INTERNATIONAL MONETARY FUND

REGIONAL ECONOMIC OUTLOOK

ASIA AND PACIFIC

Navigating the Pandemic:
A Multispeed Recovery in Asia

2020
OCT

World Economic and Financial Surveys

Regional Economic Outlook

Asia and Pacific

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OCT 20

INTERNATIONAL MONETARY FUND

Cataloging-in-Publication Data

Names: International Monetary Fund, publisher.
Title: Regional economic outlook update. Asia and Pacific : navigating the pandemic : a multi-speed recovery in Asia.
Other titles: Asia and Pacific : navigating the pandemic : a multispeed recovery in Asia. | World economic and financial surveys
Description: Washington, DC : International Monetary Fund, 2020. | World economic and financial surveys, 0258-7440. | Oct. 20. | Includes bibliographical references.
Identifiers: ISBN 9781513558202 (Paper)
9781513558219 (ePub)
9781513558226 (Web PDF)
Subjects: LCSH: Economic forecasting—Asia. | Economic forecasting— Pacific Area. | Asia—Economic conditions. | Pacific Area—Economic conditions. | Economic development—Asia. | Economic development— Pacific Area.
Classification: LCC HC412.R445 2020

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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Acknowledgments

This *Regional Economic Outlook* was prepared by a team led by Alison Stuart and Davide Furceri, under the overall direction of Changyong Rhee and Jonathan D. Ostry. The main authors are Angana Banerji, Pragyan Deb, Tahsin Saadi Sedik, Anthony Chia Kiat Tan, Nour Tawk, and Irina Yakadina. Stephen Chukwumah, Medha Madhu Nair, Mariam Souleyman, Naihan Yang, and Qianqian Zhang assisted in preparing the report. Cheryl Toksoz of the IMF's Communications Department edited the volume and coordinated its publication and release. Contributors to Box 2.1 are Siddharth Kothari, Shihui Liu, Longmei Zhang, and Chenqi Zhou. The report is based on data available as of September 30, 2020, and includes comments from other IMF departments and Executive Directors.

Chapters 3 and 4 draw on two papers (IMF), available online at http://www.imf.org. Chapter 3 was prepared by a staff team led by Pragyan Deb and Nour Tawk, and comprising Nathalie Pouokam, Irina Yakadina, and Naihan Yang, under the guidance of Davide Furceri, with the supervision of Jonathan D. Ostry. Chapter 4 was prepared by a staff team led by Tahsin Saadi Sedik and comprising Emilia Magdalena Jurzyk, Medha Madhu Nair, Nathalie Pouokam, Anthony Chia Kiat Tan, Rui Xu, Irina Yakadina, and Jiae Yoo, under the guidance of Alison Stuart and Davide Furceri, with the supervision of Jonathan D. Ostry.

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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 Special Administrative Region, Japan, Korea, Macao Special Administrative Region, 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 abbreviations are used:

AE	advanced economy
COVID-19	coronavirus disease
GDP	gross domestic product
EMDE	emerging and developing economy
NO_2	nitrogen dioxide
OECD	Organisation for Economic Co-operation and Development
REO	Regional Economic Outlook
WEO	World Economic Outlook
WHO	World Health Organization

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.

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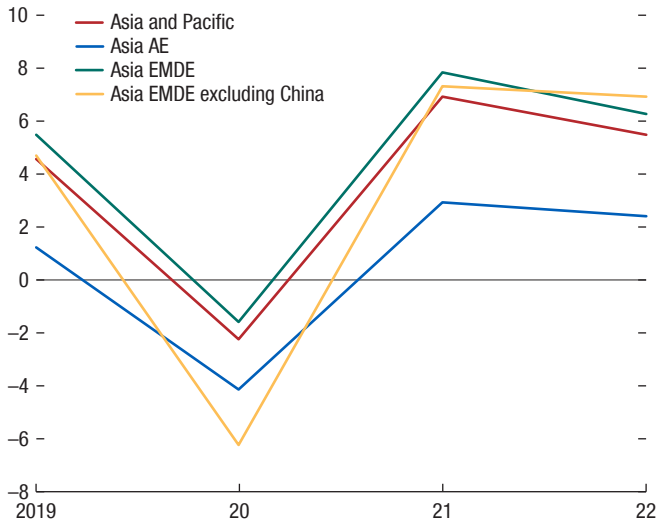
Navigating the Pandemic: A Multispeed Recovery in Asia

1. Overview

The coronavirus disease (COVID-19) pandemic is still unfolding around the globe. In Asia, as elsewhere, the virus has ebbed in some countries but surged in others. The global economy is beginning to recover after a sharp contraction in the second quarter of 2020, as nationwide lockdowns are lifted and replaced with more targeted containment measures. Global growth has been revised up since the June 2020 World Economic Outlook (WEO) Update to –4.4 percent in 2020, because of better-than-expected second quarter outturns in some major countries where activity began to improve sooner than expected after lockdowns were scaled back. In 2021 global growth is projected at 5.2 percent, a little lower than projected earlier, consistent with the expectation that social distancing persists into 2021 and fades thereafter.

Figure 1.1. Real GDP Growth Rates
(In percent)



Source: IMF World Economic Outlook.
Note: EMDE = Emerging and Developing Economies.

The Asia and Pacific region is also starting to recover tentatively, but at multiple speeds. Economic activity is expected to contract by –2.2 percent in 2020, due to a sharper-than-expected downturn in key emerging markets, and to grow by 6.9 percent in 2021—0.6 percentage point lower and 0.3 percentage point higher, respectively, than in the June 2020 *World Economic Outlook Update* (Figure 1.1).

The outlook varies by country depending on infection rates and containment measures, the scale and effectiveness of the policy response, reliance on contact-intensive activities, and reliance on external demand. In parts of Asia where virus transmission rates are low, mobility and activity could normalize faster than elsewhere. Scarring is likely, however, as labor market participation has fallen, and output is expected to remain below pre-pandemic trends over the medium term, with the most vulnerable in society likely to be hit the hardest.

The forecasts remain highly uncertain, with significant downside risks. A resurgence of the pandemic cannot be ruled out. Geopolitical tensions—particularly US-China—may also derail the recovery. A rise in social unrest triggered by the pandemic's disproportionate impact on the poorest and most vulnerable could compromise recent hard-won gains, or a return to risk aversion in financial markets could add to balance sheet vulnerabilities. Prospects for an early, large-scale rollout of an effective vaccine creates an upside risk.

With the pandemic seemingly far from over, policy support should be sustained and, in some cases, increased. Strong health care and containment measures are vital until the pandemic has abated. Targeted fiscal spending is needed until the recovery is entrenched. It should aim at the most vulnerable where fiscal multipliers are highest, and to jobs-oriented, inclusive, and green investment. Looking ahead, credible fiscal plans will be key to secure debt sustainability. Monetary policy should remain supportive. Elevated credit risks demand continual monitoring, especially where debt levels

are high. Policymakers need to redouble efforts to keep workers connected to the labor force and solvent firms in business while allowing nonviable firms to exit, and facilitating new businesses to emerge and generate new job opportunities, and thus mitigate scarring.

This *Regional Economic Outlook* draws on studies analyzing the impact of COVID-19. Chapter 3 examines the effect of containment and related policy measures on health outcomes and economic activity. Fast implementation of containment measures and appropriately timed exits—supported by strong testing and contact tracing policies—have been key in stabilizing COVID-19's spread while mitigating its economic costs in many Asian economies. Fiscal support has also been critical to reduce economic costs, underpin recovery, and limit scarring. Chapter 4 warns that the crisis is having the largest impact on low-income workers, women, and youth, and so is increasing inequality. These distributional effects could be even larger in the medium term as robots displace low-skilled workers, and the resulting higher levels of inequality could undermine social cohesion. Policies should be targeted to mitigate the pandemic's adverse distributional consequences and so underpin overall economic activity and virus containment.

2. A Multispeed Recovery in Asia

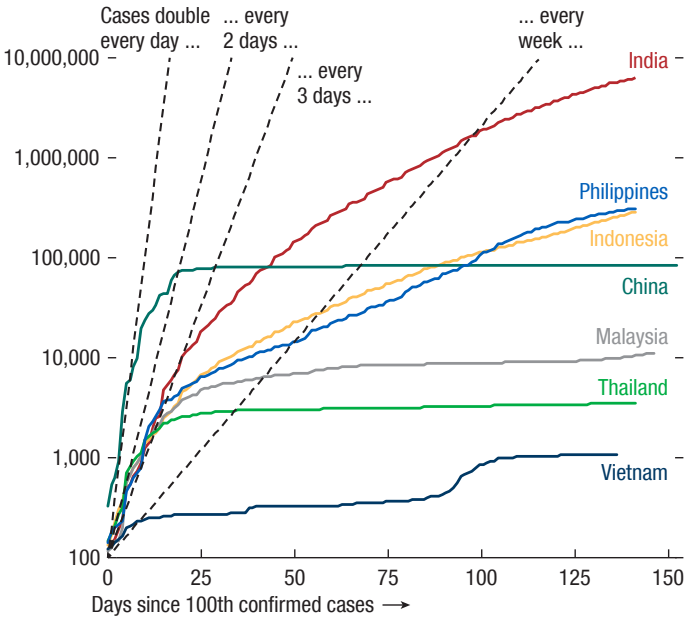
Global Context

The COVID-19 pandemic plunged the world into a sharp recession in the first half of 2020. Service sector activity, which relies on person-to-person contact, took a big hit. Manufacturing also weakened substantially, and global trade plummeted. Global growth is projected at –4.4 percent in 2020, 0.6 percentage points above the June 2020 *World Economic Outlook Update* forecast. The upgrade reflects a better second quarter outturn in major countries that eased lockdowns earlier than expected. The recovery is projected to be more gradual than previously forecast. In 2021 global growth is projected at 5.2 percent, 0.3 percentage point lower than projected in June 2020, reflecting the persistence of social distancing into 2021.

Green Shoots in Asia

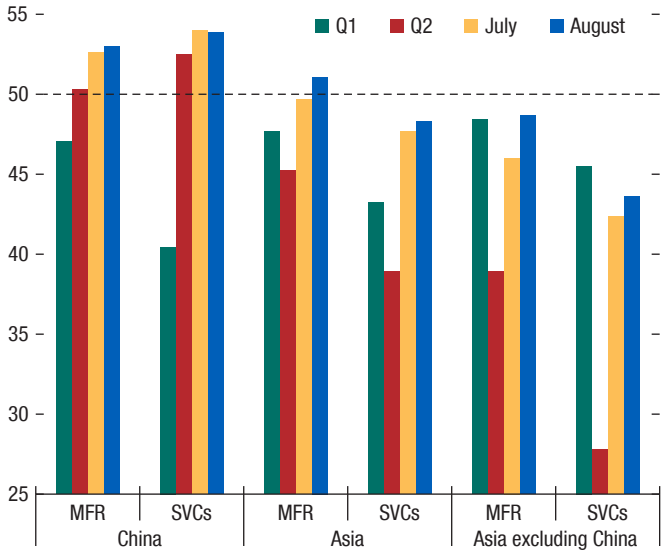
The pandemic is at various stages in the Asia and Pacific region. Many countries have successfully contained the first wave of the virus, although there have been second waves in some countries (Australia, Japan, Myanmar), as well as periodic, localized outbreaks in others (China, Korea, New Zealand, Vietnam). A small group is still striving to flatten the pandemic curve (India, Indonesia, Philippines; Figure 2.1), and yet others remain largely free of COVID-19 (most Pacific island countries). Countries across the region have exited from economy-wide containment measures at varying speeds (Box 2.1), but some major restrictions remain in place—external borders are closed in most countries, exacting significant economic costs.

Figure 2.1. Cumulative Confirmed Cases, Emerging Asia
(Log scale)



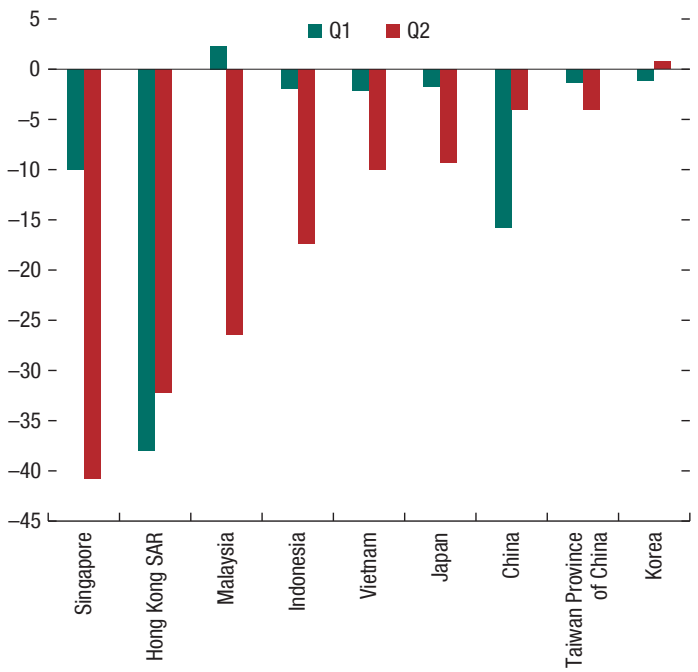
Sources: Johns Hopkins University; and IMF staff calculations.
Note: As of September 30, 2020.

Figure 2.2. Manufacturing and Services PMI
(Seasonally adjusted, 50+ = expansion)



Sources: Haver Analytics; and IMF staff calculations.
Note: MFR = manufacturing; SVC = service.

Figure 2.3. Retail Sales
(Percent change, year-over-year)



Sources: CEIC; Haver Analytics; and IMF staff calculations.

Economic activity is beginning to revive, starting with China. After hitting a trough in February 2020, China's growth received a boost from infrastructure, real estate investment, and a surge in exports, mainly of medical and protective equipment, as well as work-from-home-related electronics. This is being followed by a gradual recovery in private nonhousing investment and consumption.

The economic contraction in the rest of Asia appears to have bottomed out in the second quarter of 2020 (Figures 2.2 and 2.3). The drop in activity in the second quarter was particularly sharp in India and the Philippines, given the continued rise in virus cases and extended lockdowns. In India, activity plunged by 24 percent year-on-year in the second quarter, with large contractions across all sectors except for agricultural production, where record crops and fewer virus cases have supported the rural economy. A fall in remittances compounded the hit on activity in the Philippines and the Pacific island countries. High-frequency indicators point to a trough in activity for much of Asia in April, with economies recovering thereafter, though at multiple speeds. The surge in risk aversion and capital outflows from the region seen in the immediate aftermath of the outbreak has reversed in recent months. Advanced economies with lower infection rates have seen a bigger pickup in activity through to August than did emerging market and developing economies (excluding China). Inflation across Asia has remained largely contained because of a drop in demand, lower oil prices, and stable food prices, but inflation has been high in India due to supply-side disruptions related to lockdowns.

Countries recovering faster from the pandemic are those that introduced effective containment measures early and timed their exit from containment well. Comprehensive testing and contact tracing infrastructure were key in the early stages and exit phase of the pandemic, including in countries that did not implement mandatory restrictions (Korea). Fiscal support also facilitated the resumption of activity (Chapter 3). That said, support targeted to vulnerable segments of society

has been deficient, highlighting underdeveloped health and social institutions, weak financial inclusion, and high levels of informality.

Outlook and Risks: Can Asia Lead the Way Forward?

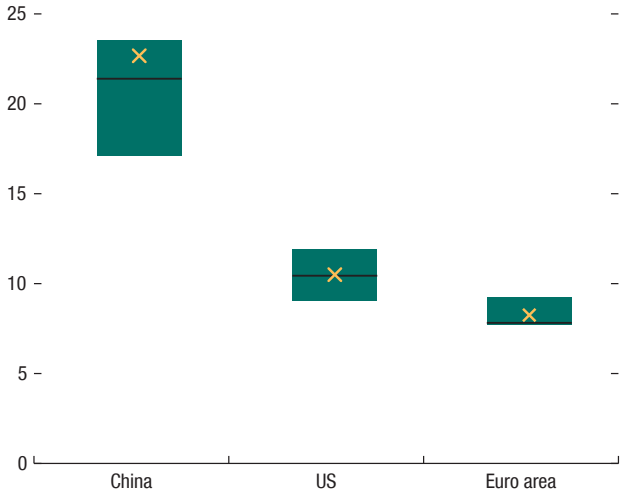
While Asia is beginning to emerge from its worst-ever recession, regional growth has been further downgraded to –2.2 percent in 2020, 0.6 percentage point lower than in June (Table 2.1). This reflects a sharper contraction, notably in India, the Philippines, and Malaysia. Bucking this trend, China's outlook has been revised up to 1.9 percent for 2020 because of a faster-than-expected rebound in the second quarter, and growth is expected to pick up to 8.2 percent in 2021 on the assumption of a smooth handover from public sector support to private sector demand. Asian advanced economies are expected to shrink by less than previously projected, reflecting a faster pickup in activity following earlier exit from lockdowns.

Recovery is likely to be sluggish. The Asia and Pacific region is projected to grow by 6.9 percent in 2021. While this is 0.3 percentage point higher than projected in June, it nevertheless implies a further drop in the level of output in 2021 than envisaged earlier. Activity is seen as beginning to normalize next year in badly hit emerging market economies. The stronger recovery in China, the United States and the euro area will also support growth in Asia (Figure 2.4). Domestic private sector demand is expected to recover slowly, however, due to a longer period of social distancing and containment measures.

Output is expected to remain below pre-pandemic trend through the medium term.

- *Returning to full capacity will be a long slog.* Fear of infection and social distancing measures are dimming consumer confidence and will keep economic activity below capacity until a vaccine is developed. International borders are likely to remain closed for a considerable period. Scarring effects are likely thus to be larger in countries that are highly dependent on tourism and other services that require in-person contact, affecting small states in South Asia, the Pacific islands, and some advanced economies and emerging market and developing economies.
- *Labor markets show increasing signs of scarring.* Labor market indicators are deteriorating much more than during the global financial crisis. Aggregate hours worked have declined as both employment rates and hours worked per employee have collapsed. Unemployment has surged, and labor force participation has plunged, particularly for women and younger workers.
- *Prospects for a global trade–led recovery are decidedly uncertain.* Although China's recovery can boost regional trade, weak global growth, closed borders, and festering tensions around trade, technology, and security have worsened the prospects for a trade-led recovery in the region. Some

Figure 2.4. Trade Exposure of REO 14
(Percent of total trade)



Sources: IMF Direction of Trade Database; and staff calculations.
Note: The chart shows the share of trade exposure (import plus export) to China, the United States, and the euro area as percent of the total trade of respective countries. The horizontal line inside each box represents the median; the upper and lower edges of each box show the top and bottom quantiles. X is the mean. 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.

Table 2.1. Asia: Real GDP
(Year-over-year change; percent)

	Actuals and Latest Projections					Difference from April 2020 World Economic Outlook		Difference from Pre-Pandemic Oct. 2019 World Economic Outlook	
	2017	2018	2019	2020	2021	2020	2021	2020	2021
Asia	**5.8**	**5.3**	**4.6**	**−2.2**	**6.9**	**−2.2**	**−0.7**	**−7.3**	**1.7**
Advanced Economies (AEs)	**2.8**	**1.7**	**1.2**	**−4.2**	**2.9**	**0.3**	**−0.8**	**−5.4**	**1.4**
Australia	2.4	2.8	1.8	−4.2	3.0	2.5	−3.2	−6.4	0.4
New Zealand	3.8	3.2	2.2	−6.1	4.4	1.1	−1.6	−8.8	1.7
Japan	2.2	0.3	0.7	−5.3	2.3	−0.1	−0.7	−5.7	1.9
Hong Kong SAR	3.8	2.8	−1.2	−7.5	3.7	−2.6	−0.2	−8.9	1.2
Korea	3.2	2.9	2.0	−1.9	2.9	−0.7	−0.5	−4.1	0.1
Taiwan Province of China	3.3	2.7	2.7	0.0	3.2	4.1	−0.3	−1.9	1.1
Singapore	4.3	3.4	0.7	−6.0	5.0	−2.5	2.0	−7.0	3.4
Macao SAR	9.9	5.4	−4.7	−52.3	23.9	−22.7	−8.2	−51.2	23.9
Emerging Markets and Developing Economies (EMDEs)[1]	**6.7**	**6.3**	**5.5**	**−1.7**	**8.0**	**−2.7**	**−0.5**	**−7.7**	**1.8**
Bangladesh[2]	7.3	7.9	8.2	3.8	4.4	0.0	−3.4	−3.8	−2.9
Brunei Darussalam	1.3	0.1	3.9	0.1	3.2	−1.2	−0.3	−4.6	−0.3
Cambodia	7.0	7.5	7.0	−2.8	6.8	−1.2	0.7	−9.5	0.0
China	6.9	6.7	6.1	1.9	8.2	0.7	−1.0	−4.0	2.3
India[3]	7.0	6.1	4.2	−10.3	8.8	−12.2	1.4	−17.3	1.4
Indonesia	5.1	5.2	5.0	−1.5	6.1	−2.0	−2.1	−6.6	0.9
Lao P.D.R.	6.8	6.3	5.2	0.2	4.8	−0.5	−0.8	−6.3	−2.0
Malaysia	5.8	4.8	4.3	−6.0	7.8	−4.3	−1.2	−10.4	2.9
Myanmar	5.8	6.4	6.5	2.0	5.7	0.2	−1.9	−4.3	−0.4
Mongolia	5.3	7.2	5.1	−2.0	6.0	−1.0	−2.0	−7.4	0.9
Nepal	8.2	6.7	7.1	0.0	2.5	−2.5	−2.5	−6.3	−3.3
Philippines	6.9	6.3	6.0	−8.3	7.4	−8.9	−0.2	−14.4	1.0
Sri Lanka	3.6	3.3	2.3	−4.6	5.3	−4.0	1.1	−8.1	1.0
Thailand	4.1	4.2	2.4	−7.1	4.0	−0.5	−2.1	−10.2	0.5
Vietnam	6.9	7.1	7.0	1.6	6.7	−1.1	−0.3	−4.9	0.2
Pacific Island Countries and Other Small States	**4.1**	**1.7**	**3.6**	**−7.5**	**4.2**	**−5.2**	**−0.6**	**−11.3**	**0.7**
Bhutan	6.3	3.8	3.8	0.6	−0.5	−2.1	−3.3	−6.6	−6.4
Fiji	5.4	3.5	−1.3	−21.0	11.5	−15.2	4.5	−24.0	8.3
Kiribati	0.9	2.3	2.3	−1.1	3.0	−1.1	0.7	−3.4	0.9
Maldives	6.8	6.9	5.7	−18.6	12.7	−10.5	−0.5	−24.6	7.2
Marshall Islands	4.1	3.6	5.3	−4.5	−0.9	−4.3	−4.1	−6.8	−2.9
Micronesia	2.7	0.2	1.2	−3.8	1.2	−3.4	−0.2	−4.6	0.4
Nauru	−5.5	5.7	1.0	0.7	1.3	2.4	−0.1	0.0	0.0
Palau	−2.0	5.8	−1.8	−11.4	−7.4	0.5	−21.8	−13.2	−9.6
Papua New Guinea	3.5	−0.8	4.9	−3.3	1.2	−2.3	−1.7	−5.8	−1.3
Samoa	1.0	−2.2	3.5	−5.0	−1.5	−1.3	−2.0	−9.4	−3.7
Solomon Islands	5.3	3.9	1.2	−5.0	4.5	−2.9	0.7	−7.9	1.8
Timor-Leste	−3.8	−0.8	3.1	−6.8	4.0	−3.8	0.2	−11.8	−0.8
Tonga[4]	3.3	0.3	0.7	−2.5	−3.5	−1.3	−4.7	−6.2	−6.4
Tuvalu	4.6	3.7	6.0	−0.5	3.0	0.4	−0.6	−4.9	−1.3
Vanuatu	4.4	2.9	3.3	−8.3	4.3	−5.0	−0.6	−11.4	1.5
ASEAN[5]	**5.4**	**5.2**	**4.7**	**−3.4**	**6.1**	**−2.7**	**−1.3**	**−8.1**	**1.1**
ASEAN-5[6]	**5.2**	**4.9**	**4.2**	**−4.4**	**6.0**	**−3.1**	**−1.5**	**−8.8**	**1.3**
EMDEs excluding China and India	**5.6**	**5.6**	**5.2**	**−2.5**	**5.9**	**−2.3**	**−1.8**	**−7.7**	**0.6**

Sources: IMF, World Economic Outlook database; and IMF staff estimates and projections.
[1]EMDEs excluding Pacific island countries and other small states.
[2]Bangladesh's data are reported on a fiscal year basis. Its fiscal year starts from July 1 and ends on June 30.
[3]India's data are reported on a fiscal year basis. Its fiscal year starts from April 1 and ends on March 31.
[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, Singapore, Thailand, and Vietnam.
[6]ASEAN-5 comprises Indonesia, Malaysia, the Philippines, Singapore, and Thailand.

countries have started diversifying their economies and moving up the value chain. However, a fundamental reorientation of growth models toward domestic demand will take time and considerable policy effort. For small economies (such as the Pacific island countries), their size, remoteness, and high vulnerability to natural disasters make it exceptionally difficult to reorient away from tourism, commodities, and remittances.

The extent of scarring will depend on economies' reliance on contact-intensive activities; market rigidities; digital penetration, technological capacity, and availability of remote working; and policy space to support resource reallocation. Weak household, corporate, and financial balance sheets may add to scarring.

Uncertainties, Unknowns, and Risks

Although early success in developing an effective vaccine could lead to a quicker and stronger recovery, the downside risks are considerable.

- A second wave of the pandemic cannot be ruled out.
- Escalating US-China tensions spanning trade, financial flows, technology, and geopolitics could pose major economic risks, given Asia's major role, among other things, in global value chains.
- The pandemic's disproportionate impact on the poorest and most vulnerable will exacerbate already high and rising income and wealth inequality in Asia and could engender social tensions.
- A return to tighter financial conditions could exacerbate pre-pandemic vulnerabilities (such as highly leveraged public and private sector balance sheets), tip struggling corporations and small and medium enterprises into bankruptcy, worsen credit risk and financial stability, and aggravate debt overhangs.

Policies: From Green Shoots to a Smart, Green, Inclusive Recovery

A full arsenal of policy support is needed. Asia and Pacific countries have already provided significant fiscal policy support to cushion the pandemic's impact. Likewise, central banks have cut policy rates, injected liquidity, and introduced unconventional measures: such support should continue because of the extent of evident economic slack across the region. However, the pandemic's prolonged duration is creating structural challenges for policy. It is becoming increasingly difficult to distinguish between temporary liquidity shortages and solvency problems and between temporary and permanent job losses. For all countries—and especially for emerging market and developing economies that are running out of policy space—policymakers will need to find ways to continue to support the economy while preparing for the post-pandemic world and longer-term challenges, such as ageing and climate change, without exacerbating existing vulnerabilities, including financial stability concerns (2020 *Global Financial Stability Report*).

The crisis provides an opportunity to deliver on promises for inclusive and green growth. Some reforms—in health care, social safety nets, labor market, and the corporate sector—can be beneficial during the pandemic while facilitating a speedier return to pre-pandemic output and sustaining social cohesion.

- *Strong health care and containment measures remain vital.* Countries that have yet to bring the outbreak under control should redouble efforts to flatten the pandemic curve. Micro-containment measures are necessary in all countries, along with timely testing and effective contact tracing. Greater efforts on the curative side are also warranted, such as increased hospital capacity to diagnose and treat. Credible plans to secure adequate vaccine supplies are essential, including through multilateral vaccine sharing efforts. Ramping up relatively underdeveloped health care systems is critical for many emerging

market and developing economies, including the Pacific island countries, to meet their Sustainable Development Goals.

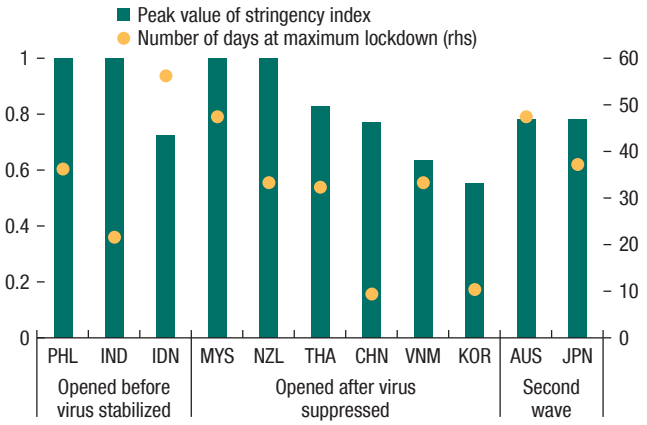
- *Maintaining appropriate fiscal support is critical to ensure that the recovery does not unravel, but with an eye toward sustainability and longer-term objectives.* The priorities include spending on health care, targeted social protection, and assistance for viable small and medium enterprises. Better targeting to the most vulnerable, including in the informal sector, would help to boost fiscal multipliers—examples are Cambodia's introduction of digital cash transfers; India's efforts to expand cash benefits using digital payment platforms and socioeconomic databases; Indonesia and Vietnam's introduction of new cash transfer programs targeted to the vulnerable; and Nepal's temporary in-kind food transfers. Investments in green energy and technological infrastructure should be prioritized to create jobs and improve teleworking opportunities. A credible medium-term fiscal strategy, including steps to improve revenue mobilization and spending efficiency, is needed given high debt levels and limited tax bases (2020 *Fiscal Monitor*). Low-income countries, including the Pacific island countries, will require donor assistance in the form of concessional financing and grants for the foreseeable future.
- *Monetary policy should remain supportive while output gaps are large and inflation pressures low*. Instruments include policy rate cuts and unconventional monetary support (Indonesia, Japan, Korea, Thailand), as well as steps to improve policy transmission, for example strengthening the interest rate–based policy framework in China. In some cases where inflation remains low, debt monetization could be appropriate, provided it is well communicated, limited in size, time-bound, and implemented within a clear operational framework that preserves central bank independence and does not impede monetary policy. The exchange rate should continue to act as a shock absorber. If such flexibility were to amplify economic contraction and heighten financial instability to crisis or near-crisis proportions, temporary and well-designed capital flow measures could be considered as part of a policy package to safeguard macro-financial stability, along with international financial support.
- *Financial sector policies should pay close attention to elevated risks, while providing temporary and targeted liquidity support as needed.* As the recovery takes hold, there will be a case for dialing back some of the measures adopted at the height of the pandemic, given elevated credit risk and debt overhang (for example, in China) or high household debt (Australia). To prevent a buildup of systemic exposures, policymakers will need to attend to emerging risks and will need to tighten micro and macroprudential measures as the recovery takes hold. Countries where the pandemic has aggravated preexisting vulnerabilities need to ensure that the financial sector is well capitalized and provisioned, and nonperforming loans are resolved promptly.
- *Structural reforms should focus on reducing scarring and boosting growth potential.* They should prioritize measures to protect the poor, reduce informality, and reduce worker disengagement and skill erosion. Safety nets need to be made more inclusive of informal workers and facilitate training and redeployment (Dabla-Norris and Rhee 2020). Corporations should be incentivized to restructure if needed, and new equity-like instruments could be considered to help viable small and medium enterprises overcome debt overhang and retool (Bauer and others, forthcoming). Insolvency frameworks should be streamlined to facilitate corporate debt restructuring and resource reallocation. Reforms are needed to ease administrative burdens and regulatory barriers for new investment (including foreign investment), exports (especially of food and medical supplies), and start-ups. Leveling the playing

field between state-owned and private enterprises is essential to support business formation and job creation (China, India, Indonesia, Vietnam). Improving agricultural productivity is critical for many developing economies and Pacific island countries. Food security remains a key risk that could adversely affect the urban and rural poor. Contingency planning and international cooperation will be essential to mitigate it, including through multilateral safety nets such as the ASEAN+3 (10 ASEAN countries plus China, Japan, and Korea) Emergency Rice Reserve.

Box 2.1. Exiting Lockdowns: Asia's Reopening Experience and Some Early Lessons

The IMF developed a new containment index (grounded in IMF staff surveys and other publicly available information) for six economic sectors (international travel, schools, retail, industry, services, and public gatherings) for 11 Asian countries and 22 European economies (see Franks and others, forthcoming, and IMF 2020 for details). Compared with other available indices (for example, Hale and others 2020), the new index has two advantages: It distinguishes between key economic sectors (services, industry, retail), thus providing a granular view of containment measures, and it captures announcements about future changes to containment measures.

Figure 2.1.1. Lockdown Stringency and Duration
(Index; days, rhs)



Source: IMF staff estimates.
Note: rhs = right-hand scale. Stringency index averages across sub-indices for 6 sectors (retail, services, industry, school, international travel, public gatherings). Each sub-index normalized to lie between 0 and 1, with 1 implying the sector is fully closed, and 0 implying fully open. Country abbreviations are International Organization for Standardization country codes.

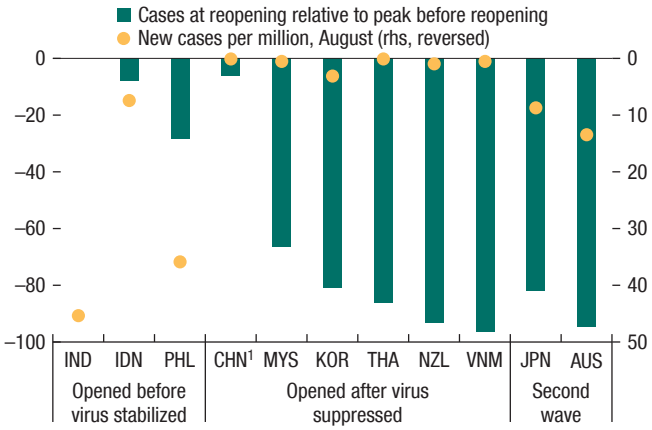
Asian authorities generally responded early to the epidemic compared with other regions (Chapter 3). On average, Asian countries tightened domestic restrictions five days after a significant outbreak (defined as 100 cumulative cases), though Indonesia was slower to act, waiting for 25 days. Sequencing of closures was also similar across countries, with international travel restrictions imposed first, followed by school closures.

However, the stringency and duration of lockdowns differed markedly across countries (Figure 2.1.1). Several countries imposed near-complete lockdowns for more than a month (Malaysia, New Zealand, Philippines), but others closed only nonessential services and allowed industrial sectors to continue operating (Australia, Thailand, Vietnam). Korea, however, did not implement mandatory shutdowns, instead issuing strong recommendations regarding business closures, relying on voluntary social distancing and a comprehensive testing and tracing infrastructure to contain the virus.

The effectiveness of lockdowns in reducing infection rates also varied across countries. Challenges (caused by government capacity constraints) in implementing and enforcing lockdowns, especially in more densely populated emerging markets with greater levels of informality and poverty (Deb and others 2020a; 2020b), may have made lockdowns less effective (India, Indonesia, Philippines). Limited health care capacity, including in testing and tracing, may have also affected the effectiveness of lockdowns. Several countries ramped up testing and tracing capabilities, but some countries lagged behind (Indonesia, Philippines).

Box 2.1 *(continued)*

Figure 2.1.2. Reopening Timing and Latest Infection Rates
(Percent change; infections per million, rhs)



Source: IMF staff estimates.
Note: rhs = right-hand scale. Reopening date is defined as the first time the stringency index declines from its peak.
[1]Excludes Hubei. In China, the reopening date based on the index is February 9, 2020, when some low risk provinces were reopened. Because the reopening strategy differed significantly across provinces and was based on province-level trends, China is not classified as having "opened before virus stabilized," even though the number of cases nationally had not declined significantly from its peak. Country abbreviations are International Organization for Standardization country codes.

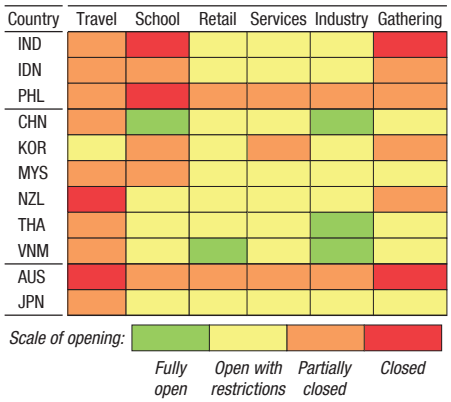
Asian countries generally reopened their economies after suppressing the virus. Most eased restrictions when new cases were more than 80 percent below peak levels (Figure 2.1.2). In this group, only Australia and Japan saw a substantial second wave of infections. Others witnessed small outbreaks, though these have largely been contained (China, Korea, New Zealand, Vietnam).

Some countries, however, reopened before infection rates fell significantly and experienced an increase in cases after opening. India started easing restrictions while virus cases were still rising, and Indonesia and the Philippines had seen a stabilization in cases but had not suppressed the virus. The decision to reopen early in the epidemic cycle in these countries was potentially motivated by the perceived high economic cost of the lockdown (especially for informal workers with limited access to social safety nets) compared with smaller health gains, given favorable demographics (a younger population that is at lower risk) and higher population density. These early openers have continued to experience a high number of new infections (Figure 2.1.2), reflecting a pickup in mobility after reopening, less scope for voluntary social distancing, and other factors like mass movement of migrant workers in India.

The speed of reopening has been slower in the early openers, reflecting persistently high infection rates. India, Indonesia, and the Philippines relaxed their harshest containment measures, but many sectors remain partially closed (that is, some states or subsectors have not reopened). However, countries that started easing restrictions after virus cases subsided have continued easing restrictions over time, and many sectors now either are completely open or operating with enhanced health protocols (Figure 2.1.3). Some of these countries adopted a sequential approach, reopening lower-risk regions or sectors first, and have also reimposed localized lockdowns if needed to control new virus clusters (China, Vietnam).

Economic activity has also recovered more slowly in the early openers. Purchasing managers' indexes remain

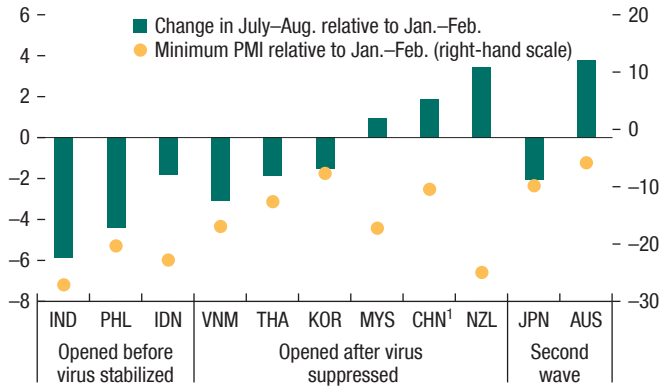
Figure 2.1.3. Status of Containment Measures



Source: IMF staff estimates.
Note: As of September 8, 2020. Country abbreviations are International Organization for Standardization country codes.

Box 2.1 *(continued)*

Figure 2.1.4. Change in Manufacturing PMI
(Change in diffusion index)



Source: Haver Analytics.
[1]For China, Jan. PMI is used instead of average over Jan. and Feb. because the impact of the epidemic was already visible in Feb. Country abbreviations are International Organization for Standardization country codes.

significantly below pre-COVID-19 levels in India and the Philippines (Figure 2.1.4), potentially reflecting relatively low de facto mobility as high infection rates led to a fear of becoming infected and limited or insufficiently implemented fiscal stimulus (Philippines). By contrast, indexes recovered or surpassed pre-COVID-19 levels in most countries that reopened after they had suppressed the virus.

Health measures such as testing and contact tracing have played an important role in mitigating the spread of the virus after exiting lockdowns. An increase in mobility and social interactions after lockdowns were lifted has led to new infection clusters in several countries that had suppressed the virus. In Australia and Japan, these have led to second waves, and Australia reimposed strict containment measures in affected regions. However, an effective testing, tracing, and quarantining system has helped some countries detect and contain infection clusters before they led to widespread community transmission (China, Korea, New Zealand, Vietnam). Vietnam has used a comprehensive tracing system to quarantine all close contacts of positive cases. China and Korea have used technology and big data to significantly improve the efficiency of contact tracing and conduct risk assessment at a granular level. Localized lockdowns have also been imposed in hot spots to prevent further spread of the virus.

Lessons from Asia's Experience

Asia's experience highlights three key lessons:

- *Containment measures should be activated early*, when infection rates are still low, to effectively flatten the virus curve and reduce the depth and duration of the economic downturn (Chapter 3).
- *Exiting lockdowns after the virus has been suppressed leads to better health and economic outcomes*. As China's experience shows, a sequenced approach that prioritizes essential sectors and reopens regions based on forward-looking risk assessments can reduce the economic costs of lockdowns while minimizing health risks.
- *A comprehensive testing and tracing system can minimize the risk of second waves*. Adequate testing is needed to ensure early detection of new infection clusters, and an effective tracing and isolation system (including quarantining of close contacts and localized lockdowns) can reduce community transmission, preventing clusters from becoming more widespread. Although some system of testing and tracing is likely to be important in controlling second waves, the exact details of the system will vary across countries, depending on societal preferences and legal protections relating to privacy.

3. COVID-19 Lockdowns and Exits in Asia: Some Lessons

This chapter uses new data and novel modeling techniques to examine the effect of containment and policy measures in affecting the health and economic consequences of the COVID-19 pandemic.

Lockdowns: The Importance of Acting Fast

The analysis quantifies the impact of COVID-19 containment measures on the number of infections and on economic activity using real-time containment measures implemented by 129 countries (Deb and others 2020a; 2020b). Daily data on the number of COVID-19 infections and fatalities are used, along with novel high-frequency indicators of economic activity, such as the level of nitrogen dioxide (NO_2) emissions. The results suggest that containment measures have been effective in flattening the pandemic curve. For example, the very stringent containment measures put in place in New Zealand (such as an international travel ban and early restrictions on gatherings and public events, followed quickly by school and workplace closures and stay-at-home orders) are likely to have reduced the number of infections by almost 90 percent relative to a baseline of no containment measures (Figure 3.1, panel 1). Containment measures have been associated with a strong decline in mobility and were more effective in halting the spread of the virus in countries where de facto mobility was curtailed the most, either because of compliance or greater voluntary social distancing stemming from fear of becoming infected (Figure 3.1, panel 2; October 2020 *World Economic Outlook*, Chapter 2). The flattening of the pandemic curve ensured that medical systems were not overwhelmed and reduced fatalities, laying the foundation for recovery (Figure 3.1, panel 3) and medium-term growth (Barro and others 2020).

While necessary to save lives and pave the way for recovery, containment measures resulted in large short-term economic losses. The analysis suggests that in countries where stringent measures were implemented, NO_2 emissions—a proxy for economic activity—cumulatively fell by almost 99 percent 30 days after their implementation, relative to the country-specific path without containment (Figure 3.1, panel 4). Translating this into economic terms, containment led to about a 12 percent decline (month-on-month) in industrial production, which is in line with the decline in industrial production observed in many Asian countries after lockdowns, including China (more than 10 percent) in January–February, Japan (10 percent), and Vietnam (15 percent) in April. The impact of containment has been adverse across all sectors, but tourism has been affected the most. This is particularly important for the Pacific island countries and other Asian economies that rely on tourism, such as Cambodia, New Zealand the Philippines, South Asia, and Thailand.

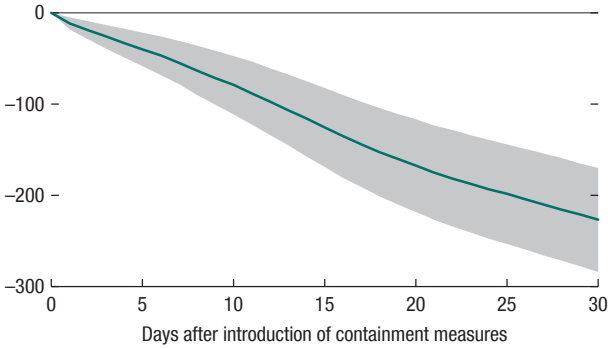
However, a look behind the *average effects* of containment measures shows that their impact varies significantly across countries, depending on local factors and characteristics. Containment measures were more effective in countries with a large share of elderly in the population, and where de facto mobility was curtailed. Other factors also affected the spread of COVID-19, such as population density and the strength of a country's health system. The latter implies that containment might be more challenging in some of the more densely populated Asian emerging markets with weaker health systems, such as India.

Speed of response is another critical factor. The analysis suggests that public health response time, measured as the number of days taken to implement containment measures after a significant outbreak (set at 100 cases, in line with the epidemiology literature such as Mishra and Mishra [2020]), played a significant role in flattening the curve. On this measure, Asia

Figure 3.1. Impact of Containment Measures

Containment measures reduced COVID-19 infections by an average of more than 90 percent in 30 days ...

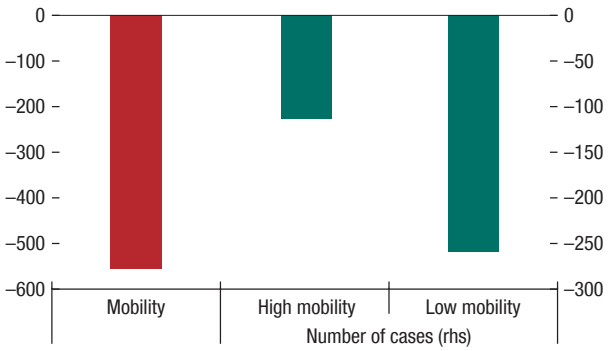
1. Confirmed Cases, Deviation from Baseline (Log percentage points)



Source: Deb and others (2020a).
Note: The graph shows the cumulative response and 95 percent confidence band on the number of COVID-19 infections over 30 days to a tightening of the containment measures index from 0 to 1 (referred to as a unitary tightening henceforth), relative to a baseline of no containment. The containment measures index is normalized to a range from 0 to 1. The figure is displayed in log percentage points, whereas the text translates these into percent changes.

... and were strongly associated with lower mobility, with a greater reduction in infections in countries with a larger de facto decline in mobility.

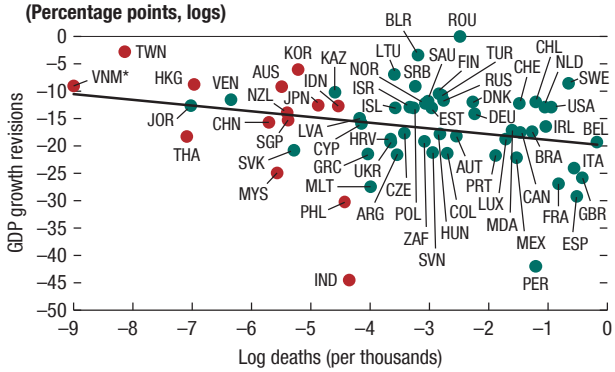
2. Impact of Containment Measures, Deviation from Baseline (Log percentage points; 30 days after a unitary tightening of containment measures)



Source: Deb and others (2020a).
Note: The red bar shows the cumulative impact of containment measures on retail mobility 30 days after a unitary tightening of containment measures. The green bars show the impact on COVID-19 infections when containment measures lead to a smaller decline in mobility (high mobility) relative to a larger decline (low mobility). rhs = right-hand scale.

This laid the foundation for a stronger recovery ...

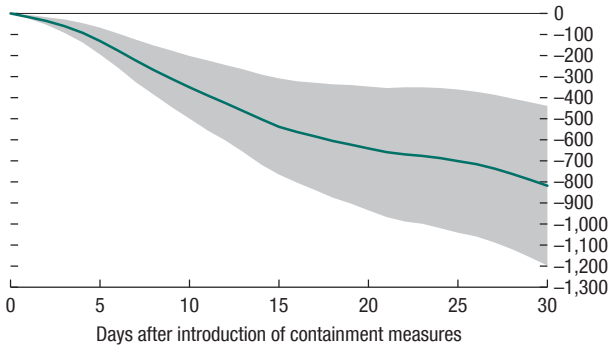
3. Growth Revisions and COVID-19 Deaths per Capita (Percentage points, logs)



Sources: Johns Hopkins University Coronavirus Research Center; and World Economic Outlook Database.
Note: The figure shows cumulative growth revisions over the first and second quarters of 2020 on the y-axis (outturns relative to January 2020 WEO forecast). There are no deaths recorded in Vietnam, making log deaths negative infinity on the x-axis. Country abbreviations are International Organization for Standardization country codes.

... but entailed short-term economic costs of about 12 percent monthly decline in industrial production.

4. NO_2 Emissions, Deviation from Baseline (Log percentage points)

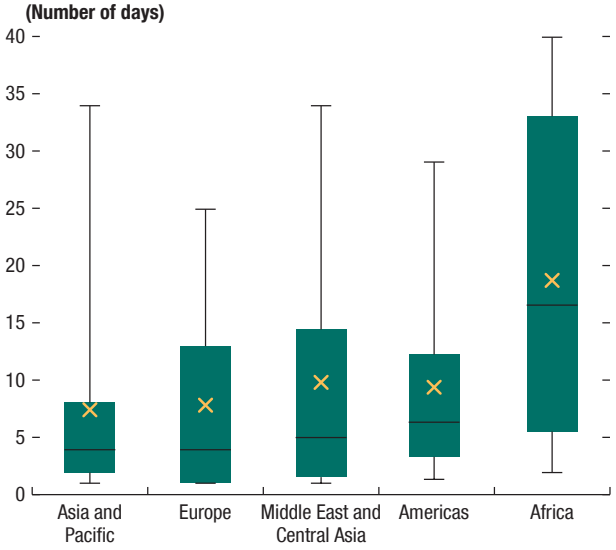


Source: Deb and others (2020b).
Note: The graph shows the cumulative response and 95 percent confidence band on NO_2 emissions over 30 days to a unitary tightening of the containment measures relative to a baseline of no containment. The decline in NO_2 emissions after 30 days of containment measures, of about –800 log percentage points, is translated into losses in industrial production using an estimated historical elasticity between NO_2 emissions and industrial productions of 0.015. The figure is displayed log percentage points, whereas the text translates these into percent changes.

Figure 3.2. Early Intervention Is Paramount

Asian countries responded faster on average ...

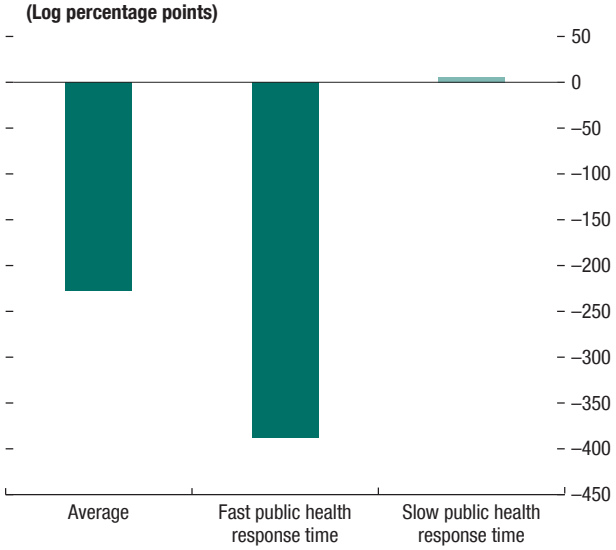
1. Public Health Response Time (Number of days)



Source: Deb and others (2020a).
Note: Public health response time is measured as the number of days it took a country to implement containment measures (excluding restrictions on international travel) after a significant outbreak. In line with epidemiology literature (Mishra and Mishra 2020), significant outbreak is set at after 100 cases. The horizontal line inside each box represents the median; the upper and lower edges of each box show the top and bottom quartiles, respectively; and the top and bottom markers denote the maximum and the minimum, respectively. X is the mean.

... resulting in more effective intervention.

2. Confirmed Cases, Deviation from Baseline (Log percentage points)



Source: Deb and others (2020a).
Note: The bars show the cumulative impact after 30 days on the number of coronavirus disease infections to a unitary tightening of containment measures relative to a baseline of no containment. The figure is displayed in log percentage points, whereas the text translates these into percent changes. The lighter shade indicates effects not statistically significant at the 95 percent level.

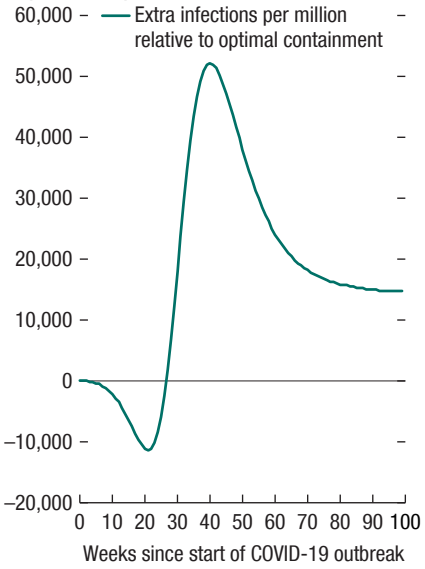
did relatively well compared with other regions, probably because of its experience with previous pandemics (Figure 3.2, panel 1). Countries such as Vietnam or the Pacific island countries, which put measures in place swiftly at the start of the pandemic, witnessed a reduction in infections by more than 95 percent relative to a baseline with no containment measures (Figure 3.2, panel 2).

This empirical evidence is supported by model analysis—based on the Susceptible, Infected, Recovered, or Removed (SIR) macro model (Eichenbaum, Rebelo, and Trabandt 2020) with fiscal policy (Engler and others 2020)—and emphasizes the importance of early intervention. When containment measures are delayed, model simulations illustrate that the cumulative number of infections is significantly higher, and the depth of the economic contraction is more pronounced (Figure 3.3). The reason is that with raging infections, the negative externalities associated with economic activity are very large. Even if containment measures are eventually introduced, the delayed response still leads to higher fatalities and economic losses.

Figure 3.3. Results from an Extended Susceptible, Infected, Recovered, or Removed Macro Model

Delayed containment significantly increases the number of infected ...

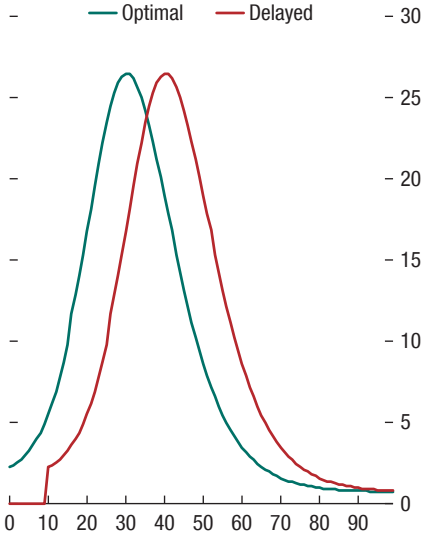
1. Confirmed Cases under Delayed Containment, Relative to Optimal Containment (Per million)



Source: Engler and others (2020).
Note: The chart shows additional weekly infections per million of population under the scenario with delayed containment relative to the optimal policy scenario.

... even with the same stringency of containment measures ...

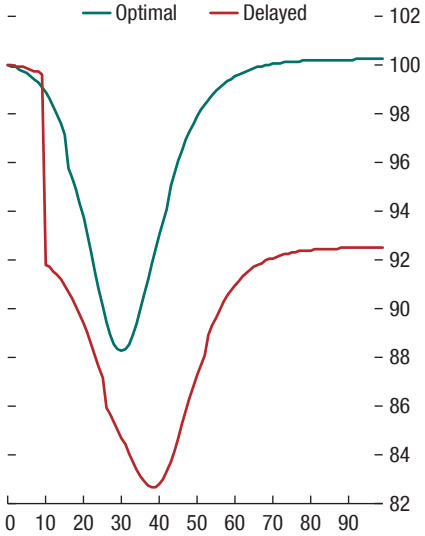
2. Containment (Percent)



Source: Engler and others (2020).
Note: The chart illustrates delayed containment by 10 weeks. Modeled as a Pigouvian consumption tax, other than the delayed start, the containment measures are identical under both scenarios.

... resulting in more pronounced economic contraction.

3. GDP (Percent of pre-pandemic level)



Source: Engler and others (2020).
Note: The chart shows the decline in GDP relative to its pre-pandemic level under the delayed containment and optimal policy scenarios.

Exit Strategies: Timing Is Key

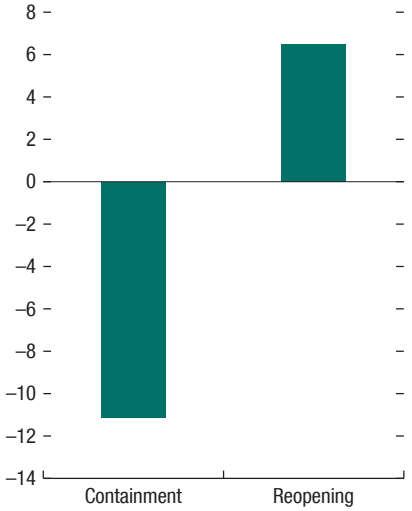
Several Asian economies began to ease lockdowns early, and as a result, many containment measures had already been lifted by July. Exit strategies vary across countries (Box 2.1), but in general, they have been accompanied by an improvement in economic activity (October 2020 *World Economic Outlook*, Chapter 2). However, because of changes in individual behavior associated with the fear of becoming infected and measures left in place to maintain social distancing and reduce contagion, the positive impact of exiting lockdowns on economic activity has been smaller in magnitude than the negative impact of lockdowns. The analysis shows that, on average, lockdowns led to a contraction in economic activity (as measured by industrial production) of about 12 percent a month, but an eventual full reversal of containment measures would increase economic activity by only about 6 percent (Figure 3.4, panel 1). In other words, scarring from the pandemic is already apparent in the weak recovery thus far.

The *average effect* of exits on economic activity also masks significant heterogeneity across countries. Strong testing and tracing policies, implemented in Korea for instance, along with targeted lockdowns, appear crucial for avoiding a spike in infections when containment is eased (Figure 3.4, panel 2). To minimize the risk of a second wave, health considerations suggest that without herd immunity, reliable vaccines, or effective treatment, the rollback of strict containment should begin only when there are clear signs that new infections are declining (WHO 2020). Many Asian economies seem to be following this strategy. Testing and tracing policies at the time of exit were

Figure 3.4. Easing of Containment Measures Has Asymmetric Effects, Depending on the Strength of Testing and Tracing Policies

Easing of containment measures has led to a pickup in economic activity, but this effect is less pronounced ...

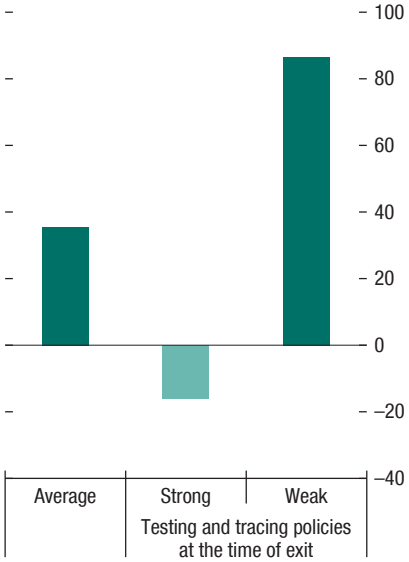
1. Industrial Production, Deviation from Baseline (Percent, implied impact on industrial production 30 days after containment/ reopening)



Source: Deb and others (2020b).
Note: The bars show the impact after 30 days on industrial production (implied by changes in NO_2 emissions) to a unitary change (tightening during containment and easing during reopening) in the containment measures relative to a baseline of no change. Changes in NO_2 emissions are translated into industrial production using estimated historical elasticity of 0.015.

... and is associated with a larger increase in the number of COVID-19 infections in countries with weaker testing and tracing policies at the time of exit.

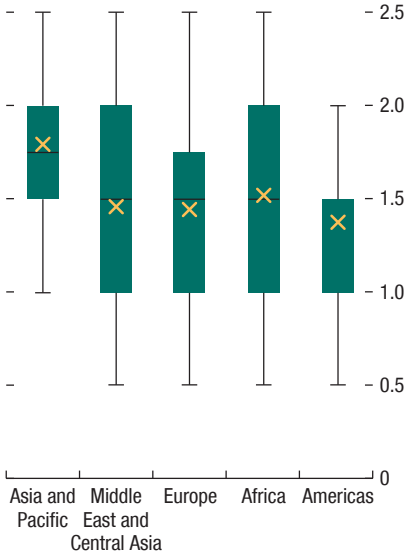
2. Confirmed Cases, Deviation from Baseline (Log percentage points, 30 days after relaxation of containment measures)



Source: Deb and others (2020b).
Note: The bars show the impact after 30 days on the number of coronavirus disease infections to a unitary easing in the containment measures relative to a baseline of no change. The first bar shows the average effect, and the other two bars highlight the impact under strong and weak testing and tracing policies at the time of easing of lockdowns. The figure is displayed in log percentage points. The lighter shade indicates effects not statistically significant at the 95 percent level.

Asian countries had relatively strong testing and tracing policies at the time they eased lockdowns.

3. Testing and Tracing Policies at Time of Exit (Index, 7-day moving average)



Source: Deb and others (2020b).
Note: The index was calculated as the simple average of testing and contact tracing policies available from the Oxford Coronavirus Government Response Tracker. The horizontal line inside each box represents the median; the upper and lower edges of each box show the top and bottom quartiles, respectively; and the top and bottom markers denote the maximum and the minimum, respectively. X is the mean.

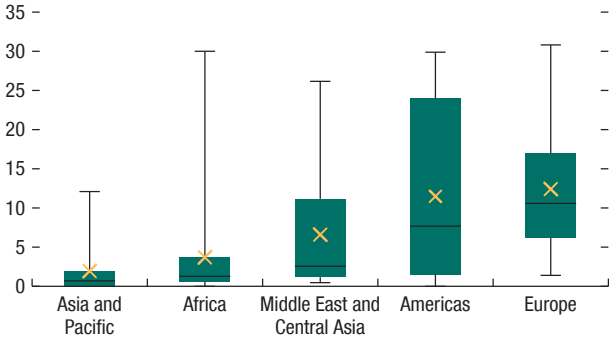
relatively high in Asia (Figure 3.4, panel 3), and the median seven-day average of new cases was less than 1 per million people—among the lowest across all regions (Figure 3.5, panel 1).

The analysis indicates that appropriately timing the exit from lockdowns is key to limiting the risk of a new wave of infections, restoring confidence, boosting economic activity, limiting scarring effects, and laying the foundation for a stronger recovery. Empirical results show that in countries that eased lockdowns when new infections were very low, exits have been associated with a significant increase in mobility (which proxies individual behavior in relation to the fear of becoming infected) and economic activity. By contrast, in countries that started reopening when the number of new infections was still high and increasing, mobility did not increase significantly (Figure 3.5, panel 2), and neither did economic activity (Figure 3.5, panel 3). Model simulations also illustrate another dire consequence of exiting too early and before the pandemic peaks: early exits lead to a significantly higher number of infections and fatalities, which can plunge the

Figure 3.5. The Importance of Getting the Timing Right

Asian countries eased lockdowns when the average number of cases was lower ...

1. New Cases at Time of Exit
(Per million people, 7-day moving average)



Source: Deb and others (2020b).
Note: The horizontal line inside each box represents the median; the upper and lower edges of each box show the top and bottom quartiles, respectively; and the top and bottom markers denote the maximum and the minimum, respectively. X is the mean.

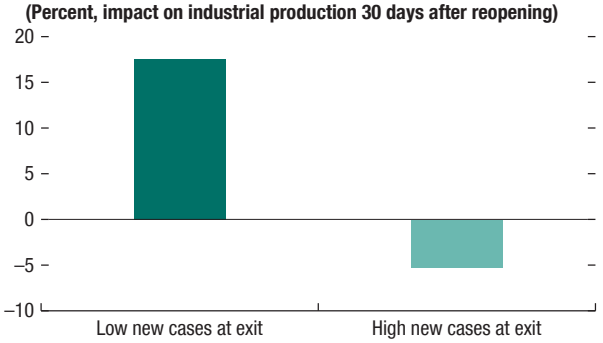
... which helped to restore confidence ...

2. Transit Mobility, Deviation from Baseline
(Percentage points)

Source: Deb and others (2020b).
Note: The bars show the impact after 30 days on transit mobility to a unitary easing of containment measures relative to a baseline of no change. The lighter shade indicates effects not statistically significant at the 95 percent level.

... and boost activity after the release from lockdowns ...

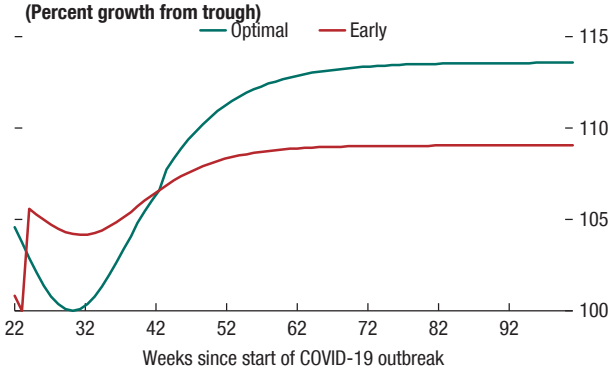
3. Industrial Production, Deviation from Baseline
(Percent, impact on industrial production 30 days after reopening)



Source: Deb and others (2020b).
Note: The bars show the impact after 30 days on industrial production (implied by changes in NO_2 emissions) to a unitary easing of containment measures relative to a baseline of no change. Changes in NO_2 emissions are translated into industrial production using estimated historical elasticity of 0.015. The lighter shade indicates effects not statistically significant at the 95 percent level.

... confirming model results that premature exits can make the situation worse.

4. GDP Recovery from Trough
(Percent growth from trough)



Source: Engler and others (2020).
Note: The chart compares the behavior of GDP under the early exit versus optimal policy scenario, in percent of the GDP. Early exit leads to a second wave of infections, hampering the recovery.

economy into a second recession and weaken the medium-term recovery (Figure 3.5, panel 4).

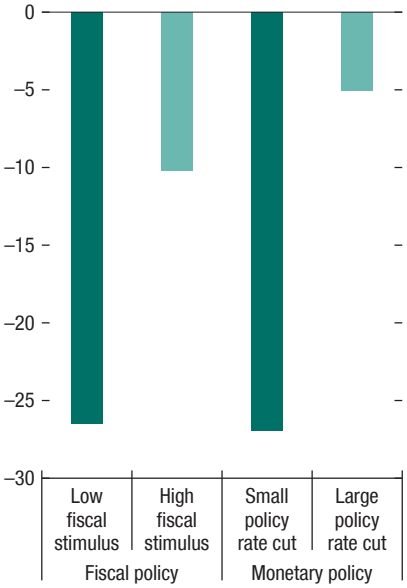
Macroeconomic Policies Can Mitigate Economic Costs and Support Recovery

Supportive policies can mitigate the economic costs of containment measures. Using aggregate data provided by the IMF Policy Tracker on discretionary fiscal and monetary measures implemented and announced in response to the COVID-19 pandemic, empirical analysis confirms that such policy measures have been effective in mitigating the economic costs associated with containment measures. Such measures had a much larger impact on economic activity—equivalent to a 22 percent decline in industrial production—in countries with relatively small

Figure 3.6. Policies Can Cushion Economic Impact of Containment Measures

Macro policies were effective in mitigating some of the costs associated with containment measures ...

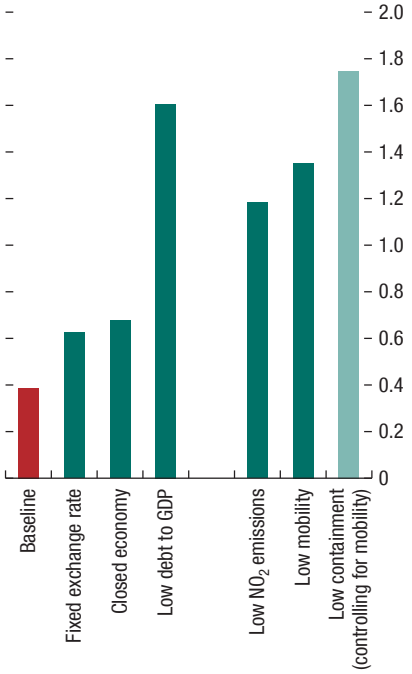
1. Industrial Production, Deviation from Baseline
(Percent, implied impact on industrial production after 30 days)



Source: Deb and others 2020a.
Note: The bars show the impact after 30 days on industrial production (implied by changes in NO_2 emissions) to a unitary tightening of containment measures relative to a baseline of no change. Changes in NO_2 emissions are translated into industrial production using estimated historical elasticity of 0.015. The lighter shade indicates effects not statistically significant at the 95 percent level.

... though there are significant heterogeneities in the fiscal multipliers based on country characteristics and the stage of the pandemic.

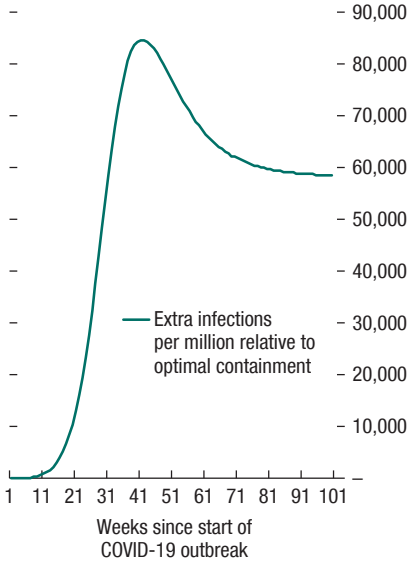
2. Impact of Fiscal Shocks on Industrial Production
(Betas, percent)



Source: Deb and others 2020.
Note: The bars denote the impact (coefficients) of fiscal shocks on industrial production obtained from a panel regression of 39 countries from January 2020 to July 2020.

Targeted fiscal transfers can reduce the number of infections.

3. Confirmed Cases without Transfers, Relative to Optimal Containment
(Per million)



Source: Engler and others 2020.
Note: The chart shows additional weekly infections per million under the scenario with no transfers relative to the optimal policy scenario. Positive difference indicates higher cumulative cases.

fiscal packages. Likewise, some of the adverse impact of containment measures was mitigated in countries with larger cuts in policy rates (Figure 3.6, panel 1).

To shed more light on the effectiveness of fiscal measures, a daily database of new announced fiscal plans—encompassing direct fiscal measures as well as guarantees and loans to households and firms—was constructed for a sample of 39 advanced and emerging market economies, based on narrative information in the IMF Policy Tracker and newspaper reports (Deb and others, forthcoming). Using high-frequency identification—that is, purging the fiscal news by daily indicators of economic activity (NO_2 emissions, mobility)—the analysis provides evidence that fiscal announcements had significant effects on economic activity. Estimates suggest that fiscal announcements of 1 percent of GDP increased year-on-year industrial production by about 0.4 percent— equivalent to a fiscal multiplier of about 0.2–0.3. Consistent with Ilzetzki, Mendoza, and Végh (2013), multipliers are higher in economies operating under fixed exchange rates in more closed economies, and where debt-to-GDP ratios are relatively low (Figure 3.6, panel 2). The

analysis also finds that multipliers were higher during months of larger losses in economic activity (proxied by mobility indices and NO_2 emissions) with fiscal announcements of 1 percent of GDP leading to about a 1.2–1.4 percent increase in industrial production (corresponding to a fiscal multiplier of 0.6–1). It was also found that, generally, fiscal announcements have larger effects when containment measures are more stringent, as periods of lockdowns also correspond to periods of weak economic activity. However, when controlling for the effect of fiscal announcements during months of weaker economic activity, the analysis found evidence of a bigger impact of fiscal news when containment measures are lower—that is, when supply-side restrictions from lockdowns are smaller (Figure 3.6, panel 2).

Finally, model simulations show that fiscal measures targeted to the most vulnerable households (such as consumption coupons in Korea and cash transfers to casual workers in Australia) also helped reinforce greater social distancing and reduce the number of infections (Figure 3.6, panel 3) and fatalities.

Conclusions

Countries in Asia have taken significant measures to contain the COVID-19 pandemic while aiming to limit its economics costs. In the absence of a vaccine or effective treatment, several Asian countries locked down their economies quickly and decisively to stabilize the spread of the virus and enable them to gradually reopen economic activity. The early implementation of containment measures proved crucial in flattening the pandemic curve and avoiding a deeper and more protracted recession. Meanwhile, the rollback of containment measures only after the stabilization of outbreaks and with strong testing and tracing regimes led to a stronger rebound in economic activity and better health outcomes. The substantial macroeconomic policies implemented and announced helped reduce the economic costs of containment and sustain the recovery while limiting scarring. Targeted fiscal announcements were essential for protecting the most vulnerable, stimulating economic activity, and helping contain the spread of the pandemic, and thus should not be withdrawn prematurely.

Several economies in Asia have handled the pandemic well so far, but some have yet to bring the outbreak under control. These countries need to contain the virus while balancing the short-term economic costs. The challenges are ongoing and large, including the ever-present risk of a second wave of infections that could put more lives at risk, mandate other lockdowns, and damage economies further.

4. COVID-19 and Inequality in Asia: Risks of Social Unrest?

This chapter shows, based on high-frequency labor surveys, that inequality is increasing further during the COVID-19 pandemic because job losses have been concentrated among low-income workers. Moreover, the experience from past pandemics suggests that the adverse distributional effects could be even larger in the medium term—including, looking ahead, through the displacement of low-skilled workers by robots—and that the resulting higher levels of inequality could undermine social cohesion. This is especially salient for countries with already high inequality going into this crisis. Information from the IMF Policy Tracker shows that many Asian governments have implemented significant fiscal policy measures to mitigate the pandemic's effect on the most vulnerable, with the impact depending on the initial coverage of safety nets, fiscal space, and degree of informality and digitalization. Although there is no one-size-fits-all solution, the model-based analysis shows that policies targeted to where needs are greatest are effective in mitigating adverse distributional consequences and underpinning overall economic activity and virus containment.

Labor Market Surveys Indicate Rising Inequality

The COVID-19 pandemic is taking its toll on Asia's labor market. High-frequency labor market indicators have deteriorated markedly and to a much greater extent than during the global financial crisis. Aggregate hours worked have declined both at the extensive (employment rate) and intensive margins (hours worked per employee). Unemployment has surged and labor force participation plunged—an early sign of scarring effects. As in the United States (Shibata 2020) and the United Kingdom (Haioglu, Känzig, and Surico 2020), the pandemic is worsening distributional outcomes in Asia:

- *Job losses are concentrated in industries with lower wages . . .* The crisis is affecting all industries, but high-contact sectors (such as hospitality and retail) and non-teleworkable industries (such as mining, manufacturing, and construction) are experiencing the largest declines (Figure 4.1, panel 1). These sectors have a larger share of low-skill workers and lower earnings. For example, the average monthly wage in the social sector is less than one-third that of essential and teleworkable industries.
- *. . . among women . . .* Labor force participation is significantly declining (unlike during the global financial crisis), especially for women. Between December 2019 and June 2020 Asia's female participation rate declined by 1.3 percentage points compared with a 1 percentage point fall for males (Figure 4.1, panel 2).
- *. . . and youth*. Asia had one of the highest pre-pandemic shares of youth not in employment, education, or training, particularly in developing countries. The pandemic is aggravating this trend. Asia's youth have experienced sharper job losses compared with other workers during the pandemic, and youth unemployment rose 1.4 percentage points, on average, by June (Figure 4.1, panel 3), as youth are mainly employed in high-contact sectors.

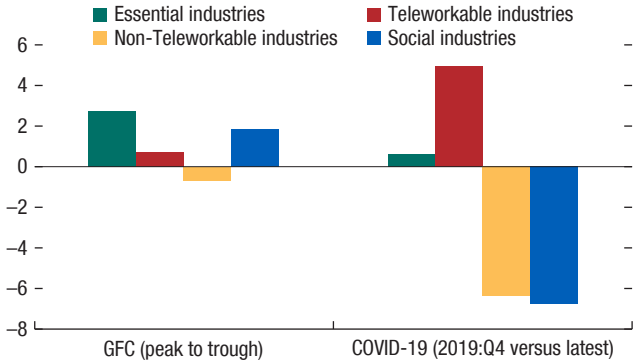
Pandemics and Automation: Will the Lost Jobs Come Back?

The COVID-19 pandemic is likely to increase inequality further over the medium term, unless policies succeed in altering historical patterns. Furceri and others (2020) provide evidence that major epidemics over the past two decades, even though smaller in scale than COVID-19, have led to persistent increases in the Gini coefficient, raised income shares to higher-income deciles, and lowered the employment-to-population ratio for those with basic education compared with those with higher education.

One channel through which pandemics may increase inequality is the acceleration in

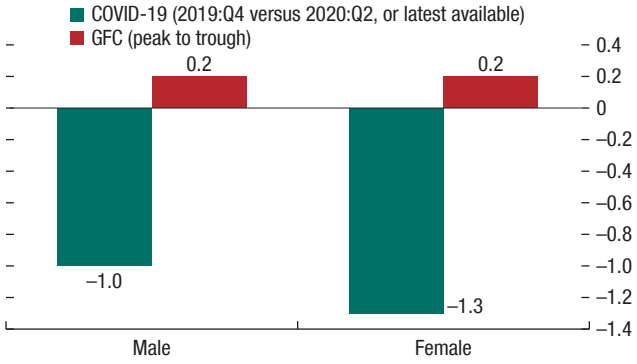
Figure 4.1. Selected Economies in Asia: Non-Teleworkable Sectors, Gender Gap, and Youth Unemployment

1. Change in Employment by Industry Classification during Crises (Percentage points)



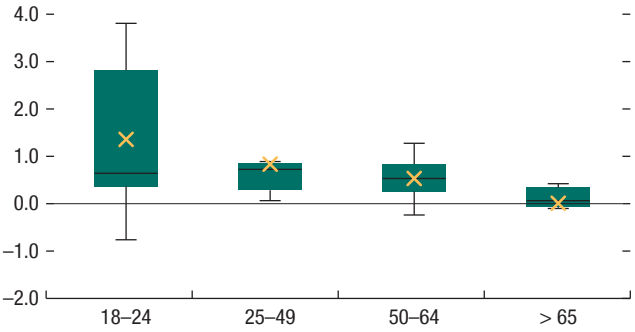
Sources: Haver Analytics; and IMF staff calculations.
Note: COVID-19 = coronavirus disease; GFC = global financial crisis. Asia refers to Australia, Hong Kong SAR, Indonesia, Japan, Korea, Malaysia, New Zealand, Singapore, Taiwan Province of China, Thailand, The Philippines, and Vietnam. Data are seasonally adjusted, based on June 2020 data (or latest available). Essential industries refer to agriculture, utilities, transport, information and communication, and health and public administration; social industries refer to wholesale and retail, hotels and restaurants, and arts and entertainment; teleworkable industries refer to finance, business and professional services, and education; and non-teleworkable industries refer to mining, manufacturing, and construction.

2. Change in Labor Force Participation Rate by Gender during Crises (Percentage points)



Sources: Haver Analytics; and IMF staff calculations.
Note: COVID-19 = coronavirus disease; GFC = global financial crisis. Asia refers to Australia, Hong Kong SAR, Japan, Korea, the Philippines, and Thailand. Data are seasonally adjusted. For COVID-19, data are up to June 2020.

3. Change in Unemployment Rate by Age Cohort (Percentage points)

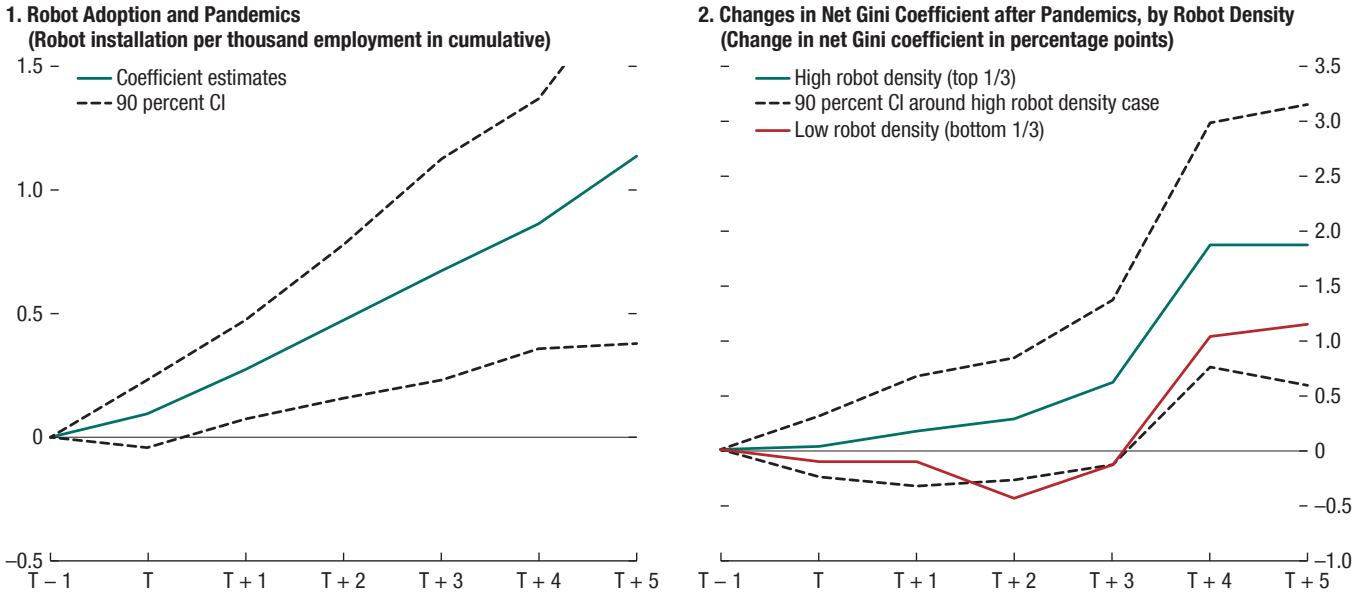


Source: Haver Analytics.
Note: Asia refers to Australia, Japan, Korea, New Zealand, Taiwan Province of China, and Thailand. Data refers to the change in unemployment rate from December 2019 to June 2020. Data are seasonally adjusted. The horizontal line inside each box represents the median; the upper and lower edges of each box show the top and bottom quartiles, respectively; and the top and bottom markers denote the maximum and the minimum, respectively. X is the mean.

automation and robotization. Automation raises productivity, but the analysis suggests that it also increases inequality by displacing workers in routine manual occupations, which have low earnings.

Robot adoption (measured by new robot installations per 1,000 employees, collected by the International Federation of Robotics) tends to increase after pandemic events (Figure 4.2, panel 1), especially when the such events are associated with a significant economic contraction. This is in line with the literature showing that firms tend to undertake restructuring after recessions and adjust production toward labor-saving technologies (Hall 2005; Mortensen and Pissarides 1994; Hershbein

Figure 4.2. Pandemics, Automation, and Inequality



Sources: International Federation of Robotics; World Input-Output Database: Socioeconomic Accounts; Penn World Table 9.0 database; and IMF staff estimates.
Note: CI = confidence interval; T = pandemic year. Impulse responses were estimated using a sample of 14 industries in 39 economies over 2000–14 and local projection method (Jordà 2005). Right-hand scale variables are: a dummy indicating pandemic years, two lags of the left-hand scale variable, and the pandemic dummy, controlling for industry and country fixed effects; initial level of wage and capital-to-wage ratio, changes in the capital-to-wage ratio at the industry level, the country-level economic development, demographics, and measures of trade and financial globalization; and the world real GDP growth. Robust standard error is clustered at the country-industry pair level.

Sources: Standardized World Income Inequality Database; International Federation of Robotics; and IMF staff estimates.
Note: CI = confidence interval; T = pandemic year. Impulse responses were estimated using a sample of 14 industries in 39 economies over 2000–14 and local projection method (Jordà 2005), allowing the coefficients on pandemic variables to vary depending on robot density (bottom 1/3, middle 1/3, and top 1/3). Right-hand scale variables are: pandemic events, interacted with dummy variables indicating high, medium, or low robot density, controlling for country and year fixed effects; log of wage, capital-to-wage ratio, and the measures of macroeconomic development (income, demographics, measures of trade, and financial globalization). Robust standard error is clustered at the country level.

and Kahn 2018; Carbonero, Ernst, and Weber 2018). It is also consistent with recent studies showing that pandemic-induced uncertainty could add to the incentives for automation on net, despite its negative effects on aggregate demand, as firms try to anticipate future labor disruptions from pandemics (Leduc and Liu 2020).

The increase in inequality over the medium term tends to be larger for economies with higher robot density—above 2.3 per thousand (Figure 4.2, panel 2)—and where robot adoption increases more after the pandemic. These results suggest that the distributional effects of this pandemic could be sizable in Asia: In 2018 nearly two-thirds of the world's operational stocks of industrial robots were in Asia, and more than 40 percent of the world's new robots were installed in China (October 2018 *Regional Economic Outlook: Asia and Pacific,* Chapter 5). Moreover, robot density is rising fast from a low base in several Asian economies.

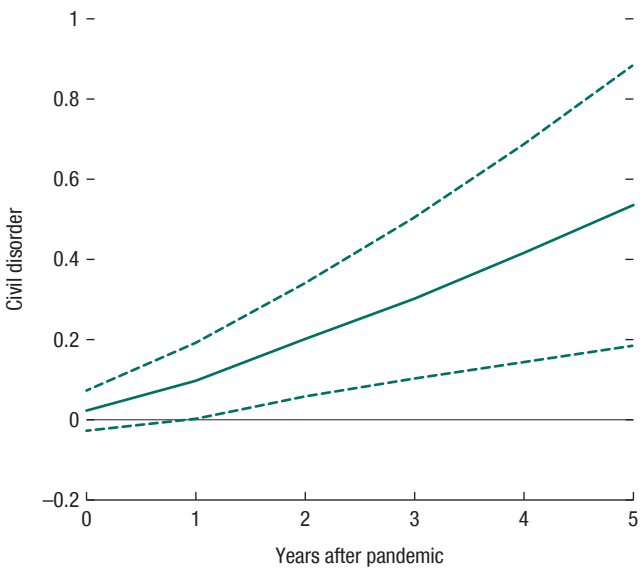
Pandemics and Social Unrest: When Inequality Becomes Intolerable

What are the implications? Higher inequality is associated with lower sustainable medium-term growth (Ostry, Berg, and Tsangarides 2014) and can fuel social tensions in countries with already high inequality.

Using a panel vector autoregression framework, it was found that past major pandemics, by reducing growth and increasing inequality, have led to a significant increase in social unrest in the medium term, as measured by the civil disorder score from International Country Risk Guide

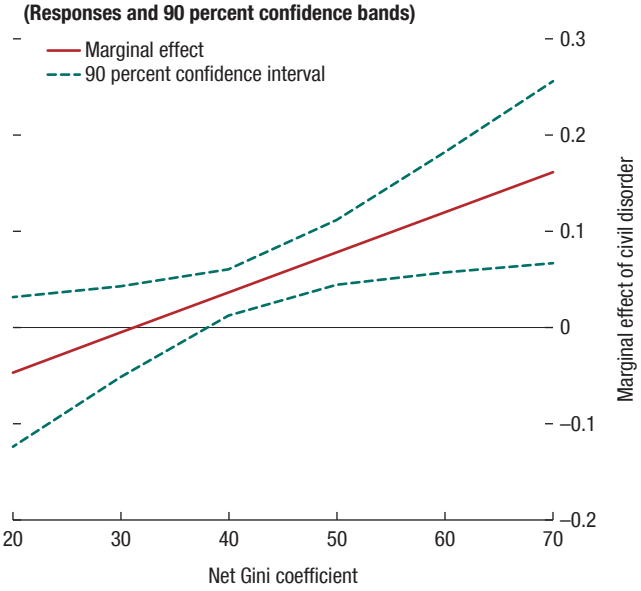
Figure 4.3. Pandemics, Inequality, and Social Unrest

1. Impulse Response of Civil Disorder to Pandemics



Sources: International Country Risk Guide; and IMF staff calculations.
Note: The impulse reaction functions are estimated with a panel vector autogression (VAR) model using a sample of 133 countries over 2001–18. The graph shows the responses and 90 percent confidence bands, which are estimated using Gaussian approximation based on 200 Monte Carlo draws from the fitted panel VAR model. The *x*-axis shows years after pandemic events: $t = 0$ is the year of the pandemic event. Estimates are based on the orthogonalized impulse response functions of the panel VAR model: The three endogenous variables are real growth, net Gini coefficient, and civil disorder. The pandemic dummy is an exogenous covariate in the panel VAR. Country fixed effects are controlled for, and standard errors are clustered at the country level. The sign of civil disorder is flipped so that an increase in the score indicates more disorder or higher social unrest.

2. Marginal Effect of Net Gini Coefficient on Civil Disorder (Responses and 90 percent confidence bands)



Sources: International Country Risk Guide; and IMF staff calculations.
Note: The margins plot is based on a panel regression, using a sample of 133 countries over 2001–18:

$$y_{it} = \alpha + \beta_1 \cdot ineq_{i,t-1} + \beta_2 \cdot ineq^2_{i,t-1} + \beta_3 \cdot controls_{i,t-1} + \gamma_i + \eta_t + \epsilon_{i,t}.$$

Where y_{it} is the measure of social unrest, and inequality is measured by net Gini coefficient. The chart shows the marginal effects of a 1-point (out of 100) increase in net Gini coefficient on civil disorder at different levels of net Gini coefficient. Ninety percent confidence intervals are included with the point estimates. The sign of civil disorder is flipped so that an increase in the score indicates more disorder or higher social unrest.

(Figure 4.3, panel 1).[1] Higher social unrest, in turn, is associated with lower economic activity in the short term and with higher inequality. These results are consistent with the finding that external shocks raise risks to growth and social stability (Rodrik 1999).

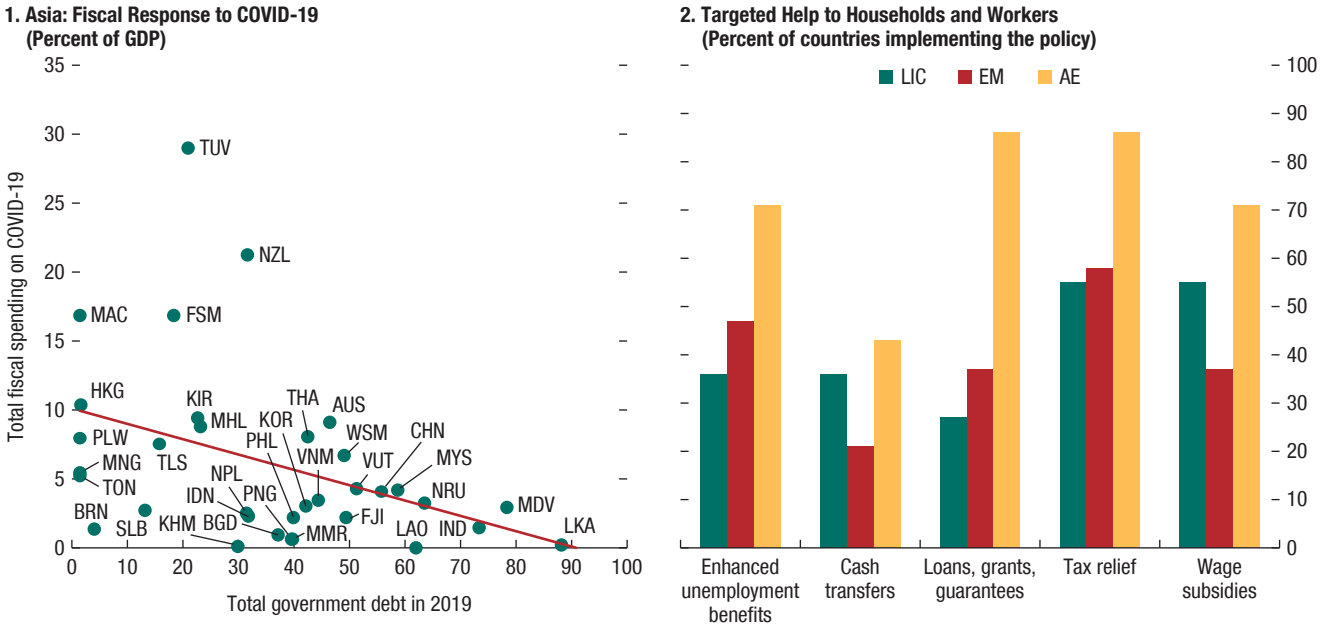
The analysis finds that the effect of inequality on social unrest is stronger when income inequality is initially high (Figure 4.3, panel 2). An increase in the net (post tax and transfer) Gini coefficient is associated with higher social unrest when the level of the net Gini is above 40—about one-third of Asian economies have a net Gini coefficient higher than this threshold. The analysis also finds that the impact of inequality on social unrest depends on the extent of redistribution (measured as the difference between market Gini coefficient and net Gini coefficient): an increase in inequality is associated with more unrest when redistributive transfers are low, suggesting that redistributive measures indeed help to reduce social tensions.

Breaking the Vicious Cycle: Policies and the Way Forward

Countries with broader social safety nets, greater fiscal space, lower levels of informality, and higher digitalization have been able to respond effectively in protecting the vulnerable, but countries that entered the crisis with weaker initial conditions faced greater challenges (Figure 4.4, panel

[1]In line with the October 2020 *World Economic Outlook*, Box 1.4, no significant short-term effects were found.

Figure 4.4. Asia's Policy Responses



Sources: IMF World Economic Outlook database; and IMF survey of policy responses to COVID-19.
Note: COVID-19 = coronavirus disease. Country abbreviations are International Organization for Standardization country codes.

Source: IMF survey of policy responses to COVID-19.
Note: COVID-19 = coronavirus disease. AE = advanced economy; EM = emerging market; LIC = low-income country.

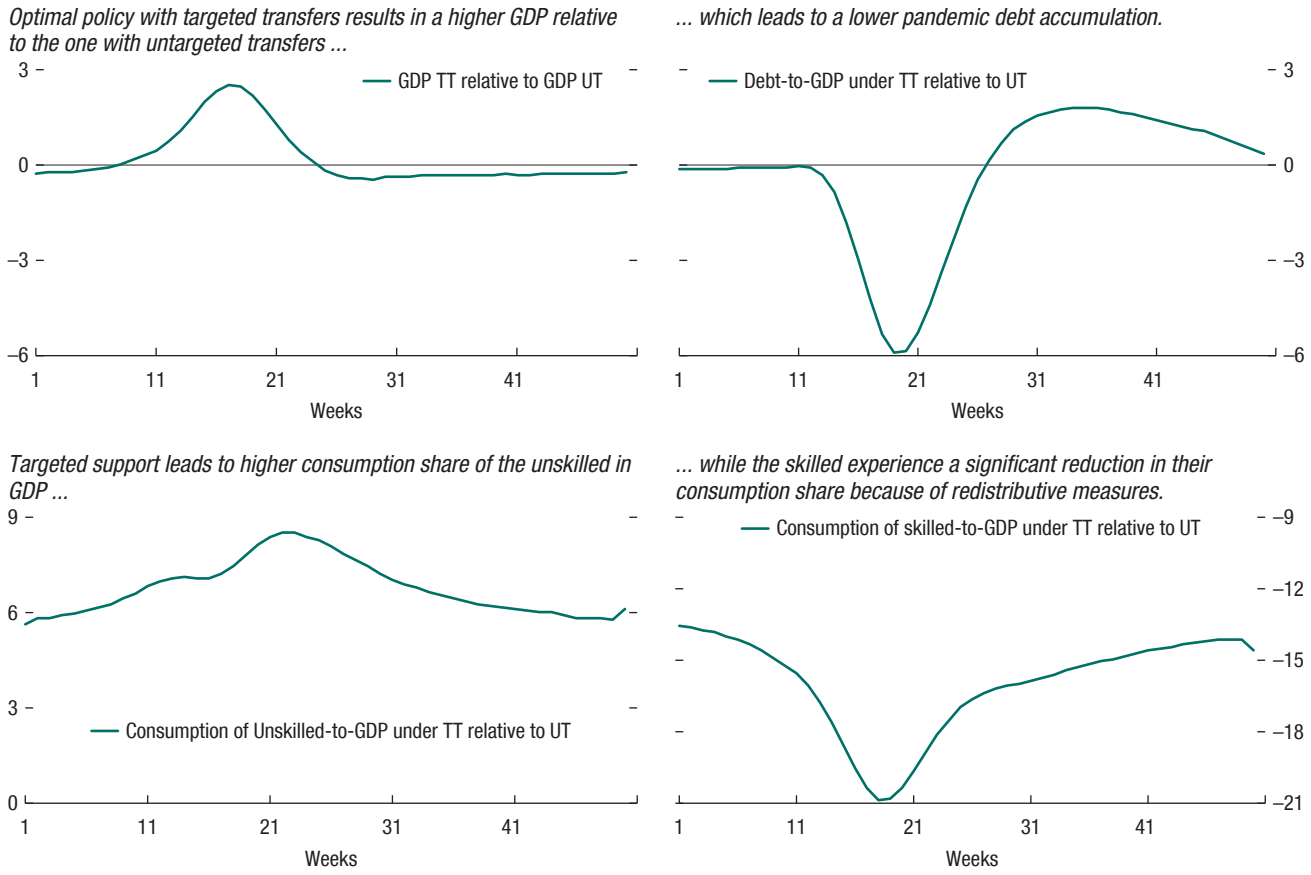
1). Advanced economies introduced targeted cash transfers more than emerging market and developing economies did (Figure 4.4, panel 2). The degree of digitalization likely played a role, helping to reach citizens in need: low-income and emerging market countries that introduced targeted cash transfers (for example, Cambodia and India, see Chapter 2) had, on average, higher digitalization scores than those that did not introduce these measures. Most advanced economies also introduced enhanced unemployment benefits, wage subsidies, and fiscal support to firms. Less frequent adoption of such measures among low-income countries and emerging markets was likely related to a higher degree of informality, which made reaching the workers and firms more challenging.

Policy Analysis: More Targeted Measures, More Lives Saved

This section compares the efficiency of various fiscal measures to alleviate the impact of the lockdown, focusing on targeted support to households. It uses a susceptible-infected-recovered macro model (Eichenbaum, Rebelo, and Trabandt 2020) extended to include both skilled and unskilled workers and external borrowing and redistributive fiscal policy (Engler and others 2020).

The analysis shows that fiscal support measures not only mitigate the economic cost of the pandemic but can significantly reduce the number of infections—about one-third relative to the no-intervention baseline. By helping to protect the livelihoods of consumers and workers and increasing their disposable income, these measures make staying home more affordable and help reinforce greater social distancing.

Figure 4.5. Targeted versus Untargeted Fiscal Support
(Differences, percent of GDP)



Source: Engler and others (2020).
Note: TT = targeted transfers; UT = untargeted transfers.

The favorable effects are larger for targeted than for untargeted measures. The former help reduce inequality in disposable income and preserve a higher consumption share of GDP for the unskilled (Figure 4.5). This saves more lives because unskilled workers tend to be more exposed to the health crisis. The reduction in infections and fatalities, in turn, helps reduce the depth of the recession and therefore flattens the surge in the debt-to-GDP ratio. The model suggests that, compared with untargeted transfers, targeted transfers raise GDP by some 3 percent and lower the debt-to-GDP ratio by 6 percentage points.

Although there is no one-size-fits-all best policy, the model suggests that it is economically and socially beneficial to provide targeted support to the unskilled. To minimize longer-term damage, policies should also address challenges from automation, including by revamping education curriculums to achieve more flexible skill sets and lifelong learning, as well as new training for adversely affected workers.

References

Barro, Robert J., José F. Ursúa, and Joanna Weng. 2020. "The Coronavirus and the Great Influenza Pandemic: Lessons from the Spanish Flu for the Coronavirus's Potential Effects on Mortality and Economic Activity." NBER Working Paper 26866, National Bureau of Economic Research, Cambridge, MA.

Bauer, A., R. Sean Craig, J. Garrido, K. Kang, K. Kashiwase, S. Kim, Y. Liu, and S. Rafiq. Forthcoming. "Flattening the Insolvency Curve: Supporting the Corporate Sector in Asia and the Pacific in the Post-C19 Recovery."

Carbonero, Francesco, Ekkehard Ernst, and Enzo Weber. 2018. "Robots Worldwide: The Impact of Automation on Employment and Trade." ILO Research Department Working Paper 36, International Labour Organization, Geneva.

Dabla-Norris, Era, and Changyong Rhee. 2020. "A 'New Deal' for Informal Workers in Asia." *IMFBlog* (blog). International Monetary Fund, April 30, 2020. https://blogs.imf.org/2020/04/30/a-new-deal-for-informal-workers-in-asia/.

Deb, Pragyan, Davide Furceri, Jonathan D. Ostry, and Nour Tawk. 2020a. "The Economic Effects of COVID-19 Containment Measures." IMF Working Paper 20/158, International Monetary Fund, Washington, DC.

Deb, Pragyan, Davide Furceri, Jonathan D. Ostry, and Nour Tawk. 2020b. "The Effect of Containment Measures on the COVID-19 Pandemic." IMF Working Paper 20/159, International Monetary Fund, Washington, DC.

Deb, Pragyan, Davide Furceri, Jonathan D. Ostry, Nour Tawk, and Naihan Yang. Forthcoming. "The Effect of Fiscal Policy during COVID-19: Preliminary Evidence."

Eichenbaum, Martin S., Sergio Rebelo, and Mathias Trabandt. 2020. "The Macroeconomics of Epidemics." NBER Working Paper 26882, National Bureau of Economic Research, Cambridge, MA.

Engler, P., Nathalie Pouokam, Diego Rodríguez Guzman, and Irina Yakadina. Forthcoming. "Fiscal Redistribution and Inequality in the Time of a Pandemic."

Franks, Jeffrey, Bertrand Gruss, Carlos Mulas Granados, Manasa Patnam, and Sebastian Weber. Forthcoming. "Exiting from Lockdowns: Early Evidence from Reopenings in Europe." IMF Working Paper, International Monetary Fund, Washington DC.

Furceri, Davide, Prakash Loungani, Jonathan D. Ostry, and Pietro Pizzuto. 2020. "Will COVID-19 Affect Inequality? Evidence from Past Pandemics." COVID Economics 12 (May): 138–157.

Graetz, Georg, and Guy Michaels. 2018. "Robots at Work." *The Review of Economics and Statistics* 100 (5): 753–68.

Haioglu, Sinem, Diego R. Känzig, and Paolo Surico. 2020. "The Distributional Impact of the Pandemic." CEPR Discussion Paper 15101, Centre for Economic Policy Research, London.

Hale, Thomas, Sam Webster, Anna Petherick, Toby Phillips, and Beatriz Kira. 2020. University of Oxford Coronavirus Government Response Tracker, Blavatnik School of Government. https:// www.bsg.ox.ac.uk/research/researchprojects/coronavirusgovernmentresponsetracker.

Hall, Robert E. 2005. "Employment Fluctuations with Equilibrium Wage Stickiness." *American Economic Review* 95 (1): 50–65.

Hershbein, Brad, and Lisa B. Kahn. 2018. "Do Recessions Accelerate Routine-Biased Technological Change? Evidence from Vacancy Postings." *American Economic Review* 108 (7): 1737–72.

Ilzetzki, Ethan, Enrique G. Mendoza, and Carlos A. Végh. 2013. "How Big (Small?) Are Fiscal Multipliers?" *Journal of Monetary Economics* 60 (2): 239–54.

Leduc, Sylvain, and Zheng Liu. 2020. "Can Pandemic-Induced Job Uncertainty Stimulate Automation?" Federal Reserve Bank of San Francisco Working Paper 2020–19, Federal Reserve Bank of San Francisco, San Francisco.

Mishra, Pranav Kumar, and Shekhar Mishra. 2020. "A Deductive Approach to Modeling the Spread of COVID-19." https://www.medrxiv.org/content/10.1101/2020.03.26.20044651v1.full.pdf.

Mortensen, Dale T., and Christopher A. Pissarides. 1994. "Job Creation and Job Destruction in the Theory of Unemployment." *The Review of Economic Studies* 61 (3): 397–415.

Organisation for Economic Co-operation and Development (OECD). 2019. Gender, Institutions, and Development Database. https://stats.oecd.org/Index.aspx?DataSetCode=GIDDB2019.

Ostry, Jonathan D., Andrew Berg, and Charalambos G. Tsangarides. 2014. "Redistribution, Inequality, and Growth." IMF Staff Discussion Note 14/02, International Monetary Fund, Washington, DC.

Rodrik, Dani. 1999. "Where Did All the Growth Go? External Shocks, Social Conflict, and Growth Collapses." *Journal of Economic Growth* 4 (December): 385–412.

Shibata, Ippei. 2020. "The Distributional Impact of Recessions: The Global Financial Crisis and the Pandemic Recession." IMF Working Paper No. 20/96, International Monetary Fund, Washington, DC.

World Health Organization (WHO). 2020. "Considerations in Adjusting Public Health and Social Measures in the Context of COVID-19: Interim Guidance." WHO reference number WHO/2019-nCoV/Adjusting_PH_measures/2020.1 (April 16, 2020), World Health Organization, Geneva.