Restrictions database; and Baba and others, forthcoming.
Note: The figure captures restrictions on FDI transactions. AEs = advanced economies; EMDEs = emerging market and developing economies; FDI = foreign direct investment.
[1]2021 is based on partial data for the year.

... including substantial financial linkages with the United States and Europe.

**2. Composition of Foreign Assets, 2020**
   (Percent)
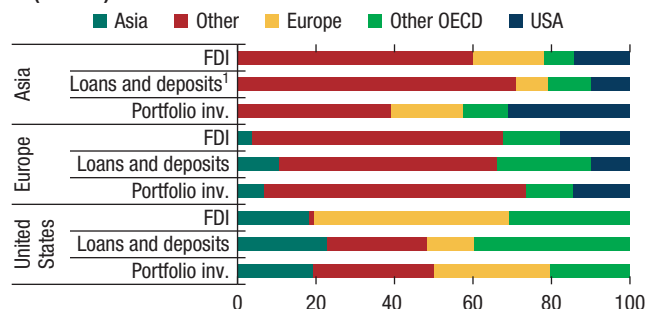
Sources: Bank of International Settlements locational banking statistics; IMF, Coordinated Direct Investment Survey database; IMF, Coordinated Portfolio Investment Survey database; and IMF staff calculations.
Note: FDI = foreign direct investment; OECD = Organisation for Economic Co-operation and Development; USA = United States.
[1]Countries in Asia reporting loans and deposits are Australia, Hong Kong SAR, Japan, Korea, Macao SAR, Philippines, and Taiwan Province of China.

... and national security concerns potentially playing a significant role in the imposition of official restrictions ...

4. National Security Mentioned in AREAER Report
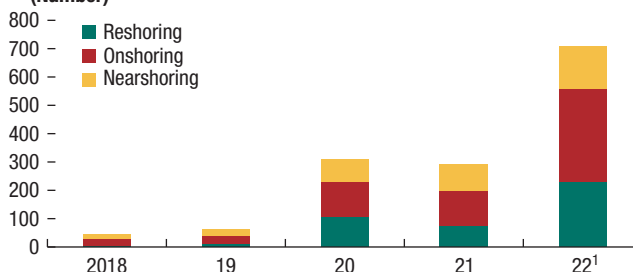   **(Number)**
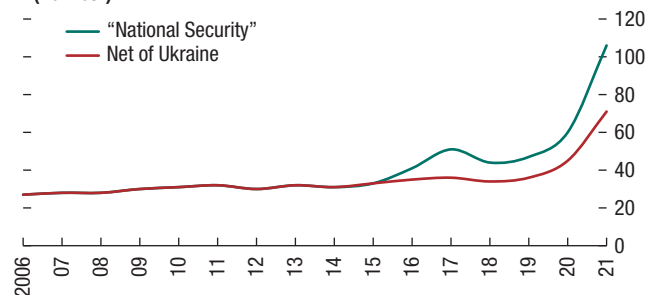
Sources: IMF, Annual Reports on Exchange Arrangements and Exchange Restrictions database; and IMF staff calculations.
Note: The figure plots the number of times the word "National Security" appears in each AREAER report. Red line excludes mentions of "National Security and Defense Council of Ukraine." AREAER = *Annual Reports on Exchange Arrangements and Exchange Restrictions.*

... and private investment decisions.

5. Mentions of Key Terms in Corporate Presentations
   (Number)

Sources: Bloomberg Finance L.P.; and document search and analytics tool.
Note: The figure shows the number of times specific terms are mentioned in transcripts from corporate presentations.
[1]For 2022, numbers are rescaled to account for the fact that data are available only through August.

financially integrated with the rest of the world, benefiting from inward capital flows to fund domestic investments, outward investments in opportunities abroad, and broader diversification and international risk sharing. Financial fragmentation could thus entail short-term costs from a rapid unwinding of financial positions, and long-term costs from lower diversification and from slower productivity growth because of lower foreign direct investment.

The total gross stock of cross-border assets and liabilities of Asian advanced economies has increased to more than 500 percent of GDP in 2020, partly driven by financial centers like Hong Kong Special Administrative Region and Singapore.[11] Asian emerging market and developing economies have also seen an increase in cross-border holdings from 25 to 110 percent of GDP between 1990 and 2020 (Figure 3.4, panel 1). These large cross-border holdings could add to vulnerabilities if geopolitical considerations result in the forced unwinding of positions. This is because countries' large total stock positions are partly underpinned by significant exposures across world regions (Figure 3.4, panel 2). In particular, more than half of Asian portfolio investments abroad are in the United States, Europe, and other Organisation for Economic Co-operation and Development economies, and about one-fifth of US foreign direct investment positions are allocated to Asia.

Although data are more limited than in the trade sphere, there are arguably early signs of financial fragmentation. The IMF's *Annual Report on Exchange Arrangements and Exchange* Restrictions, which documents trade and capital flow measures being implemented by countries, shows a significant increase in the number of new capital flow control measures imposed by countries in 2020 in the aftermath of the pandemic (IMF 2022). Most notably, 2020 saw a large increase in restrictions imposed on foreign direct investment inflows, a key complement to the development

and functioning of global value chains (Figure 3.4, panel 3). While partly coinciding with the onset of the pandemic, greater geopolitical tensions have been linked to this proliferation of foreign direct investment restrictions (Evenett 2021). Indeed, the number of mentions of the phrase "national security" in *Annual Report on Exchange Arrangements and Exchange Restrictions* reports has increased rapidly in recent years (Figure 3.4, panel 4). And while partial data through 2021 show a decline from the 2020 peak, the number of new foreign direct investment measures remains high, compared with historical averages.

Private sector investment decisions also seem to be responding to increased uncertainty and tensions by putting more weight on geopolitical considerations: mentions of key words like "reshoring," "nearshoring," and "onshoring" have increased significantly in company earning calls and annual reports (Figure 3.4, panel 5).

Conclusion

Early signs of fragmentation have been visible for a while, with trade policy uncertainty spiking in recent years, countries imposing ever more trade restrictions (especially in the high-tech and energy sectors), and national security concerns resulting in new restrictions being placed on inward foreign direct investment. Russia's war in Ukraine has further raised geopolitical tensions, bringing to the fore risks that trade and financial flows will increasingly be driven by geopolitical rather than economic considerations. The analysis presented in this chapter highlights the potentially large economic losses—for the world and especially for Asia—that could arise if these trends toward greater fragmentation continue, especially in the case of the sharpest fragmentation scenarios in which the world divides into distinct blocs.

Collaborative solutions are needed to avoid the adverse effects from greater fragmentation and to ensure that trade continues to act as an engine of growth. The focus should be on rolling back damaging trade restrictions and reducing policy uncertainty through clear communication

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[11]Excluding financial centers (Hong Kong Special Administrative Region and Singapore) gives a similar trend, though the level of assets and liabilities, at about 380 percent of GDP, is lower for Asian advanced economies.

of policy objectives and processes to address legitimate national security concerns, while addressing competitiveness weakness through structural reforms that lift productivity (August 2022 *External Sector Report: Pandemic, War, and Global Imbalances*). Within Asia, there is a role not only for deepening existing agreements (Constantinescu, Mattoo, and Ruta 2018) but also for ensuring that overlapping trade agreements do not contribute to fragmentation but rather are an avenue to promote open and stable trading relationships.[12] Achieving this positive potential requires that each agreement be open to participation by others willing to take on similarly ambitious obligations. Complementing regional agreements with reforms at the multilateral level, while also restoring a fully functional World Trade Organization dispute settlement system, can not only mitigate any potential negative impacts of discriminatory policies on other trading partners but also help resolve some of the underlying sources of tensions. Above all, however, active engagement and dialogue between policymakers from around the world, including in multilateral forums, will be vital to avoid the sharpest and most harmful fragmentation scenarios.

[12]The Comprehensive and Progressive Agreement for Trans-Pacific Partnership, Regional Comprehensive Economic Partnership (both in operation), and the Indo-Pacific Economic Framework (under discussion) overlap in their participation and coverage of issues but have unique strengths. Regional Comprehensive Economic Partnership participants are cutting tariffs among countries that account for 30 percent of the global population and production. With four Western Hemisphere participants, the Comprehensive and Progressive Agreement for Trans-Pacific Partnership bridges the Pacific with ambitious commitments in frontier policy areas such as investment and e-commerce. Although apparently light on market access and other traditional free trade agreement provisions, initial discussions toward the Indo-Pacific Economic Framework involve countries that account for about 40 percent of global GDP and would promote cooperation on issues such as the digital economy, supply resilience, decarbonization, and infrastructure.

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