EXECUTIVE BOARD MEETING

EBS/21/21

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March 11, 2021

To: Members of the Executive Board

From: The Secretary

Subject: **April 2021 World Economic Outlook—Executive Summary, Chapter 1, and Online Annex**

Board Action:	Executive Directors' **consideration** (Formal)
Tentative Board Date:	**Thursday, March 25, 2021**
Publication:	Yes, it is intended that the full set of the World Economic Outlook (WEO) documents will be released to the public at the time of the WEO press conference, tentatively scheduled for **Tuesday, April 6, 2021**.
Questions:	Ms. Koeva Brooks, RES (ext. 39809) Mr. Nabar, RES (ext. 39024)
Additional Information:	Please note that, as usual, the WEO forecast remains under review. Final projections will be featured in the WEMD presentation to the Board. The paper will be revised for publication in light of the Executive Board discussion. If Executive Directors have additional comments, they should notify Ms. Koeva Brooks and Mr. Nabar by **5:30 p.m. on Friday, March 19, 2021.**

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CHAPTER 1

EXECUTIVE SUMMARY

Fifteen months into the COVID-19 pandemic, the accumulating human toll continues to raise concerns even as growing vaccine coverage lifts sentiment. High uncertainty surrounds the global economic outlook, primarily related to the path of the pandemic. The contraction of activity in 2020 was unprecedented in living memory in its speed and synchronized nature. But it could have been a lot worse. Although difficult to pin down precisely, IMF staff estimates suggest the contraction could have been three times as large if not for extraordinary policy support. Much remains to be done to beat back the pandemic and avoid divergence in income per capita across economies and persistent increases in inequality within countries.

Improved outlook: After an estimated contraction of –3.3 percent in 2020, the global economy is projected to grow at 5.9 percent in 2021, moderating to 4.4 in 2022. The contraction for 2020 is 1.1 percentage point smaller than projected in the October 2020 *World Economic Outlook* (WEO), reflecting the higher-than-expected growth outturns in the second half of the year for most regions after lockdowns were eased and as economies adapted to new ways of working. The projections for 2021 and 2022 are 0.7 and 0.2 percentage point stronger than in the October WEO, reflecting additional fiscal support in a few large economies and the anticipated vaccine-powered recovery in the second half of the year. Global growth is expected to moderate to 3.3 percent over the medium term—reflecting projected damage to supply potential and forces that predate the pandemic, including aging-related slower labor force growth in advanced economies and some emerging market economies. Thanks to unprecedented policy response, the COVID-19 recession is likely to leave smaller scars than the 2008 great financial crisis. However, emerging market and low-income developing countries have been hit harder and are expected to suffer more significant medium-term losses.

Divergent impacts: Output losses have been particularly large for countries that rely on tourism and commodity exports and for those with limited policy space to respond. Many of these countries entered the crisis in a precarious fiscal situation and with less capacity to mount major health policy responses or support livelihoods. The projected recovery follows a severe contraction that has had particularly adverse employment and earnings impacts on certain groups. Youth, women, workers with relatively lower educational attainment, and the informally employed have generally been hit hardest. Income inequality is likely to increase significantly because of the pandemic. Close to 90 million more people are expected to fall below the threshold of extreme poverty during 2020–21 compared to pre-pandemic projections. Moreover, learning losses have been more severe in low-income and developing countries, which have found it harder to cope with school closures, and especially for girls and students from low-income households. Unequal setbacks to schooling could further amplify income inequality.

High uncertainty surrounds the global outlook. Future developments will depend on the path of the health crisis, including whether the new strains prove susceptible to vaccines or they prolong the pandemic; the effectiveness of policy actions to limit persistent economic damage (scarring); the evolution of financial conditions and commodity prices; and the adjustment capacity of the

economy. The ebb and flow of these drivers and their interaction with country-specific characteristics will determine the pace of the recovery and the extent of medium-term scarring across countries (Chapter 2). In many aspects, this crisis is unique. In certain countries, policy support and lack of spending opportunities have led to large increases in savings that could be unleashed very quickly should the uncertainty dissipate. At the same time, it is unclear how much of these savings will be spent given the deterioration of many firms' and households' balance-sheets (particularly among those with a high propensity to consume out of income) and the expiration of loan repayment moratoria. In sum, risks are assessed as balanced in the short term, but tilted to the upside later on.

Considering the large uncertainty surrounding the outlook, policymakers should prioritize policies that would be prudent regardless of the state of the world that prevails—for instance, strengthening social protection with wider eligibility for unemployment insurance to cover the self-employed and informally employed (see Chapter 2 of the April 2020 WEO); ensuring adequate resources for health care, early childhood development programs, education, and vocational training; and investing in green infrastructure to hasten the transition to lower carbon dependence. Moreover, as discussed in Chapters 2 and 3, they should be prepared to flexibly adjust policy support; for example, shifting from lifelines to reallocation as the pandemic evolves, and linked to improvements in activity, while safeguarding social spending and avoid locking in inefficient spending outlays. It is important to anchor short-term support in credible medium-term frameworks (see the April 2021 *Fiscal Monitor*).

Policy Priorities: The factors shaping the appropriate stance of policy vary by country, especially progress towards normalization. Hence, countries will need to tailor their policy responses to the stage of the pandemic, strength of the recovery, and structural characteristics of the economy. Once vaccination becomes widespread and spare capacity in the healthcare system is generally restored to pre-COVID levels, restrictions can begin to be lifted. While the pandemic continues, policies should first focus on escaping the crisis, prioritizing health spending, providing well-targeted fiscal support, and maintaining accommodative monetary policy, while monitoring financial stability risks. Then, as the recovery progresses, policymakers will need to limit long-term economic scarring with an eye toward boosting productive capacity (e.g., public investment) and increasing incentives for an efficient allocation of productive resources. It is a delicate balance, especially given the prevailing uncertainty. Therefore, when support is eventually scaled back, it should be done in ways that avoid sudden cliffs (for instance, gradually reducing the government's share of wages covered under furlough and short-time work programs while increasing hiring subsidies to enable reallocation as needed). All the while, long term challenges—boosting productivity, improving policy frameworks, and addressing climate change—cannot be ignored. Differential recovery speeds across countries may give rise to divergent policy stances, particularly if advanced economies benefit sooner than others from wide vaccine coverage. Clear forward guidance and communication from advanced economy central banks is particularly crucial, and not just for calibrating the appropriate domestic monetary accommodation. It also vitally bears on external financial conditions in emerging markets and the impact divergent policy stances have on capital flows (Chapter 4).

Strong international cooperation is vital for achieving these objectives and ensuring that emerging market economies and low-income developing countries continue to narrow the gap between their living standards and those of high-income countries. On the health front, this means ensuring adequate worldwide vaccine production and universal distribution at affordable prices—including through sufficient funding for the COVAX facility—so that all countries can quickly and decisively beat back the pandemic. The international community also needs to work together to ensure that financially constrained economies have adequate access to international liquidity so that they can continue needed health, other social, and infrastructure spending required for development and convergence to higher levels of income per capita. Countries should also work closely to redouble climate change mitigation efforts. Moreover, strong cooperation is needed to resolve economic issues underlying trade and technology tensions (as well as gaps in the rules-based multilateral trading system). Building on recent advances in international tax policy, efforts should continue to focus on limiting cross-border profit shifting, tax avoidance, and tax evasion.

CHAPTER 1

GLOBAL PROSPECTS AND POLICIES

Divergent Recoveries amid High Uncertainty

Global prospects remain extraordinarily uncertain 15 months into the pandemic. New virus mutations and the accumulating human toll raise concerns even as growing vaccine coverage lifts sentiment. Economic recoveries are diverging across countries and sectors, reflecting variation in pandemic-induced disruptions and the extent of policy support. The outlook depends not just on the outcome of the battle between the virus and vaccines (Figure 1.1). It also hinges on how effectively economic policies deployed under extreme uncertainty can limit lasting damage from this unprecedented crisis.

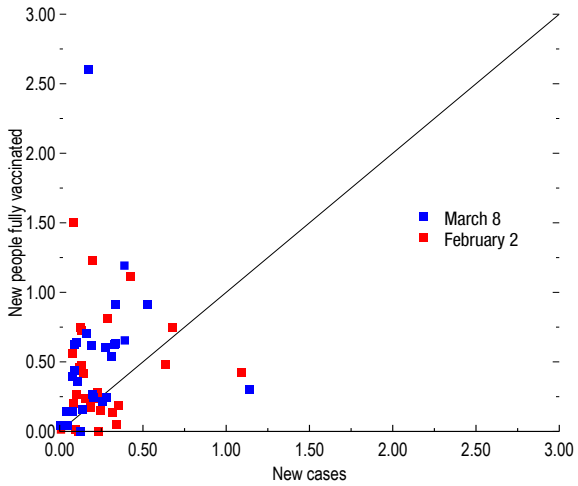
Pandemic Continues to Exact a Severe Human Toll

Social distancing, vaccinations, and treatments have helped slow the progress of the virus and saved lives. At the same time, the crisis has laid bare large differences in countries' capacity to support their population, especially the most vulnerable. The measured pandemic death toll (more than 2 ½ million people worldwide), excess mortality from other causes on account of delayed care, and elevated unemployment have imposed extreme social strains worldwide. Vaccination has begun in most countries, holding promise of eventual reductions in the severity and frequency of infections. Coverage varies considerably so far, and countries are expected to achieve widespread inoculation at different times (Figure 1.2).

A multispeed, incomplete recovery: Second and third infection waves have necessitated renewed restrictions in many countries since

Figure 1.1. A Race between Virus and Vaccines
(Per thousand, seven-day moving average; latest observation: March 8, 2021)

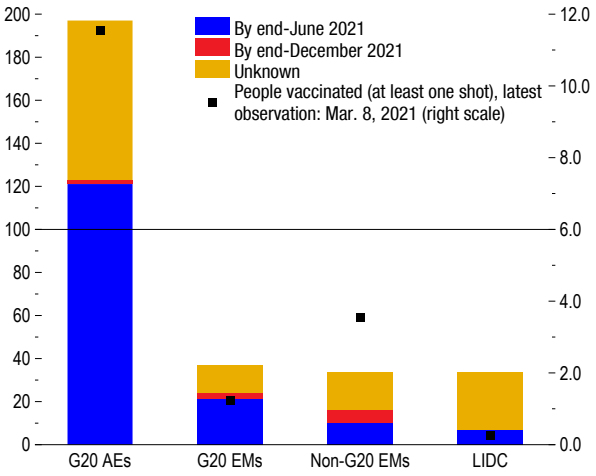
The race between the virus and vaccines has begun.



Sources: Johns Hopkins University COVID-19 statistics; and national government reports via *Our World in Data*.
Note: Data labels use International Organization for Standardization (ISO) country codes.

Figure 1.2. Confirmed Vaccine Procurement
(Percent of population)

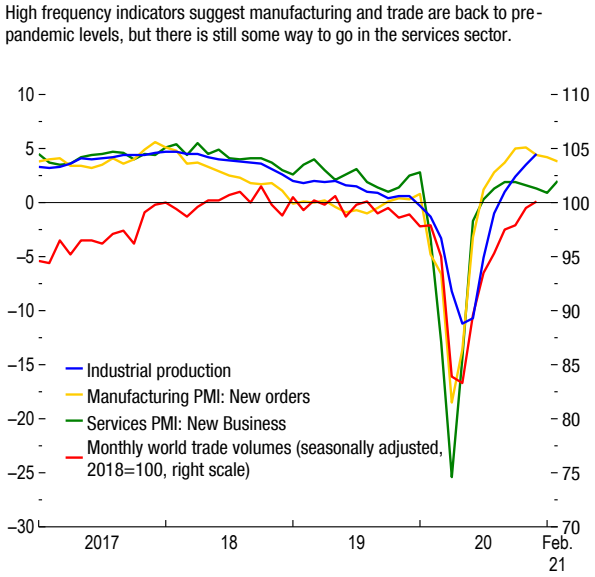
Procurement data suggest that most of the population in emerging market economies will not be vaccinated before 2022.



Sources: Duke Global Health Innovation Center; Johns Hopkins University COVID-19 statistics; and national government reports via *Our World in Data*.
Note: Vaccines are Janssen (Johnson & Johnson), Gamaleya, Moderna, Oxford/AstraZeneca, Pfizer/BioNTech, Sinopharm, and Sinovac. AEs = advanced economies; EMs = emerging market economies; LIDC = low-income developing country.

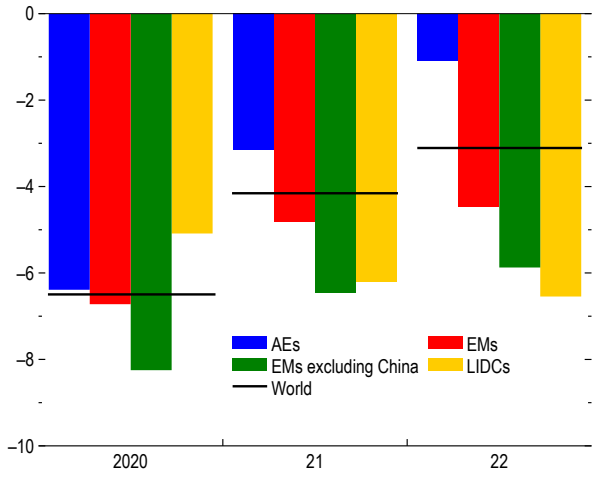
the October WEO forecast. This stop-go rhythm means that recovery is uneven and far from complete. Although GDP in general recovered stronger than expected in the second half of 2020, it remains significantly below pre-pandemic trends in most countries. Moreover, high-frequency indicators suggest a softening of momentum in early 2021 (Figure 1.3).

Figure 1.3. Global Activity Indicators
(Three-month moving average, annualized percent change; deviations from 50 for manufacturing PMI, unless noted otherwise)



Sources: CPB Netherlands Bureau for Economic Policy Analysis; Haver Analytics; Markit Economics; and IMF staff estimates.
Note: PMI = purchasing managers' index.

Figure 1.4. Hardest-Hit Groups
(Revisions to cumulative per capita GDP growth from 2019 between the January 2020 and April 2021 WEO forecasts, percent)



Source: IMF staff calculations.
Note: Per capita real GDP (2017 purchasing-power-parity dollars) is used in the calculations. AEs = advanced economies; EMs = emerging market economies; LIDCs = low-income developing countries; WEO = *World Economic Outlook*.

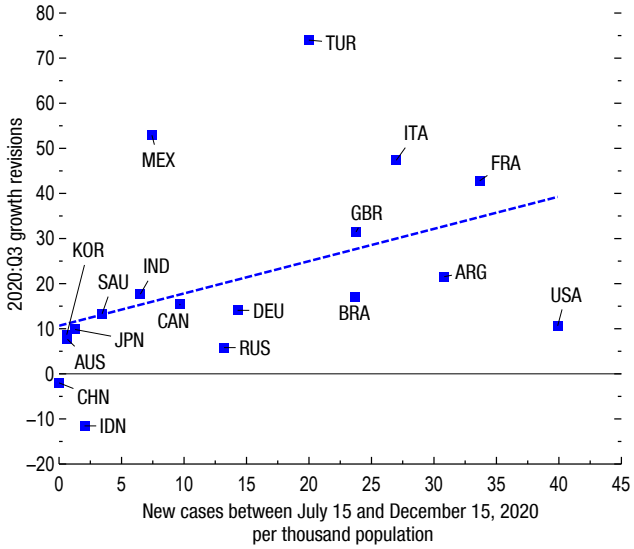
- *Differences across countries:* Across countries, the recovery has been shaped by the path of the pandemic, curbs to mobility imposed to contain its progress, and policy actions. Output losses have been particularly large for countries that rely on tourism and commodity exports and for those with limited policy space to respond. Many of these countries entered the crisis in a precarious fiscal situation and with less capacity to mount major health policy responses, forcing stricter lockdowns to contain the spread of the virus. Factors such as the proportion of "teleworkable" jobs, share of employment in small and medium enterprises, depth of capital markets, size of the informal sector, and quality of and access to digital infrastructure also played roles—both in the downturn and the speed of the recovery (Figure 1.4). Such differences may, in turn, lead to lasting divergences across countries if the pandemic is not beaten back universally. Close to 90 million more people are expected to fall below the threshold of extreme poverty by the end of 2021 compared to pre-pandemic projections, reversing a two-decade-long trend of global poverty reduction.

- *Differences across sectors:* Strong demand for products that support work-from-home and the release of pent-up demand for durable goods more generally (especially automobiles) have been key factors behind the global recovery since the second half of 2020 (Box 1.1). Following a short-lived and synchronized collapse, industrial production has returned to

pre-pandemic levels. Consumption of contact-intensive services has remained depressed, however, as the reopening of many economies in May–June—which led to a surprise rebound in the third quarter of 2020—also triggered a second wave of infections and further curbs to mobility in the closing months of 2020 (Figure 1.5). Travel, the arts, entertainment, sports, hospitality, and brick-and-mortar retail have operated at a fraction of their capacity since the beginning of the pandemic and will not see a substantial rebound before the pandemic is brought under control.

Figure 1.5. Growth Surprise and Rebound in COVID-19 Cases
(Percentage points)

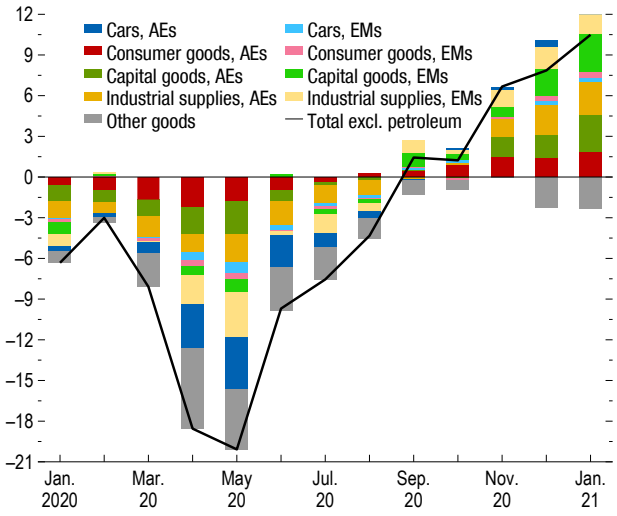
Part of the positive growth surprise in 2020 resulted from reopening, leading to an infection surge and renewed lockdowns at the end of the year.



Sources: Johns Hopkins University COVID-19 statistics; and IMF staff calculations.
Note: Sample is G20 countries. Growth revision is between June 2020 and January 2021 *World Economic Outlook Updates*. Data labels use International Organization for Standardization (ISO) country codes.

Figure 1.6. Global Imports: Contributions by Types of Goods and Regions
(Contribution to year-over-year percent change, percentage points; based on value in US dollars)

The sharp rebound in international trade in the second half of 2020 reflects pent-up demand for consumer durables (cars) from advanced economies and resumption of supply chains in emerging markets.

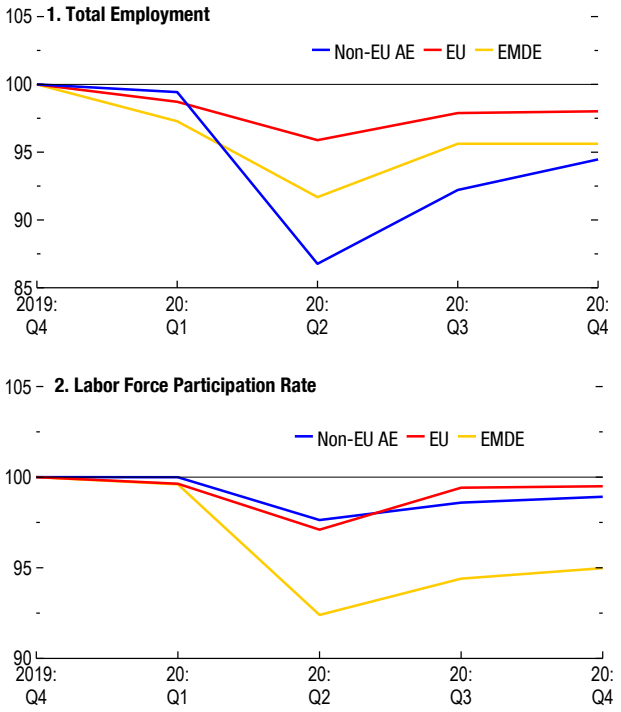


Sources: Haver Analytics; and IMF staff calculations.
Note: Advanced economies (AEs) comprise Australia, Canada, Denmark, euro area, Hong Kong SAR, Israel, Japan, Korea, New Zealand, Sweden, Taiwan Province of China, United Kingdom, and United States. Emerging market economies (EMs) comprise Argentina, Brazil, Chile, China, Colombia, Hungary, India, Malaysia, Mexico, Peru, Philippines, Poland, Russia, South Africa, Thailand, and Turkey.

- *International trade* in goods has shown similar patterns (Figure 1.6). Merchandise trade volumes have returned to pre-pandemic levels. Cross-border trade in services remains subdued.
- *Labor market vulnerabilities:* The labor market recovery is also incomplete, with still-elevated unemployment and underemployment (Figure 1.7). Despite extraordinary policy support (including job retention programs and wage subsidies), unemployment rates have risen by about 1½ percentage points above their pre-pandemic averages in both advanced and emerging market and developing economies. Labor force participation has also dropped. Moreover, the true amount of slack may be even larger than these indicators suggest as many countries have introduced jobs retention programs (for example, *Kurzarbeit* in Germany; see Chapter 3).

Figure 1.7. Employment and Labor Force Participation
(Index, 2019:Q4 = 100)

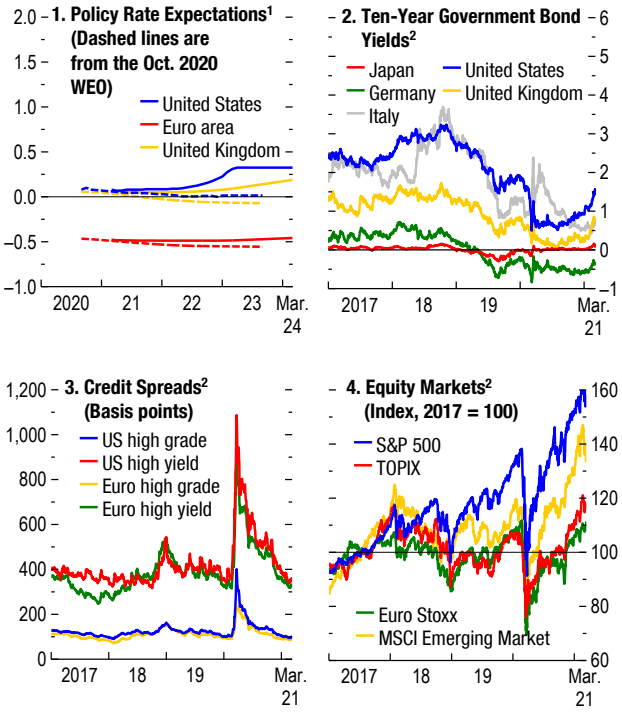
There is still a long way to go to close the employment gap.



Sources: Haver Analytics; and IMF staff calculations.
Note: Based on 68 countries for panel 1 and 48 countries for panel 2 using seasonally adjusted quarterly series. Labor force participation rates are based on 15 to 64 years and indexes are weight-averaged using the population from latest WEO database. When 2020:Q4 are not yet available, 2020:Q3 values are assumed. AE = advanced economies; EMDE = emerging market and developing economies; EU = European Union; WEO = *World Economic Outlook*.

Figure 1.8. Advanced Economies: Monetary and Financial Market Conditions
(Percent, unless noted otherwise)

Financial conditions imply a continuing disconnect between financial markets and the real economy.



Sources: Bloomberg Finance L.P.; Haver Analytics; Refinitiv Datastream; and IMF staff calculations.
Note: MSCI = Morgan Stanley Capital International; S&P = Standard & Poor's; TOPIX = Tokyo Stock Price Index; WEO = *World Economic Outlook*.
[1]Expectations are based on federal funds rate futures for the United States, the sterling overnight interbank average rate for the United Kingdom, and the euro interbank offered forward rate for the euro area; updated March 10, 2021.
[2]Data are through March 9, 2021.

Divergence between asset markets and the rest of the economy: In contrast with the labor and product markets, notwithstanding recent volatility, asset markets have powered ahead, lifted by policy stimulus and expectations of a vaccine-driven normalization later this year (Figure 1.8). The disconnect is a double-edged sword: supportive financial conditions are vital for the recovery, but wide divergences between valuations and broader economic prospects raise financial stability risks (see the April 2021 *Global Financial Stability Report*).

Divergences within countries give rise to higher inequality. Given the asymmetric nature of the COVID-19 shock, the employment and earnings impact of the pandemic has been highly unequal across groups of workers. Youth, women, and the relatively lower-skilled have been hit the hardest (see Chapter 3). These demographic groups have suffered the most in this recession, in part because their jobs are concentrated in contact-intensive services and the informal sector (see *Regional Economic Outlooks*, October 2020). Income inequality is likely to have increased significantly in both advanced economies and emerging markets (see Box 1.2 of the October 2020 *World Economic Outlook* [WEO]). Moreover, learning losses have been more severe in low-income developing countries, which have had more difficulty coping with school closures, and especially

for girls and students from low-income households (Figure 1.9). Unequal setbacks to schooling could further amplify income inequality (Chapter 2 and April 2021 *Fiscal Monitor*).

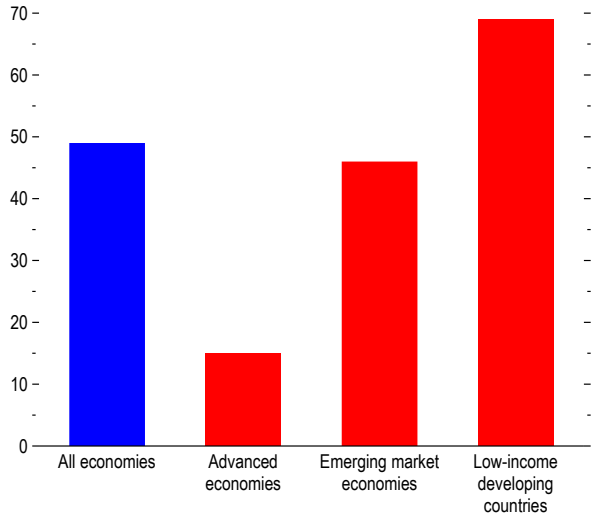
Unprecedented Policy Actions Prevented Far Worse Outcomes

A forceful, swift, global policy response: A year ago, with the world economy seemingly staring into the abyss, central banks swiftly provided liquidity and supported credit extension to a vast array of borrowers. At the same time, fiscal authorities channeled relief to households and firms through transfers, wage subsidies, and liquidity supports (see the Fiscal Monitor Database of Country Fiscal Measures in Response to the COVID-19 Pandemic). These actions supplemented other aspects of the safety net, such as unemployment insurance and nutrition assistance. Financial regulators in many countries facilitated continued credit provision with a range of measures.[1] Financial conditions have been broadly supportive, with differentiation subsiding across high-yield and investment-grade corporate and sovereign bonds (Figure 1.10). Exchange rate movements have reflected these shifts in risk sentiment; most emerging market currencies and those of commodity exporters have appreciated, while the US dollar has depreciated since last April (Figure 1.11). All these developments helped limit amplification of the shock.

Mission not accomplished (yet): IMF staff estimates suggest that policy actions—including automatic stabilizers, discretionary measures, and financial sector measures—contributed about 6 percentage points to

Figure 1.9. Global Education Losses Due to the COVID-19 Pandemic
(Average missed days of instruction in 2020)

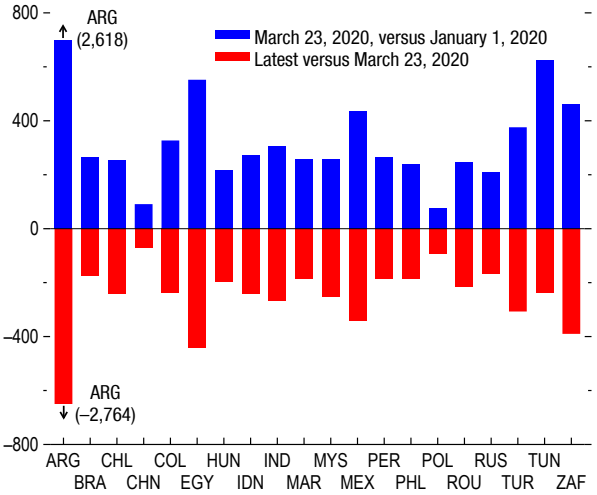
Education losses have been more severe in low-income developing countries.



Sources: UNESCO-UNICEF-World Bank Survey on National Education Responses to COVID-19 School Closures; and IMF staff calculations.

Figure 1.10. Change in EMBI Spreads
(Basis points)

Emerging market financial conditions are almost back to precrisis levels.



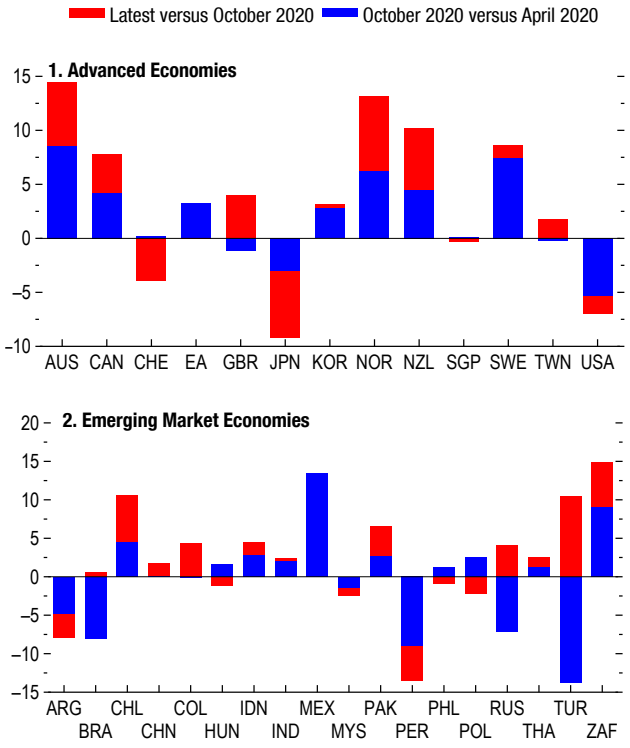
Sources: Bloomberg Finance L.P.; and IMF staff calculations.
Note: Data are through March 9, 2021. EMBI = J.P. Morgan Emerging Markets Bond Index. Data labels use International Organization for Standardization (ISO) country codes.

[1] These included easing classification guidelines for nonperforming loans, relaxing provisioning requirements for banks, reducing risk weights on loans backed by public guarantees, introducing moratoriums on bankruptcy proceedings (see the section on policy priorities), and flexibility regarding bank capital requirements (reducing macroprudential buffers, clarifying how breaches of capital buffers would be treated).

global growth in 2020. While difficult to pin down precisely, absent these actions the global growth contraction last year could have been three times worse than it was. Even after this expansive support and with a recovery underway since mid-2020, unemployment and underemployment remain elevated. Although estimating output gaps during this crisis has been tricky (social distancing and curbs on contact-intensive activities mean that both supply and demand have contracted), these developments imply notable slack in the economy (Figure 1.12). Much work remains to achieve a complete recovery. This is a particularly complicated task for policymakers, considering the high uncertainty surrounding the outlook and, for many, the prospect of cushioning the impact on incomes through further periods of stop-go activity with far less policy space than was available at the start of the crisis.

Figure 1.11. Real Effective Exchange Rate Changes, April 2020 – March 2021
(Percent)

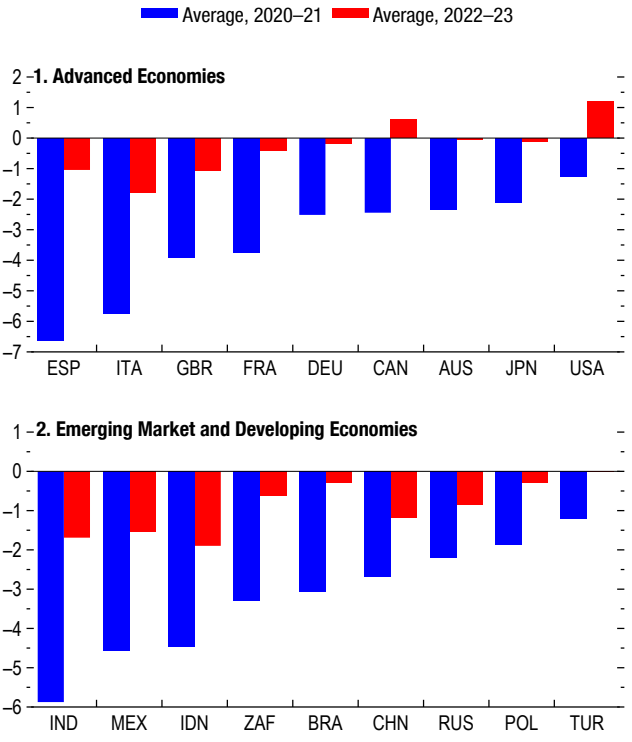
Movements in major currencies have reflected changes in risk sentiment and differences in monetary policy stances.



Source: IMF staff calculations.
Note: Positive change indicates appreciation. Latest data available are for March 5, 2021. EA = euro area; Data labels use International Organization for Standardization (ISO) country codes.

Figure 1.12. Output Gap Projections, 2020–23
(Percent of potential GDP)

Considerable slack is expected in advanced economies and emerging markets alike.



Source: IMF staff estimates.
Note: Data labels use International Organization for Standardization (ISO) country codes.

Outlook: Emerging Divergences and Challenges for Policy

An extraordinary degree of uncertainty surrounds the global outlook. Beyond the usual set of idiosyncratic shocks that normally beset all forecasting exercises, future developments will depend on (1) the path of the pandemic, (2) policy actions, (3) the evolution of financial

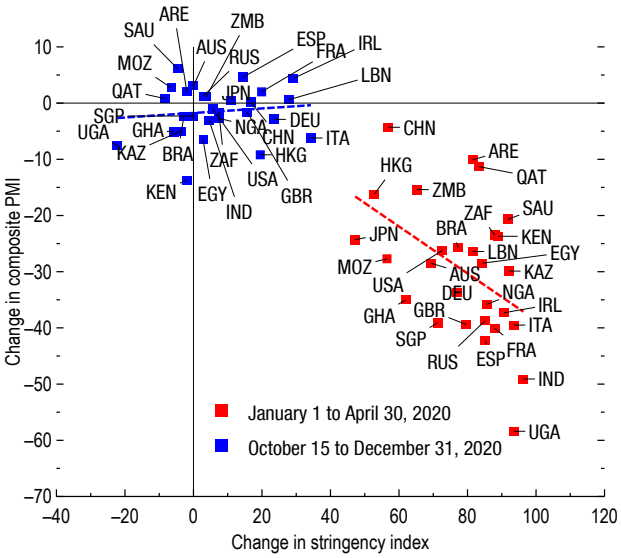
conditions and commodity prices, and (4) the capacity of the economy to adjust to health-related impediments to activity. The ebb and flow of these drivers and their interaction with country-specific characteristics will determine the pace of the recovery and the extent of medium-term scarring.

Uneven access to vaccines: Based on procurement data and the most recent progress on inoculation, the baseline assumes staggered and uneven distribution of vaccines across regions. Broad vaccine availability in advanced economies and some emerging market economies is expected for the summer of 2021 and in most countries by the second half of 2022. Key to the baseline is the assumption that vaccines and various therapies are accessible at affordable prices for all countries. This timetable assumes that effective protection, combined with improved testing and tracing, will reduce local transmissions to low levels everywhere by the end of 2022. Within this global picture, vaccine deployment will be staggered across regions, with some countries exiting the crisis much sooner and with new strains forcing occasional and localized lockdowns before vaccines become widely available. These restrictions should have less impact on activity than in the previous waves because of their more targeted nature, adaptation to remote work, and a more subdued starting point for contact-intensive activity than was the case in the first half of 2020 (Figure 1.13).

Differentiated fiscal support: Considerable variation is expected in the extent of policy support across countries (Figure 1.14). In advanced economies, the United States and Japan have announced sizable fiscal support for 2021, and the European Union has

Figure 1.13. Effect of Lockdowns on Activity: Beginning vs. End, 2020
(Index)

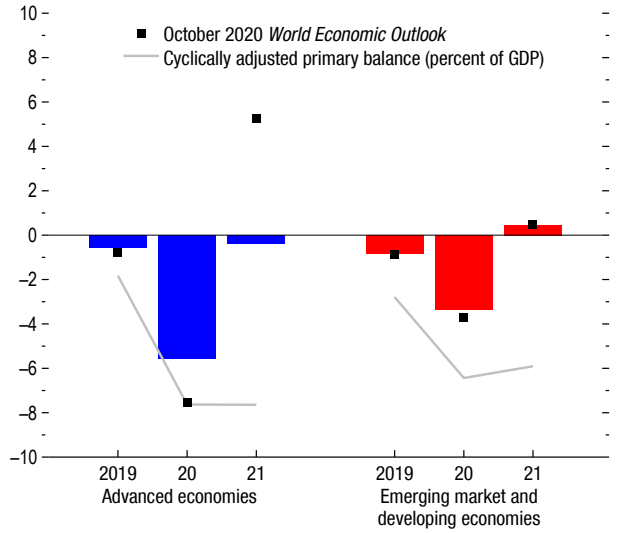
Economic activity became less sensitive to mobility curbs toward the end of the year.



Sources: Markit PMI database; and Oxford COVID-19 Government Response Tracker.
Note: Samples comprise 28 countries where composite PMI values are available. Positive change in stringency index (0–100) denotes stronger measures; positive change in composite PMI denotes *relative* expansion. PMI = purchasing managers' index.

Figure 1.14. Fiscal Stance, 2019–21
(Change in structural primary fiscal balance in percent of potential GDP)

The fiscal stance is expected to remain accommodative in advanced economies in 2021.



Source: IMF staff estimates.

agreed to start distributing the Next Generation EU funds. At $1.9 trillion, the Biden administration's new fiscal package is expected to deliver a strong boost to growth in the United States in 2021 and provide sizable positive spillovers to trading partners. Debt service costs are expected to remain manageable across advanced economies, thanks to the relatively large fraction of their debt burden covered by long-term and sometimes negative yielding bonds. Fiscal support in emerging market and developing economies has been more limited, and deficits are generally expected to decline as revenues improve and crisis-related expenditures unwind with the projected economic recovery. Higher debt service costs are also expected to constrain their ability to address social needs, including rising poverty and growing inequality, or to correct the setback in human capital accumulation during the crisis.

Table 1.1. Overview of the *World Economic Outlook* Projections
(Percent change, unless noted otherwise)

		Projections		Difference from January 2021 WEO Update 1/		Difference from October 2020 WEO 1/	
	2020	2021	2022	2021	2022	2021	2022
World Output	**–3.3**	**5.9**	**4.4**	**0.4**	**0.2**	**0.7**	**0.2**
Advanced Economies	**–4.7**	**5.1**	**3.6**	**0.8**	**0.5**	**1.2**	**0.7**
United States	–3.5	6.4	3.5	1.3	1.0	3.3	0.6
Euro Area	–6.6	4.4	3.8	0.2	0.2	–0.8	0.7
Germany	–4.9	3.6	3.4	0.1	0.3	–0.6	0.3
France	–8.2	5.8	4.2	0.3	0.1	–0.2	1.3
Italy	–8.9	4.2	3.6	1.2	0.0	–1.0	1.0
Spain	–11.0	6.4	4.7	0.5	0.0	–0.8	0.2
Japan	–4.8	3.3	2.5	0.2	0.1	1.0	0.8
United Kingdom	–9.9	5.0	5.5	0.5	0.5	–0.9	2.3
Canada	–5.4	5.0	4.7	1.4	0.6	–0.2	1.3
Other Advanced Economies 2/	–2.1	4.2	3.3	0.6	0.2	0.6	0.2
Emerging Market and Developing Economies	**–2.2**	**6.5**	**5.0**	**0.2**	**0.0**	**0.5**	**–0.1**
Emerging and Developing Asia	–1.0	8.4	6.0	0.1	0.1	0.4	–0.3
China	2.3	8.1	5.6	0.0	0.0	–0.1	–0.2
India 3/	–8.0	12.5	6.9	1.0	0.1	3.7	–1.1
ASEAN-5 4/	–3.4	4.9	6.1	–0.3	0.1	–1.3	0.4
Emerging and Developing Europe	–2.0	4.4	3.9	0.4	0.0	0.5	0.5
Russia	–3.1	3.8	3.8	0.8	–0.1	1.0	1.5
Latin America and the Caribbean	–6.9	4.5	3.1	0.4	0.2	0.9	0.4
Brazil	–4.1	3.7	2.6	0.1	0.0	0.9	0.3
Mexico	–8.2	5.0	3.0	0.7	0.5	1.5	0.7
Middle East and Central Asia	–3.2	3.8	3.8	0.8	–0.4	0.8	–0.2
Saudi Arabia	–4.1	2.9	4.0	0.3	0.0	–0.2	0.6
Sub-Saharan Africa	–2.0	3.3	4.0	0.1	0.1	0.2	0.0
Nigeria	–1.8	2.5	2.3	1.0	–0.2	0.8	–0.2
South Africa	–7.3	2.8	2.0	0.0	0.6	–0.2	0.5
Memorandum							
World Growth Based on Market Exchange Rates	–3.7	5.7	4.1	0.6	0.3	0.9	0.3
European Union	–6.2	4.4	3.9	0.3	0.2	–0.6	0.6
Middle East and North Africa	–3.8	4.1	3.7	1.0	–0.5	0.9	–0.2
Emerging Market and Middle-Income Economies	–2.4	6.8	5.0	0.4	0.0	0.7	0.0
Low-Income Developing Countries	–0.0	4.3	5.3	–0.8	–0.2	–0.6	–0.2
World Trade Volume (goods and services)	**–8.9**	**8.5**	**6.5**	**0.4**	**0.2**	**0.2**	**1.1**
Imports							
Advanced Economies	–9.2	9.3	6.3	1.3	0.3	2.0	1.2
Emerging Market and Developing Economies	–9.0	9.4	7.3	–0.7	0.2	–1.6	1.3
Exports							
Advanced Economies	–9.6	7.8	6.4	0.9	0.2	0.8	1.3
Emerging Market and Developing Economies	–6.8	7.3	6.2	–1.0	0.0	–2.2	0.5
Commodity Prices (US dollars)							
Oil 5/	–32.7	41.7	–6.3	20.5	–3.9	29.7	–9.3
Nonfuel (average based on world commodity import weights)	6.7	16.1	–1.9	3.3	–0.4	11.0	–2.4
Consumer Prices							
Advanced Economies 6/	0.7	1.6	1.7	0.3	0.2	0.0	0.1
Emerging Market and Developing Economies 7/	5.1	4.6	4.4	0.4	0.2	–0.1	0.1
London Interbank Offered Rate (percent)							
On US Dollar Deposits (six month)	0.7	0.3	0.4	0.0	0.0	–0.1	–0.1
On Euro Deposits (three month)	–0.4	–0.5	–0.5	0.0	0.1	0.0	0.0
On Japanese Yen Deposits (six month)	–0.0	–0.1	–0.0	0.0	0.1	–0.1	0.0

Table 1.1. Overview of the *World Economic Outlook* Projections (continued)
(Percent change, unless noted otherwise)

	Year over Year				Q4 over Q4 8/			
			Projections				Projections	
	2019	2020	2021	2022	2019	2020	2021	2022
World Output	**2.8**	**–3.3**	**5.9**	**4.4**	**2.6**	**–0.9**	**4.4**	**3.9**
Advanced Economies	**1.6**	**–4.7**	**5.1**	**3.6**	**1.5**	**–3.2**	**5.0**	**2.2**
United States	2.2	–3.5	6.4	3.5	2.3	–2.5	6.3	2.3
Euro Area	1.3	–6.6	4.4	3.8	1.0	–4.9	4.4	2.4
Germany	0.6	–4.9	3.6	3.4	0.4	–3.6	3.4	2.8
France	1.5	–8.2	5.8	4.2	0.8	–4.9	4.5	2.6
Italy	0.3	–8.9	4.2	3.6	0.1	–6.6	4.0	2.1
Spain	2.0	–11.0	6.4	4.7	1.7	–9.1	7.1	1.7
Japan	0.3	–4.8	3.3	2.5	–1.0	–1.3	2.0	1.8
United Kingdom	1.4	–9.9	5.0	5.5	1.2	–7.8	6.5	2.0
Canada	1.9	–5.4	5.0	4.7	1.7	–3.2	4.1	3.8
Other Advanced Economies 2/	1.9	–2.1	4.2	3.3	2.1	–1.0	3.9	2.0
Emerging Market and Developing Economies	**3.7**	**–2.2**	**6.5**	**5.0**	**3.5**	**1.2**	**4.0**	**5.4**
Emerging and Developing Asia	5.4	–1.0	8.4	6.0	4.5	3.0	4.5	6.8
China	6.0	2.3	8.1	5.6	5.2	6.2	4.2	6.0
India 3/	4.0	–8.0	12.5	6.9	2.9	–0.7	4.2	9.6
ASEAN-5 4/	4.8	–3.4	4.9	6.1	4.5	–2.8	5.6	5.8
Emerging and Developing Europe	2.4	–2.0	4.4	3.9	. . .	. . .	. . .	. . .
Russia	2.0	–3.1	3.8	3.8	2.9	–3.0	4.6	2.6
Latin America and the Caribbean	0.2	–6.9	4.5	3.1	–0.3	–3.5	1.8	2.5
Brazil	1.4	–4.1	3.7	2.6	1.6	–1.2	0.9	2.6
Mexico	–0.1	–8.2	5.0	3.0	–0.8	–4.5	2.6	2.7
Middle East and Central Asia	1.4	–3.2	3.8	3.8	. . .	. . .	. . .	. . .
Saudi Arabia	0.3	–4.1	2.9	4.0	–0.3	–4.1	4.8	4.0
Sub-Saharan Africa	3.2	–2.0	3.3	4.0	. . .	. . .	. . .	. . .
Nigeria	2.2	–1.8	2.5	2.3	1.9	–0.7	3.2	1.6
South Africa	0.2	–7.3	2.8	2.0	–0.6	–5.2	1.7	1.9
Memorandum								
World Growth Based on Market Exchange Rates	2.4	–3.7	5.7	4.1	2.2	–1.5	4.6	3.3
European Union	1.7	–6.2	4.4	3.9	1.4	–4.9	4.9	2.3
Middle East and North Africa	0.8	–3.8	4.1	3.7	. . .	. . .	. . .	. . .
Emerging Market and Middle-Income Economies	3.5	–2.4	6.8	5.0	3.5	1.2	3.9	5.5
Low-Income Developing Countries	5.3	–0.0	4.3	5.3	. . .	. . .	. . .	. . .
World Trade Volume (goods and services)	**0.9**	**–8.9**	**8.5**	**6.5**	**. . .**	**. . .**	**. . .**	**. . .**
Imports								
Advanced Economies	1.7	–9.2	9.3	6.3	. . .	. . .	. . .	. . .
Emerging Market and Developing Economies	–0.9	–9.0	9.4	7.3	. . .	. . .	. . .	. . .
Exports								
Advanced Economies	1.2	–9.6	7.8	6.4	. . .	. . .	. . .	. . .
Emerging Market and Developing Economies	0.5	–6.8	7.3	6.2	. . .	. . .	. . .	. . .
Commodity Prices (US dollars)								
Oil 5/	–10.2	–32.7	41.7	–6.3	–6.1	–27.6	30.9	–6.0
Nonfuel (average based on world commodity import weights)	0.8	6.7	16.1	–1.9	5.0	15.3	4.8	–0.5
Consumer Prices								
Advanced Economies 6/	1.4	0.7	1.6	1.7	1.4	0.4	1.8	1.7
Emerging Market and Developing Economies 7/	5.1	5.1	4.6	4.4	5.1	3.2	4.1	3.8
London Interbank Offered Rate (percent)								
On US Dollar Deposits (six month)	2.3	0.7	0.3	0.4	. . .	. . .	. . .	. . .
On Euro Deposits (three month)	–0.4	–0.4	–0.5	–0.5	. . .	. . .	. . .	. . .
On Japanese Yen Deposits (six month)	–0.0	–0.0	–0.1	–0.0	. . .	. . .	. . .	. . .

Source: IMF staff estimates.
Note: Real effective exchange rates are assumed to remain constant at the levels prevailing during January 18–February 15, 2021. Economies are listed on the basis of economic size. The aggregated quarterly data are seasonally adjusted. WEO = World Economic Outlook.
1/ Difference based on rounded figures for the current, January 2021 WEO Update, and October 2020 WEO forecasts.
2/ Excludes the Group of Seven (Canada, France, Germany, Italy, Japan, United Kingdom, United States) and euro area countries.
3/ For India, data and forecasts are presented on a fiscal year basis, and GDP from 2011 onward is based on GDP at market prices with fiscal year 2011/12 as a base year.
4/ Indonesia, Malaysia, Philippines, Thailand, Vietnam.
5/ Simple average of prices of UK Brent, Dubai Fateh, and West Texas Intermediate crude oil. The average price of oil in US dollars a barrel was $41.29 in 2020; the assumed price, based on futures markets, is $58.52 in 2021 and $54.83 in 2022.
6/ The inflation rate for the euro area is 1.4% in 2021 and 1.2% in 2022, for Japan is 0.1% in 2021 and 0.7% in 2022, and for the United States is 2.3% in 2021 and 2.4% in 2022.
7/ Excludes Venezuela. See country-specific note for Venezuela in the "Country Notes" section of the Statistical Appendix.
8/ For World Output, the quarterly estimates and projections account for approximately 90 percent of annual world output at purchasing-power-parity weights. For Emerging Market and Developing Economies, the quarterly estimates and projections account for approximately 80 percent of annual emerging market and developing economies' output at purchasing-power-parity weights.

Table 1.2. Overview of the *World Economic Outlook* Projections at Market Exchange Rate Weights
(Percent change)

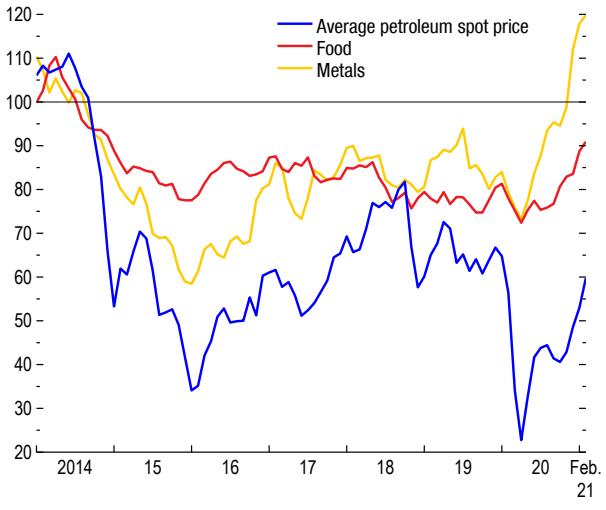
		Projections		Difference from January 2021 WEO Update 1/		Difference from October 2020 WEO 1/	
	2020	2021	2022	2021	2022	2021	2022
World Output	**–3.7**	**5.7**	**4.1**	**0.6**	**0.3**	**0.9**	**0.3**
Advanced Economies	**–4.8**	**5.1**	**3.6**	**0.7**	**0.6**	**1.3**	**0.7**
Emerging Market and Developing Economies	**–2.0**	**6.5**	**4.9**	**0.2**	**0.0**	**0.3**	**–0.1**
Emerging and Developing Asia	–0.1	8.2	5.8	0.0	0.0	0.2	–0.3
Emerging and Developing Europe	–2.3	4.3	4.0	0.5	0.0	0.5	0.6
Latin America and the Caribbean	–6.9	4.4	3.1	0.3	0.2	0.8	0.4
Middle East and Central Asia	–4.5	3.7	3.6	0.5	–0.3	0.5	–0.1
Sub-Saharan Africa	–2.5	3.3	3.8	0.2	0.1	0.2	–0.1
Memorandum							
European Union	–6.3	4.3	3.8	0.2	0.2	–0.7	0.6
Middle East and North Africa	–5.2	3.9	3.5	0.6	–0.4	0.6	–0.1
Emerging Market and Middle-Income Economies	–2.1	6.6	4.9	0.2	0.0	0.3	–0.1
Low-Income Developing Countries	–0.3	4.3	5.1	–0.6	–0.2	–0.4	–0.3

Source: IMF staff estimates.
Note: The aggregate growth rates are calculated as a weighted average, in which a moving average of nominal GDP in US dollars for the preceding three years is used as the weight.. WEO = World Economic Outlook.
1/ Difference based on rounded figures for the current, January 2021 WEO Update, and October 2020 WEO forecasts.

Broadly supportive financial conditions: The baseline assumes that monetary policy will remain accommodative and tighten only gradually as the recovery takes hold (including in some emerging market and developing economies where policy frameworks are well established and inflation expectations well anchored). As discussed in the April 2021 *Global Financial Stability Report*, financial conditions are expected to remain broadly supportive in advanced economies and to continue improving for emerging market and developing economies. Within this latter group, differentiation between investment-grade sovereigns and high-yield borrowers (many of which are constrained in their ability to take on additional debt) is expected to subside. As the recovery takes hold, monetary policy is expected to tighten gradually in an orderly fashion and somewhat earlier in advanced economies—where a vaccine-powered recovery is anticipated sooner than in emerging market and developing economies. Core sovereign yields are assumed to rise gradually over the forecast horizon, and emerging market spreads are expected to remain broadly at current levels, consistent with the projected recovery. Of course, important risks surround this benign scenario (discussed in the next section).

Figure 1.15. Commodity Prices
(Deflated using US consumer price index; 2014 = 100)

The manufacturing rebound has helped lift metal and energy prices.



Sources: IMF Primary Commodity Price System; and IMF staff calculations.

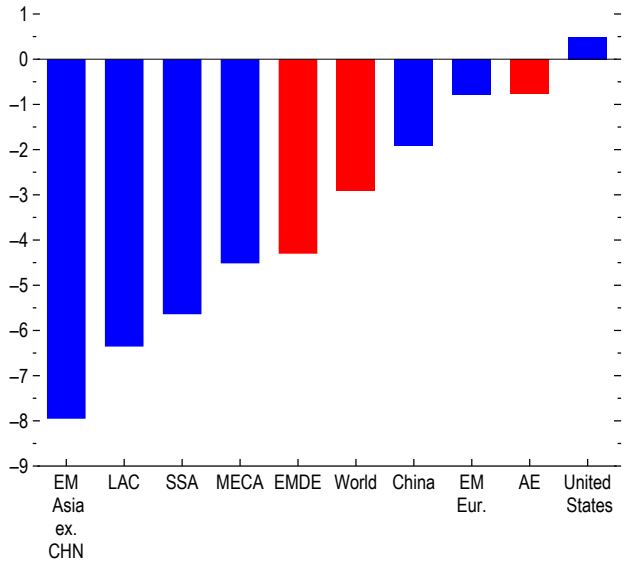
Rising commodity prices: Consistent with the projected global recovery, oil prices are projected to grow 30 percent in 2021 from their low base in 2020, in part reflecting the OPEC+ (Organization of the Petroleum Exporting Countries, including Russia and other non-OPEC oil exporters) supply curbs (Figure 1.15). Metal prices are projected to accelerate strongly in 2021, largely reflecting the rebound in China. Food prices are also expected to pick up this year (see the Commodities Special Feature in this chapter).

Diverging Paths, GDP below Pre-Pandemic Projections

After an estimated contraction of –3.3 percent in 2020, the global economy is projected to grow at 5.9 percent in 2021, moderating to 4.4 in 2022. The contraction for 2020 is 1.1 percentage point smaller than projected in the October 2020 WEO, reflecting the higher-than-expected growth outturns in the second half of 2020 for most regions after lockdowns were eased. The projections for 2021 and 2022 are 0.7 and 0.2 percentage point stronger than in the previous forecast, reflecting additional fiscal support in a few large economies and the anticipated vaccine-powered recovery in the second half of the year. This pace reflects continued adaptation of all sectors of the economy to the challenging health situation.

Figure 1.16. Medium-Term GDP Losses Relative to Pre-COVID by Region

(Revisions to projected 2024 GDP levels between the January 2020 and April 2021 WEO forecasts, percent)



Source: IMF staff estimates.
Note: AE = advanced economies; EM Asia ex. CHN = emerging and developing Asia excluding China; EM Eur. = emerging and developing Europe; EMDE = emerging market and developing economies; LAC = Latin America and the Caribbean; MECA = Middle East and Central Asia; SSA = sub-Saharan Africa.

The strength of the projected recovery varies across countries, depending on the severity of the health crisis, the extent of domestic disruptions to activity (related to countries' reliance on contact-intensive sectors), the exposure to cross-border spillovers, and—importantly—the effectiveness of policy support to limit persistent damage.

Beyond 2022, global growth is projected to moderate to 3.3 percent into the medium term. Persistent damage to supply potential across both advanced and emerging market economies and slower labor force growth because of population aging (largely in advanced economies, but also for a few emerging market economies), and necessary rebalancing to a sustainable growth path in China, are all expected to weigh on the growth outlook for the global economy in the medium term. GDP levels are projected to remain well below the pre-pandemic trend path through 2024 for most countries (Figure 1.16).

In *advanced economies*, occasional regional restrictions will likely be necessary at times to stem the progression of new strains of the virus. As the vulnerable population gets vaccinated, contact-intensive activities are expected to resume and drive a significant pickup in growth thanks to pent-up demand funded by accumulated savings in 2020. Recovery paths also vary within the group. The United States is projected to return to end-of-2019 activity levels in the first half of 2021 and Japan in the second half. In the euro area and the United Kingdom activity is expected to remain below end-of-2019 levels into 2022. The gaps can be traced back to differences in behavioral and public health responses to infections, flexibility and adaptability of economic activity to low mobility, preexisting trends, and structural rigidities predating the crisis.

With respect to the October 2020 WEO, projections for 2021 have been revised down in Europe and up in Japan and the United States. The downward revision in Europe is more than offset by stronger-than-expected growth in the United States and Japan, reflecting additional fiscal support legislated in both countries at the end of 2020. In addition, the Biden administration's $1.9 trillion rescue package is expected to further boost GDP over 2021- 2022, with significant spillovers to main US trading partners.

European countries (for example, Cyprus, Italy, Malta, Portugal, Spain), were able to salvage part of the summer tourist season by reopening in mid-2020. But this was followed by a surge in infections that forced new lockdowns in the last months of 2020, carrying over to 2021. GDP growth for 2022 has been revised up by 0.7 percentage point to 3.8 percent in the euro area and by 2.3 percentage points in the United Kingdom to 5.5 percent.

In *emerging market and developing economies*, vaccine procurement data suggest that effective protection will remain unavailable for most of the population in 2021. Lockdowns and containment measures may be needed more frequently in 2021 and 2022 than in advanced economies, increasing the likelihood of medium-term scarring effects on the potential output of these countries (see Chapter 2). Considerable differentiation is expected between China—where effective containment measures, a forceful public investment response, and central bank liquidity support have facilitated a strong recovery—and others. Tourism-based economies within this group (such as Fiji, Seychelles, Thailand) face particularly difficult prospects considering the expected slow normalization of cross-border travel. Recovery profiles vary based on regional differences in the severity of the pandemic, economic structure (employment and GDP shares of contact-intensive sectors), exposure to specific shocks (for instance due to reliance on commodity exports), and the effectiveness of the policy response to combat the fallout.

In the *Emerging and Developing Asia* regional group, projections for 2021 have been revised up by 0.4 percentage point, reflecting a stronger recovery than initially expected after lockdowns were eased in some large countries (for example, India). However, new COVID-19 cases are rising in some large countries (such as Indonesia and Malaysia), which will put a lid on growth prospects.

In the *Middle East and Central Asia*, projections for 2021 have remained broadly unchanged but reflect significant differences between countries, depending on the path of the pandemic, vaccine rollouts, tourism dependence, oil price developments, and policy space and actions. On average, countries that have started vaccinations early on (for example, Gulf Cooperation Council countries) face relatively better prospects, while fragile and conflict-affected states, which may have to rely on the more limited supply provided by COVAX, have seen their outlook darken since the October 2020 WEO.

Following a sharp drop in 2020, only a mild and multispeed recovery is expected in *Latin America and the Caribbean* in 2021. Thanks to the global manufacturing rebound in the second half of 2020, growth exceeded expectations in some large exporting countries in the region (for example, Argentina, Brazil, Peru) bringing the 2021 forecast to 4.5 percent (a 0.9 percentage

point revision). The longer-term outlook continues to depend on the path of the pandemic, however. With some exceptions (for example, Chile, Costa Rica, Mexico), most countries have not secured enough vaccines to cover their populations. Moreover, 2021 projections for the tourism-dependent Caribbean economies have been revised down by 1.5 percentage points to 2.4 percent.

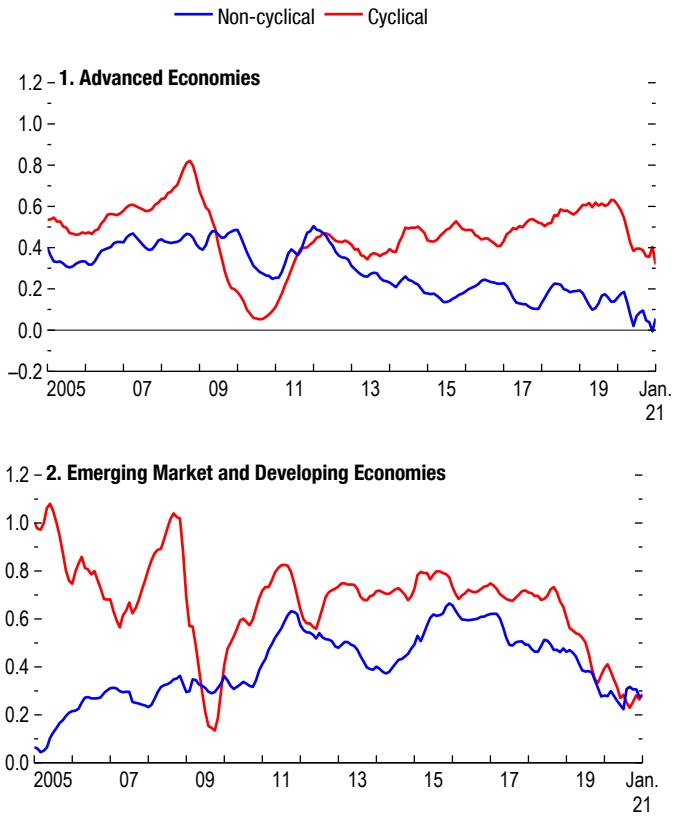
The pandemic continues to exact a large toll on *sub-Saharan Africa* (especially, for example, Ethiopia, Ghana, Kenya, Nigeria, South Africa). Following the largest contraction ever for the region (–2.0 percent in 2020), growth is expected to rebound to 3.3 percent in 2021, significantly lower than the trend anticipated before the pandemic. Tourism-reliant economies (for example, Mauritius and Seychelles) and commodity exporters (Botswana, Nigeria, South Africa) will likely be the most affected.

Inflation Pressure to Remain Contained in Most Countries

As noted, commodity prices (particularly for oil) are expected to firm up further in the months ahead. Given their record-low levels of a year ago, firmer prices should mechanically lift consumer price indices, and headline inflation, in particular, could turn volatile in coming months. The volatility should be short-lived. Baseline projections show a return of inflation to its long-term average as the remaining slack subsides only gradually and commodity-driven base effects take time to fade away.

Figure 1.17. Headline Inflation: Cyclical and Noncyclical Contributions
(Percentage points)

Price inflation (excluding food and energy) has dropped in sectors usually sensitive to fluctuations in aggregate demand (cyclical) and those that are not.



Sources: Eurostat; Haver Analytics; Organisation for Economic Co-operation and Development; and IMF staff calculations.
Note: The figure plots the time fixed effects of regressions in which three-month trailing averages of contributions to headline inflation are regressed on country and time fixed effects, with the weights being the GDP in purchasing-power-parity terms. The contribution of a component is defined as its year-over-year price change multiplied by its weight in the headline consumer price index basket.

The subdued outlook reflects developments in the labor market, where subdued wage growth and weak worker bargaining power have been compounded recently by high unemployment, underemployment, and lower participation rates. Moreover, various measures of underlying inflation remain low. IMF staff analysis on sectoral price developments points to muted price pressure, both in sectors where pricing is typically less sensitive to the business cycle and in sectors where prices tend to respond to aggregate demand fluctuations (Figure 1.17). Trimmed-

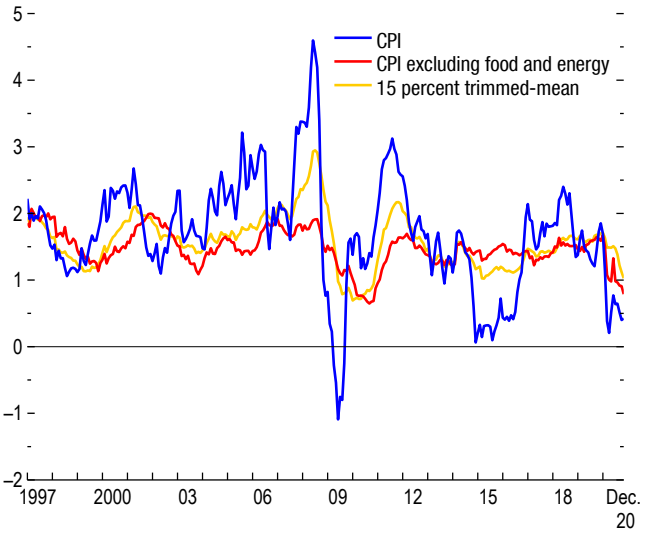
mean inflation rates (which eliminate extreme price changes from the price distribution every month to filter out underlying inflation and provide slow-moving, unbiased estimates of price pressure) point to *declining*, not increasing, inflation pressure (Figure 1.18).

Measuring slack has arguably become more difficult during the pandemic as both supply and demand have shifted. Nevertheless, even if output gaps are less negative than currently estimated, the implications for inflation should be relatively moderate. Philips curves have become flatter in recent years—reflecting various factors, including globalization, automation, rising market concentration, and associated higher monopsony power of firms in labor markets. For the same reason that inflation did not drop much when output gaps were large and negative during the global financial crisis, inflation is unlikely to increase much—unless output gaps become positive and *very* large for an extended period of time and monetary policy does not react to rising inflation expectations.

Whether inflation temporarily overshoots or starts trending up in the medium term has very different implications and depends, in the first instance, on the credibility of monetary frameworks and the reaction of monetary authorities to rising inflation pressure. For instance, if monetary policy is used primarily to keep government borrowing costs low (or is widely perceived as doing so) at the expense of ensuring price stability, inflation expectations and inflation could, in principle, increase rapidly. But this appears unlikely for most advanced and many

Figure 1.18. Trend Inflation in Advanced Economies
(Percent)

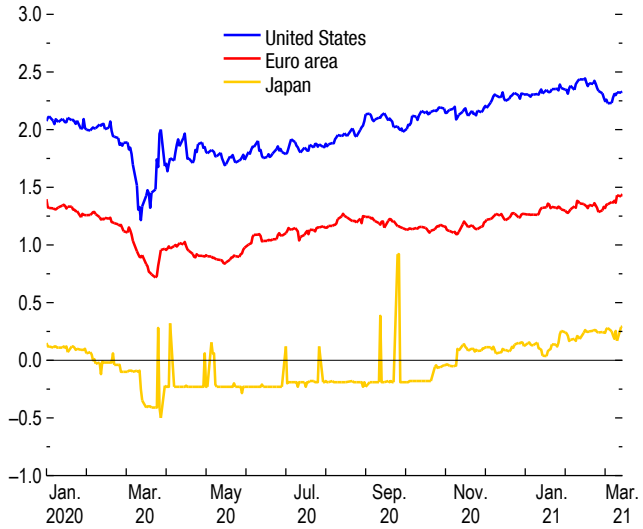
Trimmed-mean inflation points to declining inflation pressure in advanced economies, in line with various measures of slack.



Sources: Cleveland Federal Reserve; Haver Analytics; and IMF staff calculations.
Note: CPI = consumer price index.

Figure 1.19. Five-Year, Five-Year Inflation Swaps
(Percent; market-implied average inflation rate expected over the five-year period starting five years from date shown)

Market-based measures of long-term inflation expectations have been stable; they have increased slightly in the United States since May, but remain in line with the recently reformulated inflation objective of the Federal Reserve.



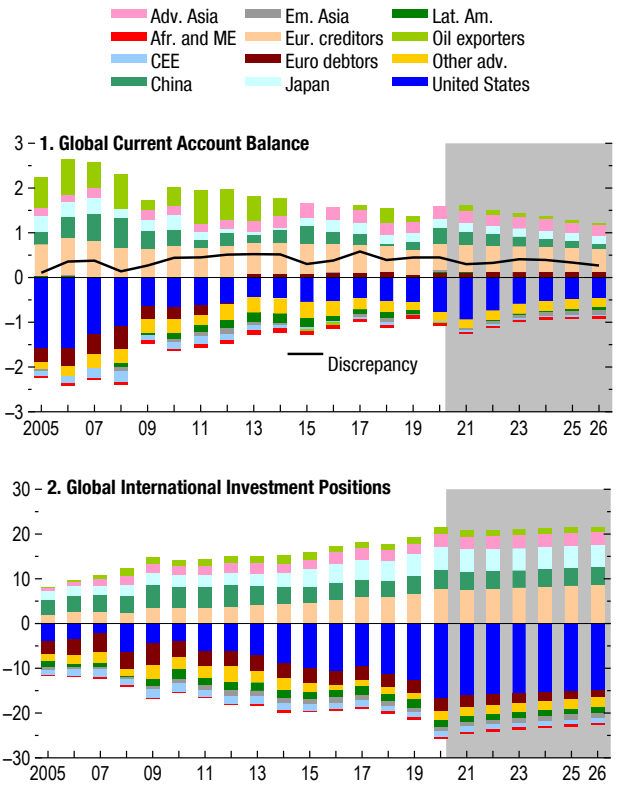
Sources: Latest data available are for March 9, 2021. Bloomberg Finance L.P.; and IMF staff calculations.

emerging market economies with independent central banks. The adoption of inflation-targeting frameworks in the 1990s has helped anchor inflation expectations around central banks' inflation targets in advanced economies. Moreover, during the pandemic, survey measures of inflation expectations have remained broadly stable, as have market measures—even though the latter have recently increased slightly (Figure 1.19).[2]

Monetary frameworks have also improved considerably in many emerging markets over the past decade. Inflation expectations are much more anchored, inflation has declined and become less persistent, and the risk of runaway inflation has decreased accordingly. However, progress has not been uniform. Some countries continue to observe high and volatile inflation and may be limited in the monetary accommodation they can provide without risking destabilizing inflation (see Chapter 3 of the October 2018 WEO). Rapidly rising food prices have already lifted headline inflation rates in some regions, including sub-Saharan Africa and Asia (see the Commodities Special Feature in this chapter). Temporarily high headline inflation could raise inflation expectations in these economies and affect inflation durably.

Figure 1.20. Current Account and International Investment Positions
(Percent of world GDP)

Global current account balances widened in 2020 and are projected to widen further in 2021.



Source: IMF staff estimates.
Note: Adv. Asia = advanced Asia (Hong Kong SAR, Korea, Singapore, Taiwan Province of China); Afr. and ME = Africa and the Middle East (Democratic Republic of the Congo, Egypt, Ethiopia, Ghana, Jordan, Kenya, Lebanon, Morocco, South Africa, Sudan, Tanzania, Tunisia); CEE = central and eastern Europe (Belarus, Bulgaria, Croatia, Czech Republic, Hungary, Poland, Romania, Slovak Republic, Turkey, Ukraine); Em. Asia = emerging Asia (India, Indonesia, Pakistan, Philippines, Thailand, Vietnam); Eur. creditors = European creditors (Austria, Belgium, Denmark, Finland, Germany, Luxembourg, The Netherlands, Norway, Sweden, Switzerland); Euro debtors = euro area debtors (Cyprus, Greece, Ireland, Italy, Portugal, Slovenia, Spain); Lat. Am. = Latin America (Argentina, Brazil, Chile, Colombia, Mexico, Peru, Uruguay); Oil exporters = Algeria, Azerbaijan, Iran, Kazakhstan, Kuwait, Nigeria, Oman, Qatar, Russia, Saudi Arabia, United Arab Emirates, Venezuela; Other adv. = other advanced economies (Australia, Canada, France, Iceland, New Zealand, United Kingdom).

Cross-Border Services Trade Expected to Remain Subdued

As the recovery strengthens in 2021, global trade is projected to accelerate to 8.5 percent, mainly because of the rebound in merchandise volumes. Cross-border services trade (tourism, transportation) is expected to remain subdued until the pandemic is brought under control everywhere. Pandemic-related restrictions on international travel and a more general fear of traveling are expected to have lasting effects on income from exported services (Greece, Iceland, Italy).

[2] Large and occasional spikes in the measure of inflation expectations in Japan reflect low trading volume.

At the global level, current account deficits and surpluses narrowed early in the crisis but subsequently widened with rising trade and commodity prices. Current account positions are expected to remain broadly stable into the medium term, with a gradual narrowing of positions in the United States and China. Stocks of international assets and liabilities are, however, expected to remain at historically high levels (Figure 1.20).

One Overarching Uncertainty and Many Risks

Because the path of the pandemic is so uncertain, it is very difficult to quantify the balance of risks around the central outlook; risks abound on both sides. New vaccines that offer a path to recovery are being approved on an ongoing basis. However, uncertainty remains regarding their effectiveness against new strains of the virus. Delays in inoculating all parts of the world could lead to vaccine-resistant virus mutations, new outbreaks could start anywhere and anytime, and renewed restrictions may be required to slow transmission. Uncertainty about the duration of this stop-go rhythm makes other elements difficult to predict: the strength of the private investment response; the extension of policy lifelines (as governments balance the provision of relief with maintaining space for further response down the road); and the extent of scarring. Risks are balanced in the near term, but more to the upside further out.

The main downside risk factors include the following:

- *Pandemic resurgence:* Vaccine-resistant strains are potential headwinds for economic activity, as are operational risks such as vaccine production and distribution delays. Excessive staggering across different regions may trigger start-stop patterns in the response to reemerging infection hotspots, extending the period of social distancing and uncertainty facing households, firms, and policymakers. Moreover, if mutations outpace the rollout of vaccines, COVID-19 could become an endemic disease of unknown severity.

- *Tighter financial conditions:* A reassessment of market fundamentals (such as in response to adverse COVID-19 developments or earlier than expected withdrawal of policy support), an increase in core sovereign yields (in response to large fiscal support), or a reevaluation of inflation risks (following inflation surprises in the context of large monetary and fiscal support) could trigger a sharp repricing of financial assets. Risky asset prices could fall sharply, causing volatility and triggering significant losses at major nonbank financial institutions. Higher risk premiums would generate financing difficulties for leveraged firms and households. A wave of bankruptcies—which have remained particularly low so far thanks to extensive policy support—could erode banks' capital buffers and constrain their ability to provide credit. Amid high and rising debt levels, vulnerable borrowers could face rollover risks, an issue that would be particularly acute for some emerging markets and low-income countries. Tighter financial conditions would hamper growth prospects. This could lead to further repricing of financial assets in a potentially dangerous feedback loop.

- *Extended scarring:* Although policy actions have so far prevented the grave health and economic crisis from morphing into a systemic financial crisis (possibly limiting the extent of scarring that otherwise might have occurred), the COVID-19 crisis could still

lead to substantial and persistent damage to supply potential. This may arise for example from diminishing labor force participation, bankruptcies, and associated disruptions of production networks (see Chapter 2). The longer the recession, the more likely it is that such effects will be permanent, especially in emerging market and developing economies, where the prevalence of relatively small firms and shallow capital markets could dampen investment and employment for a long time. Disruption to production networks might durably cripple productivity growth. At the same time, lifeline measures to safeguard firms' cash flow could keep some unviable firms afloat and lead to inefficient allocation of capital and labor that drags down medium-term growth. To the extent that retraining programs are inhibited by reduced in-person interaction, labor reallocation may also be slowed. Extended scarring could also compound inflation risks as supply constraints bind tighter due to the erosion of productive capacity.

- *Intensified social unrest:* While social unrest declined in the first months of the pandemic (due to reduced mobility), recent events suggest that the multiyear trend before the pandemic could rapidly reassert itself—particularly in countries where progress on underlying social and political issues has stalled and where the crisis has exposed or exacerbated preexisting problems. A longer crisis could intensify social unrest, which could damage sentiment and slow activity further. Necessary reform efforts could also be derailed, with negative impacts on long-term growth and debt sustainability. Recent IMF staff analysis suggests that food price volatility could play a key role in triggering unrest.
- *Increased frequency of natural disasters:* The frequency and severity of natural disasters due to extreme weather related to climate change have increased in recent years, inflicting a large humanitarian toll and loss of essential livelihoods. Some small and susceptible economies could even suffer relatively large economic damage, not least because the pandemic policy response has stretched their fiscal capacities and diminished their ability to cope with disaster-related spikes in health care needs (see Box 1.2). Natural disasters could also contribute to financial stress, particularly in the insurance sector.
- *Geopolitical, trade, and technology risks:* Many pre–COVID-19 risk factors continue to be relevant. Tensions between the United States and China remain elevated on numerous fronts, including international trade, intellectual property, and cybersecurity. Domestic economic disparities arising from the pandemic downturn may also prompt new trade barriers, motivated by the need to protect domestic workers. Amid already high levels of trade restrictions, such actions would add to inefficiencies and weigh on the recovery. Furthermore, risks of protectionist tendencies surrounding technology are emerging. Protectionist tendencies could extend to medical supplies and COVID-19–related pharmaceutical advances, which would impede the global supply of vaccines.

On the upside, the main risks to the outlook include the following:

- *Expedited vaccine production and rollout:* New vaccines are being approved on an ongoing basis. While operational challenges are large, these may be overcome sooner than anticipated, especially if more vaccines are approved that do not require cold chain low-temperature storage or can be administered in one jab. Finally, as vulnerable populations

are vaccinated and hospitalization rates decline, the fear of becoming infected could rapidly disappear. Improved consumer sentiment would boost services consumption, lead to more front-loading of investment, and lift growth above the baseline.

- *Unanticipated larger effects from fiscal support:* In contrast to the fiscal response in the aftermath of the global financial crisis, fiscal support—as part of policymakers' response to the pandemic—has been remarkably strong and could have larger effects than currently projected. Moreover, advanced economies may still have untapped fiscal space that could be used to engineer a much stronger recovery, minimize the extent of scarring, and accelerate the shift to lower carbon dependence.
- *Coordinated policies:* Monetary and fiscal policy easing came in a strong and synchronized fashion during the early phase of the pandemic. A better-than-expected recovery could occur if international coordination on exit policies is maintained in the later phase of the recovery. Moreover, intensified cooperation on vaccination could expedite the production and distribution of vaccines, end the pandemic sooner than expected, and limit the extent of scarring.

Some of these risk factors are considered in alternative scenarios discussed in the Scenario Box.

Policy Priorities

Despite an outlook which is unusually varied across countries, the overarching objectives of policy remain remarkably uniform. Foremost among these is overcoming the immediate health crisis and returning employment to normal levels. Beyond this, countries need to limit the long-run impact of the crisis by limiting scarring, including from zombie firms; and reduce inequality—both within and across countries. Further ahead, the threat of climate change is ever more pressing, demanding bold action to limit emissions, particularly for the largest polluters.

Strong international cooperation is vital for achieving these objectives and ensuring that emerging markets and low-income developing countries continue to narrow the gap between their living standards and those of high-income economies. On the health front, this means ensuring adequate worldwide vaccine production and universal distribution at affordable prices so that all countries can quickly and decisively beat back the pandemic. Export restrictions on vaccines, vaccine inputs, and medical goods should be removed. The international community also needs to work closely to ensure financially constrained economies have adequate access to international liquidity so that they can continue health, other social, and infrastructure spending required for their development and continued convergence to higher income per capita. Beyond addressing issues arising directly from the pandemic, countries should also work closely to redouble climate change mitigation efforts and to resolve economic issues underlying trade and technology tensions, as well as close gaps in the rules-based multilateral trading system. Building on recent advances in international tax policy, efforts should continue to focus on limiting cross-border profit shifting, tax avoidance, and tax evasion.

Tailor Policies to the Stages of the Pandemic and Recovery

While the objectives of policy may be similar, the policies needed to achieve them must be tailored to countries' individual circumstance. To impose some structure on this variety, the policy priorities that follow are separated into phases of the crisis: immediate actions for the here and now; initiatives to secure the recovery; and measures for building a more resilient, inclusive, and environmentally sustainable economy for the post–COVID-19 world. This is of course, somewhat approximate; in practice, the lines between successive phases are blurred, and countries may need to embark on some policies from later phases before those from earlier ones are complete. And the uneven recovery will mean that different countries may remain in different phases for some time. Nevertheless, the common goal of exiting the crisis means that this ordering can guide global policy priorities and the international cooperation required to deliver them.

Considering the large uncertainty surrounding the outlook, policymakers should prioritize policies that would be prudent regardless of the state of the world that prevails—for instance, strengthening social protection with wider eligibility for unemployment insurance to cover the self-employed and informally employed (see Chapter 2 of the April 2020 WEO); ensuring adequate resources for health care, early childhood development programs, education, and vocational training; and investing in green infrastructure to hasten the transition to lower carbon dependence. Moreover, they should be prepared to flexibly adjust policy support; for example, from lifelines to reallocation as the pandemic evolves (as discussed in Chapters 2 and 3), while safeguarding social spending and avoid locking in inefficient spending outlays. It is important to anchor near-term support in credible medium-term frameworks.

Phase 1: Escaping the Crisis

The outlook for health and economic variables remains uncertain and challenging. In this context, policymakers still have immediate concerns to deal with.

Health spending should remain a priority. The fastest way to improve economic outcomes is to suppress the pandemic. As a result, the economic benefits of spending to distribute and administer the vaccine far outweigh any costs. Vaccine production capacity and, in some countries, regulatory restrictions remain bottlenecks that could be overcome with further public investment and alignment of regulations. Cooperation on the global production and distribution of vaccines is essential. Governments should not seek to restrict international dissemination of vaccines. Policies such as limits on exports of vaccines and other medical supplies only promote retaliation that interrupts supply chains and leaves all countries worse off. Additional support for the COVAX project and global distribution of excess doses could help guarantee vaccine access for all.

Fiscal policy support should be well targeted and calibrated to the stage of the pandemic. Until the pandemic ends, fiscal policy should remain supportive. Of course, fiscal space is limited in some countries. In such cases, extraordinary spending will need to be balanced with debt sustainability within credible frameworks. But in countries with space, fiscal policy should continue to provide targeted transfers to affected households and businesses through furlough programs, loans to businesses, and direct payments to households. Such programs should be well calibrated,

targeted to the stage of the pandemic and gradually phased out as demand picks up. It is important that support be means-tested in countries that primarily rely on widescale payments to households. When support eventually is scaled back, it should be done in ways that avoid sudden cliffs (for instance, gradually reducing the government's share of wages covered under furlough and short-time work programs while increasing hiring subsidies to enable reallocation as needed). In general, stronger social assistance will not only dampen the impact on households during the current crisis, but it will also provide an automatic policy response during an uncertain recovery. Some examples include Togo, which has permanently adopted the digital infrastructure for emergency cash transfers linked to national IDs, and Indonesia, which has extended unemployment insurance to the informal sector.

Aided by monetary accommodation wherever possible: Given synchronized negative supply and demand shocks, the overall effect on output gaps is somewhat hard to determine. Yet inflation remains subdued and expectations well anchored in many countries, suggesting that monetary policy can remain accommodative in those economies. With interest rates in many countries still at their lower bound, this likely means a combination of continued expansion of central bank balance sheets (including as needed in some emerging markets) and communicating future interest rate paths that remain low for the foreseeable future. Clear forward guidance and communication from advanced economy central banks is particularly crucial, and not just for calibrating the appropriate domestic monetary accommodation. It also vitally bears on external financial conditions in emerging markets and the impact that divergent policy stances have on capital flows (Chapter 4). In this context, emerging market economies may need to consider the appropriateness of other policies in the toolkit to ensure stability—including exchange rate policies, capital flow management, and macroprudential policy. In general, flexible exchange rates are best able to absorb international shocks and limit resource misallocation in countries with well-developed financial markets and limited balance sheet mismatches. In contrast, foreign exchange intervention and temporary capital flow management measures may under some circumstances be useful for countries with balance sheet vulnerabilities, including by giving monetary policy more autonomy to respond to domestic inflation and output developments. However, such policies should not substitute for needed macroeconomic adjustment.

With macroprudential policies appropriately trained on containing financial stability risks: A prolonged period of accommodative monetary policy will likely add to already elevated financial vulnerabilities as marginal borrowers benefit from investors' search for yield and deteriorating loan origination standards. As noted in the April 2021 *Global Financial Stability Report*, taking into consideration possible lags between the activation and impact of macroprudential tools, policymakers should take early action. They should tighten selected macroprudential policy tools to tackle pockets of elevated vulnerabilities, while avoiding a broad tightening of financial conditions. If such tools are not available—for example, in some segments of the nonbank financial intermediation sector—policymakers should urgently develop them. Given the challenges to designing and operationalizing macroprudential tools within existing frameworks, policymakers should also consider building buffers elsewhere to protect the financial system.

Phase 2: Safeguarding the Recovery

The path to more a normal policy stance will be narrow, and the transition to a post-pandemic economy may be long and difficult. Along that transition, policymakers will need to balance the benefits of policies that mitigate scarring against the costs of weakening incentives for efficient allocation of productive resources, while being mindful of available policy space.

Policies should address persistent economic scarring. Without offsetting policy action, the crisis will have persistent effects over the medium term on firms, labor markets, and human capital accumulation.

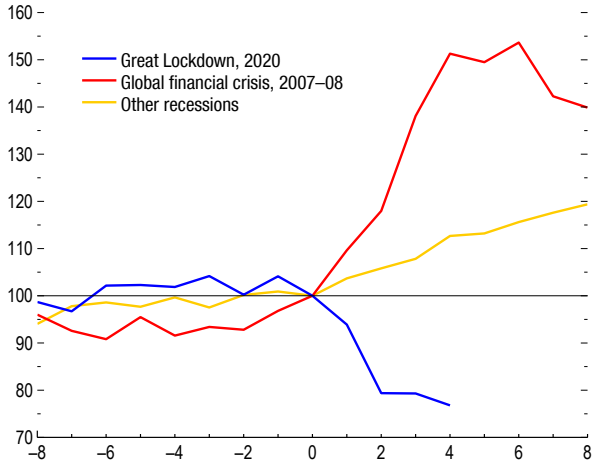
- Failure of *firms* during a crisis destroys firm-specific employment and supplier matches. By limiting the failure of viable firms, policymakers prevent persistent economic harm. Policy actions have generally limited corporate failures during the pandemic, but as the recovery proceeds governments should switch from broad-based support for firms to policies more targeted toward hard-hit sectors, such as retail, the arts, and other contact-intensive services (Chapter 2).
- *Labor market policies* should be geared toward preventing workers from falling into long-term unemployment, and furlough and short-time work programs should be scaled back as labor market conditions renormalize (see Chapter 3). Support for retraining and reskilling should continue even as the recovery takes hold. Given that the move to a new sector can take some time, displaced workers also require extended income support to manage their transition to more productive roles.
- The interruption of schooling during the pandemic has taken a severe toll on the building of *human capital* essential for sustained growth. Improvements in educational attainment in low-income countries are at particular risk given limited capacity to deliver schooling through other means (see Box 2.3). Without remedial policy actions—such as increased spending on education and associated infrastructure—disparities in educational attainment risk perpetuating a growing divergence within societies and between rich and poor countries.
- Where space permits and the recovery is weak, *broader fiscal support* can be an effective way to ward off some of the more pernicious long-term impacts of the recession. Programs focused on meeting medium-term growth and equity objectives—such as building infrastructure to speed the transition to reduced carbon dependence; increasing research spending; and investing in early childhood development, education, and vocational training programs—will also help offset persistent economic scarring. Where elevated debt levels limit scope for action, effort should also be directed to create space through increased revenue collection (fewer breaks, better coverage of registries, and switching to well-designed value-added taxes), greater tax progressivity, and by reducing wasteful subsidies.

Without sacrificing efficiency: Although emergency measures were necessary to mitigate suffering during the depths of the crisis, persisting indefinitely with them will hinder growth needed to sustain the recovery. Policies that prop up failing firms ultimately crowd out new ventures and hinder aggregate reallocation of capital and labor. Likewise, overly generous

unemployment insurance may dampen incentives to work. One particular efficiency-related risk to the recovery is the possibility of *zombie firms*. Unlike during the global financial crisis and other past recessions, corporate bankruptcies have declined across advanced economies (Figure 1.21). This is in part a result of policies that prevent creditors from enforcing claims on struggling firms, such as moratoriums on bank loan repayments, which obviate the need to seek similar protections in bankruptcy. Smaller firms in particular seem to have benefited from these policies. Firms that are large enough tend to access capital markets by issuing bonds. The number of corporate defaults among firms issuing speculative-grade debt has reached its highest level since the global financial crisis (see the April 2021 *Global Financial Stability Report*). Together, this evidence suggests that although policy action to support firms has undoubtedly kept many viable firms afloat, it is also keeping alive inefficient firms that would have failed even without the downturn. In order to prevent such zombie firms from continuing to take up resources, governments will have to roll back blanket loans and credit guarantees, relying more on dedicated out-of-court restructuring mechanisms and simpler procedures for reorganization of small firms, restructuring loans, and filing for bankruptcy. In addition, lenders should be encouraged to actively identify and manage distressed borrowers, including while moratoriums and other support measures remain in place. Governments in many countries therefore have an unenviable choice between accepting increased firm failures in the short term and supporting unproductive zombie firms in the long term. The trade-off is likely to be most difficult in the sectors that have been hit the hardest. Moreover, widespread firm failure could spill over to the financial sector, impacting banks' capital buffers. As a result, governments should also consider policies that approximate the recapitalizing effects of equity injections, which are hard for all but the largest firms to pursue directly. Such measures include loans whose repayment is conditional on sufficient subsequent profits or underwriting similar private sector loans.

Figure 1.21. Bankruptcies, Current and Past Recessions
(Index, last prerecession quarter = 100; recession quarters on x-axis)

Unlike during previous crises, bankruptcies declined with respect to pre-COVID-19 levels.



Sources: CEIC; national authorities; and IMF staff calculations.
Note: Data are from 13 countries with varying coverage during 1990:Q1–2020:Q3. Lines are averages across recession types, with quarter 0 the last prerecession quarter. For the Great Lockdown, quarter 0 is 2019:Q4 for all countries. For the global financial crisis, quarter 0 is the country-specific date of peak real GDP during 2007–08. Other recessions are country-specific and identified by two consecutive quarters of negative growth during 1990–2006 and 2009–19.

The transition to a post–COVID-19 economy will inevitably require *sectoral reallocation* as resources flow to recovering sectors. This is best achieved by scaling back the overall level of support, both for households and firms, combined with targeted support for the hardest-hit sectors. In particular, the service sector has experienced a much more severe slowdown than other parts of the economy. As a result, continued and targeted support may be best concentrated on firms in services. Early withdrawal of support from the most affected sectors

risks an uneven recovery and sector-specific scarring, hindering necessary reallocation in the long term. Of course, the balance between this withdrawal of support and propping up nonviable firms will be difficult; sector-specific policies will need to be phased out eventually. But by doing so more slowly in the most affected sectors, government can hope to limit sectoral scarring.

The crisis hit smaller firms hardest. As a result, *policies to promote competition and limit market concentration* should be enhanced to guard against sharp increases in monopoly power during the recovery.

Phase 3: Investing in the Future

Several issues will pose challenges to policy in the longer term, both pandemic related and legacies inherited from preexisting trends. Foremost among these are the ongoing climate crisis, reforms to policy frameworks, and improved international policy cooperation.

International policy cooperation remains essential. The pandemic has affected every person on the planet, without concern for nationality. Accordingly, governments should work together to address the global ramifications of the crisis.

- Continued *access to liquidity* can prevent external funding pressures from spilling over across countries and can expand monetary policy space. To decrease the likelihood that balance of payments needs curtail essential spending on health and social support, the IMF has expanded its lending toolkit: providing new financing facilities, increasing access limits for emergency finance, and increasing access to debt service relief grants. And, supported by the IMF and World Bank, the Group of 20 (G20) Debt Service Suspension Initiative makes 73 countries eligible for suspension of debt service payments until June 2021. An increase in allocations to special drawing rights (SDRs) for all countries would deepen the buffer against ongoing shocks during an uneven recovery. While temporary liquidity relief can help mitigate the lack of policy space, for some countries it may not be enough in situations where sovereign debt is unsustainable. In such instances, eligible countries should work with creditors to restructure their debt under the new common framework approved by the G20. Without such action, these economies may be forced to forgo critical health and capital spending as they divert scarce foreign reserves to meet external payment obligations, setting back their long-term development and convergence to higher income per capita even further.
- Relatedly, global disputes over *trade* more broadly remain unresolved. These include the failure to reconcile a deadlock on appointments to the World Trade Organization Appellate Body and trade tensions between the United States and China.

Boosting productivity and growth: Even before the pandemic, productivity growth had been sluggish for several decades. Although the underlying causes are hard to determine, it is possible that growth in efficiency will continue to be anemic and will require corrective policies such as investment in education, research, and infrastructure. That said, an alternate future could emerge, with innovations in artificial intelligence that lead to rapid advances in productivity as a new wave of automation extends to nonroutine tasks. Clusters of growth in sectors such as logistics and services could prove a tonic after a decade of subpar growth in many countries.

Such an outcome would not be without its drawbacks: a hollowing out of lower-skill and routine occupations could amplify inequality, and the digital divide could exacerbate differences between those with and without online opportunities. Policies such as improvement in broadband networks and cheaper access to telecommunications could help offset these costs, while worker retraining and investment in digital literacy more broadly would help widen access to emerging job opportunities.

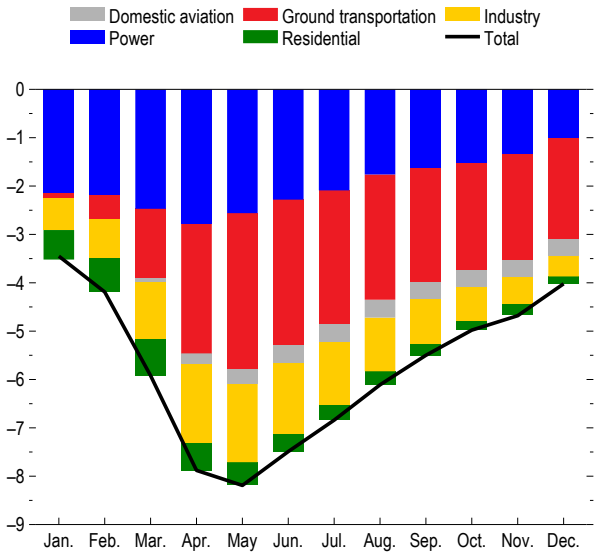
Improved frameworks can generate policy space. The amount of space available for a policy to act depends on the framework in which it operates. Improvements to policy frameworks can relax some of the constraints impeding action.

- Countries in distress may need to consider preemptive *debt restructuring*. Although far from ideal, a negotiated restructuring with creditors of highly indebted countries would be preferable to a disorderly default. If bond contracts contain collective action clauses and the new offer is seen as reasonable by the qualifying majority of bondholders, restructuring would be easier to administer. Restructuring options could include maturity extensions, interest rate reductions, principal reductions, and other debt swaps. The G20 Common Framework provides a template for some countries and could potentially be extended beyond the current list of Debt Service Suspension Initiative (DSSI)-eligible countries.
- *Fiscal space* more generally can be generated through measures that not only raise revenue but also improve progressivity—for example, by increasing taxes on affluent individuals and highly profitable corporations relatively less affected by the pandemic, closing domestic corporate tax loopholes, reducing tax expenditures, and improving revenue administration (including through greater reliance on e-filing to improve compliance). National efforts will need to be supplemented with strong international cooperation to limit profit shifting and tax evasion and avoidance. These initiatives can be reinforced on the expenditure side by improving the efficiency and governance of public investment and procurement, reducing poorly targeted subsidies, and rationalizing recurrent spending. Committing to return to compliance with fiscal rules or preapproving tax reforms now for implementation after the pandemic is durably suppressed could reinforce the credibility of fiscal frameworks.
- *Monetary policy frameworks:* In countries with interest rates at their effective lower bound (mostly advanced economies, but also some emerging market economies such as Chile and Peru), continued unconventional policies, including asset purchases, forward guidance, and even negative interest rates, can provide scope to expand policy space. In emerging markets, asset purchase programs may provide extra policy space, provided objectives are clear and policies are well communicated and form part of a larger and coherent policy framework with an explicit central bank mandate for ensuring price stability. A credible fiscal policy framework can further enhance the scope for temporarily pursuing such unconventional monetary policies as it can send a strong signal on the limits of sovereign issuance and central bank purchases (see Chapter 4).

Without global cooperation, climate change will continue to hamper economic growth and convergence. Global emissions were about 4 percent lower in 2020, broadly in line with reductions in output (Figure 1.22). This decline is likely temporary. The global economy must produce similar declines every year of the next 30 to lower emissions 80 percent by 2050. Without immediate and coordinated global policy action, emissions will rise again as the pandemic passes and output rises, and countries with the least capacity to absorb the costs of adaptation—small states and low-income countries—will suffer most (see Box 1.2). A comprehensive policy package can mitigate the worst harms of climate change at relatively low transitional output costs (see Chapter 3 of the October 2020 WEO). It should rely on a combination of policies:

Figure 1.22. Cumulative Global Carbon dioxide (CO_2) Emissions, 2020 vs. 2019
(Percent difference)

Global emissions were 4 percent lower in 2020, reflecting pandemic-driven lower activity.



Source: Carbon Monitor (https://carbonmonitor.org/).

- *Carbon pricing:* Higher carbon prices are essential to discourage use of the most socially costly fuels, most notably coal. Because the first dollar of the carbon tax is the most effective, countries without the political will for large taxes should not shy away from moderate, preferably increasing, carbon taxes or should consider carbon trading systems. A carbon price floor arrangement among large emitting countries, designed flexibly to accommodate equity considerations and constraints on national policies, can help coordinate and scale up actions in this regard (see the October 2019 *Fiscal Monitor*).
- *Green infrastructure investment:* A green infrastructure push, funded in part by a carbon tax, could offset the economic losses from higher energy costs. Such a push could include improved transmission and distribution of electricity from renewable power plants, grants to improve buildings' energy efficiency, and better green transportation infrastructure (public transit, electric vehicle charging, and the like).
- *Subsidies for green research:* Although the effects are uncertain and delayed, subsidies for research in green technologies have the potential to speed the shift to a zero-carbon economy dramatically and—given the small size of the green technology sector—are relatively cheap. Importantly, by lowering the cost of future green energy and negative emission technologies, research subsidies will help meet future decarbonization targets.

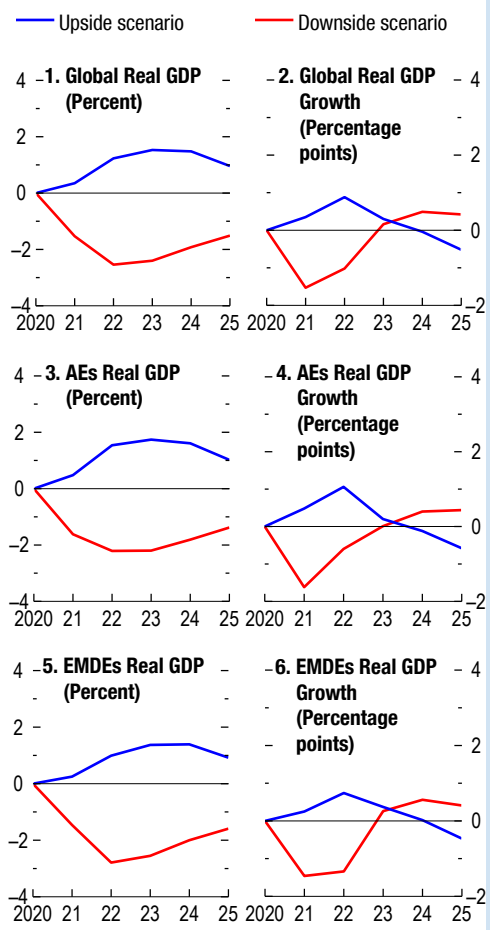
Targeted compensatory transfers: Those on lower incomes will be hit hardest by climate mitigation policies, as they have more energy-intensive consumption and are more likely to work in energy-intensive sectors. Targeted transfers and feebates funded by carbon taxes can help offset these effects, making climate change mitigation inequality-neutral.

Scenario Box

At the time of the October 2020 *World Economic Outlook* (WEO), there was significant uncertainty regarding the likely approval and availability of vaccines, and the magnitude of the deviations from baseline in the alternative scenarios that were explored reflected that degree of uncertainty. While some uncertainties regarding vaccines have been resolved, others have arisen. Although these uncertainties may not lead to deviations from the baseline that are as large as was the case in October, they are still material.

To illustrate this, the G20 Model is used to estimate the potential impact of the increased uncertainty about the path of the pandemic owing to new variants, the efficacy of vaccines, and the pace of vaccine rollout. The upside scenario explores the potential for the recovery to be much stronger than expected in the baseline as the rollout of vaccines allows activity in contact-intensive sectors to rebound quickly and thereby boost confidence. The downside scenario explores the possibility that vaccine rollout does not go as smoothly as in the baseline and that variants are more resistant to vaccines. Consequently, more modifications to existing formulations will be required leading to significant delays in achieving herd immunity and thus recovery in contact-intensive sectors.

Scenario Figure 1. Alternative Evolutions in the Fight against the COVID-19 Virus
(Deviation from baseline)



Sources: IMF, G20 Model simulations.
Note: AEs = advanced economies; EMDEs = emerging market and developing economies.

Upside

In the upside, blue line in Scenario Figure 1, it is assumed that vaccine rollout occurs about 10 percent faster than in the baseline and that vaccines are effective in preventing infections from the growing range of variants as well as containing infectiousness of those vaccinated. Better developments on the vaccine front and quickly receding disease concerns in turn lead to faster-than-expected normalization of mobility, boosting the confidence of both households and firms. This confidence leads to a faster-than-expected drawdown of accumulated savings, quick release of pent-up demand, and a ramp-up in private investment. Given well-anchored inflation expectations, the resulting demand-driven pickup in inflation does not lead monetary authorities in most countries to tighten policy, and the resulting lower real interest rates further stimulate private demand. Fiscal authorities are assumed to reduce spending on automatic stabilizers as dictated by the recovery, but there is no additional withdrawal of baseline discretionary

The authors of this box are Ben Hunt and Susanna Mursula.

measures. The faster near-term rebound in demand helps reduce some of the temporary but persistent scarring contained in the baseline as labor demand strengthens, quickly containing the loss in human capital; some bankruptcies are avoided, and renewed private investment temporarily spurs productivity growth.

With vaccine rollout occurring sooner and with more accumulated savings and pent-up demand in advanced economies, these economies lead the faster recovery; emerging market and developing economies follow, with a slightly less pronounced impact. Global GDP grows faster than baseline by just under ½ percentage point in 2021, accelerating to almost 1 percentage point in 2022, but moderating sharply in 2023 to something very close to baseline. Advanced economy GDP growth is roughly ½ percentage point above baseline in 2021, accelerating to more than 1 percentage point above baseline in 2022. Growth in emerging market and developing economy GDP is roughly ¼ percentage point above baseline in 2021, accelerating to ¾ percentage point above baseline in 2022. The faster recovery combined with the associated unwinding of some of the scarring assumed in the baseline leave global output almost 1 percent above baseline by the end of the WEO horizon.

Downside

In the downside scenario, red line in Scenario Figure 1, it is assumed that supply bottlenecks in production and other logistical problems with delivering the vaccines that are most effective against growing variants allow existing variants to become well entrenched, and additional mutations occur. This leads to delays in reaching herd immunity of roughly six months in advanced economies and nine months in emerging market and developing economies. Persistently high infection rates and deaths slow the normalization in mobility and the recovery in demand in contact-intensive sectors. This reduces the incomes of firms and households and their expectations of future income, further damaging consumer and firm confidence. Slower recovery increases risk aversion and leads to tighter financial conditions for vulnerable businesses, further undermining growth. Unconventional monetary policy measures are assumed to prevent significant increases in sovereign rates. The lack of conventional monetary policy space and shrinking fiscal space limit policymakers' ability to respond further, and no additional discretionary fiscal measures are assumed. The weaker rebound in activity leads to more proportional scarring than assumed in the baseline, slowing the speed of bounce back once vaccine availability and efficacy have improved sufficiently to allow mobility to return to pre-pandemic levels.

Global GDP growth slows by roughly 1½ percentage points more than in the baseline in 2021 and by a further 1 percentage point below baseline in 2022 before rebounding mildly above baseline in 2023 and thereafter. Growth in advanced and emerging market and developing economies suffers by about the same amount in 2021, but sharper tightening in financial conditions for vulnerable businesses in emerging market and developing economies means that their growth suffers more than growth in advanced economies in 2022. The much slower recovery leads to additional scarring and, combined with tighter financial conditions, results in output roughly 1½ percent below baseline by the end of the WEO horizon.

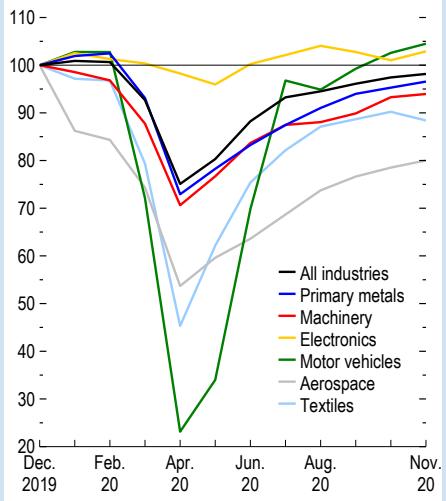
Box 1.1. Global Manufacturing: V-Shaped Recovery and Implications for the Global Outlook

Global manufacturing contracted sharply in the spring of 2020. Unlike during the global financial crisis, however, the decline was short-lived, with synchronized V-shaped recoveries across both advanced and emerging market economies in the second half of the year. While the rebound reflects in part the resumption of production following the shutdowns, other demand-related factors have also played a role, including the release of pent-up demand after lockdowns were eased and increased demand for products to facilitate work-from-home and protective equipment.

The recovery has been more pronounced in some industries than in others (Figure 1.1.1), reflecting several factors:

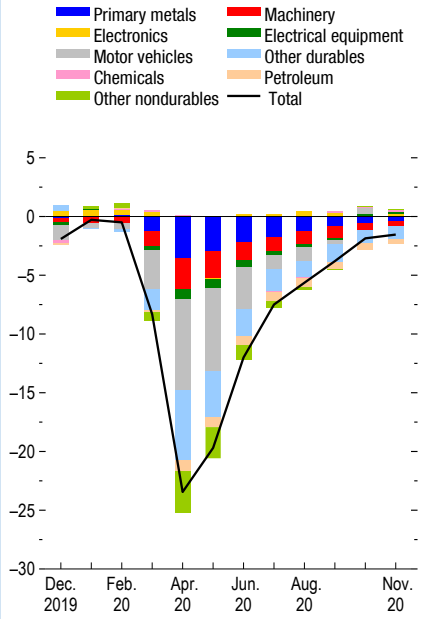
A surge in consumer spending on durables in advanced economies, reflecting policy support programs, pent-up demand, and limited spending on services as a result of the pandemic: The share of durables in consumer spending increased to about 12 percent in the third quarter of 2020, up from an average of 10.5 percent in the two years preceding the pandemic. The surge is most visible for items such as cars and electrical appliances. Global car sales for example were back to pre-pandemic levels as of December 2020, after falling by more than 40 percent through April. The bounce back also likely reflected a desire to maintain safe distances and avoid public transportation, as well as purchase incentive programs and tax deductions. The car industry has been the largest driver of the manufacturing recovery, accounting for about 35 percent of the global rebound in the second half of 2020, while electrical equipment accounted for almost 5 percent of the rebound (Figure 1.1.2). The shift toward durables has also supported the sharp rebound in global trade, with advanced economies' imports of consumer goods accounting for almost one-third of the recovery in global trade values (excluding petroleum) in the second half of 2020. The recovery in durables spending was less pronounced in emerging markets excluding China.

Figure 1.1.1. Global Manufacturing: Selected Industries[1]
(Index, December 2019 = 100; seasonally adjusted)



Sources: Haver Analytics; and IMF staff calculations.
[1]Excluding China.

Figure 1.1.2. Global Manufacturing by Industry[1]
(Contribution to year-over-year percent change; percentage points)



Sources: Haver Analytics; and IMF staff calculations.
[1]Excluding China.

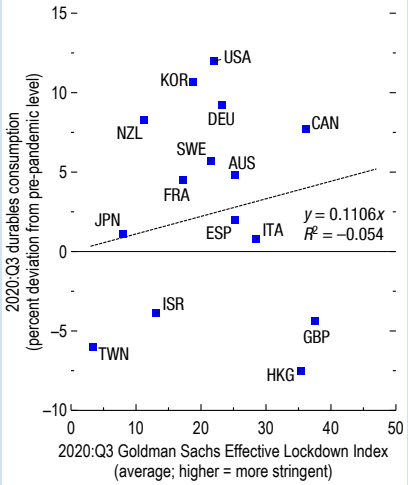
The author of this box is Nadia Mounir, with research assistance from Aneta Radzikowski.

- *The pandemic has increased demand for some products: Electronics to accommodate the shift toward teleworking and virtual learning as well as plastic, rubber, and textiles as the main source of personal protective equipment.* These sectors account for about 10 percent of the rebound in manufacturing.
- *Lingering uncertainties around the pandemic outlook have hindered the recovery of private investment, particularly in equipment. This has limited the rebound in the production of machinery and other capital goods.* Output in these sectors remains about 6 percent below pre-pandemic levels (except for the aerospace sector, which is almost 20 percent below its pre-pandemic level). There are signs of continued improvement in the production of machinery; capital goods imports picked up in late 2020.

The near-term outlook for global manufacturing remains positive, as evidenced in the [January] global manufacturing purchasing managers' index indicators, which point to a continuing expansion, though at a slower pace. While the near-term recovery could be tempered by the resurgence of COVID-19 cases in several major economies, evidence from social distancing measures in late 2020 and early 2021 in Europe and the United Kingdom suggests a relatively limited impact on manufacturing activity. In part, this is because containment measures have not been as stringent as in April and May, and disruptions to production and supply chains have been much less severe. Demand for goods, particularly durables, also appears to have become less sensitive to variations in mobility, as seen in the second half of 2020 (Figure 1.1.3).

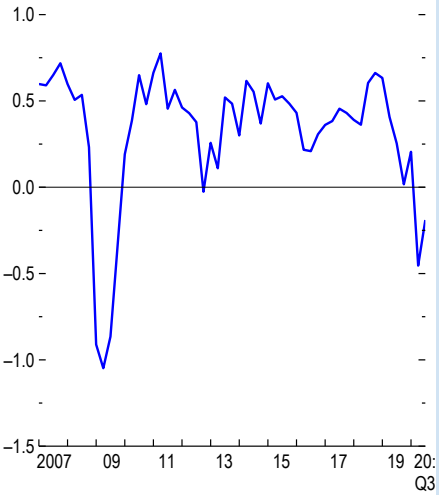
Beyond the near term, widespread availability of vaccines and normalization of contact-intensive activity, together with continued policy support, should help fuel the manufacturing recovery. Further normalization of global capital expenditures will be an important source of demand for manufacturing. However, several factors specific to the COVID-19 recession could limit the upside of this recovery: (1) global demand will likely shift from durables to services as these have accounted for the bulk of the global GDP decline and remain well below their pre-COVID-19 levels, and (2) inventory restocking, an important element in cyclical upturns, is likely to be slower this time, given less destocking during the pandemic recession than in prior recessions and lingering uncertainties around the pandemic outlook (Figure 1.1.4).

Figure 1.1.3. Correlation between Lockdowns in Advanced Economies and Durables Consumption



Sources: Goldman Sachs; Haver Analytics; Organisation for Economic Co-operation and Development database; and IMF staff calculations.
Note: Advanced economies comprise Australia, Canada, Denmark, euro area, Hong Kong SAR, Israel, Japan, Korea, New Zealand, Sweden, Taiwan Province of China, United Kingdom, and United States. This group represents 41.4 percent of global consumption based on purchasing-power-parity weights. Estimated coefficient of the lockdown index was –0.5 in Q2, significant at the 5 percent level. Data labels use International Organization for Standardization (ISO) country codes.

Figure 1.1.4. Inventory in Advanced Economies and Manufacturing Outlook
(Changes in inventory as percent of GDP; aggregated by purchasing-power-parity weights)



Sources: Haver Analytics; and IMF staff calculations.
Note: Advanced economies comprise Australia, Canada, Czech Republic, Denmark, euro area, Israel, Japan, Korea, New Zealand, Norway, Sweden, Taiwan Province of China, United Kingdom, and United States. The group represents 42.9 percent of world GDP based on purchasing-power-parity weights.

Box 1.2. Who Suffers Most from Climate Change? The Case of Natural Disasters

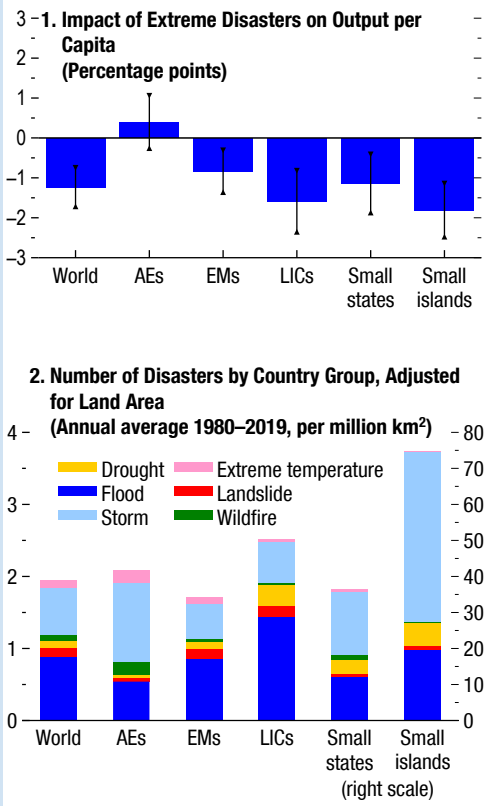
Major weather-related disasters lead on impact to sizable declines in real GDP per capita of 1.2 percentage points on average, with stronger negative effects in areas where exposure and vulnerability are high, such as in low-income developing countries and small island economies. Climate change and a continued rise in global temperatures are likely to further increase the frequency and intensity of natural disasters. Improvements to structural, financial, and social resilience could accelerate the post-disaster recovery phase and minimize such welfare losses.

Ongoing climate change poses a fundamental threat to the global economy. Without successful mitigation policies, increasing temperatures will reduce global living standards by at least 5–10 percent (relative to holding temperatures fixed at current levels) by the end of the century (see Chapter 3 of the October 2020 *World Economic Outlook*).

In the absence of successful mitigation policies, low-income countries are not only the most exposed to the costs of climate change, they are also the most limited in their capacity to adapt, even though they are the smallest contributors to emissions of greenhouse gases. These costs are most likely to be imposed by more frequent and catastrophic natural disasters as the rise in global temperatures has likely already contributed to more frequent weather-related disasters (IPCC 2012), on top of other natural disasters, such as earthquakes, to which low-income countries are likewise vulnerable.

While economies recover well from moderate disasters, extreme disasters tend to lower economic output.[1] On impact, major weather-related disasters lower real GDP per capita by 1.2 percentage points on average, with stronger effects in low-income countries and small island economies—with a loss of 1.6 and 1.8 percentage points, respectively (Figure 1.2.1, panel 1)—where exposure and vulnerability are high, as these countries experience more

Figure 1.2.1. Heterogeneous Effects and Frequency of Weather-Related Natural Disasters



Sources: EM-DAT (Emergency Events Database); and IMF staff calculations.
Note: Error bars in panel 1 represent 90 percent confidence intervals. In panel 2, for each year the number of disasters is added up and divided by the total land area of the country group, then averaged over years. Small states are defined as territories with land area under 30,000 square kilometers (for reference, Haiti is 27,750 square kilometers). AEs = advanced economies; EMs = emerging market economies; LICs = low-income countries.

The author of this box is Evgenia Pugacheva. The box has benefited from comments by Stéphane Hallegatte.

[1] See Botzen, Deschenes, and Sanders (2019) for an overview of the literature on the macroeconomic implications of natural disasters. For major disasters that fall within the top 5th percentile of disasters by severity, Felbermayr and Gröschl (2014) estimate a decline in GDP growth of 0.46 percentage point in the year of the shock. Strobel (2011) finds that the impact of hurricane landfall on coastal counties in the United States reduces GDP per capita growth rate locally by 0.45 percentage point—but has no effect on national growth rates, as economic activity in the unaffected areas compensates for the losses. Loayza and others (2012) likewise stress that the impact of a disaster depends on its severity. Cantelmo, Melina, and Papageorgiou (2019) argue that severe repeated natural disasters have persistent negative effects

reported disasters per square kilometer of land area (Figure 1.2.1, panel 2).[2] The impact in advanced economies is more muted as they are often better equipped to deal with natural disasters. Indeed, better and faster reconstruction, plus large public relief spending can lead to an increase in output following a disaster, at least in the short term. Medium- to long-term effects of weather-related disasters could be persistent, for instance, tropical cyclones, which have devastating effects on both small island economies and coastal regions of bigger countries, lead to losses that are not recovered even 20 years after the storm strikes (see Chapter 3 of the October 2017 *World Economic Outlook*). All in all, such events disproportionately affect the poorest segment of the population, with intergenerational effects as people's health is damaged, their livelihood is destroyed, and children are prevented from attending school (Chapter 2 of the April 2020 *Sub-Saharan Africa Regional Economic Outlook*).

The main mechanism by which disasters reduce output is the destruction of productive capital. Unlike disasters that destroy only durable consumption goods such as cars and furniture, capital-destroying disasters tend to reduce GDP (Strulik and Trimborn 2019). And damage to public infrastructure and provision of water, gas, and electricity can halt production activity, with effects that echo along supply chains. Reconstruction efforts are also costly, diverting resources from other production activities and reducing aggregate productivity because of capital misallocation (Hallegatte and Vogt-Schilb 2019). But if done right, better reconstruction can not only minimize the impact of disasters on consumption, production, and overall welfare, it can also reduce vulnerability to future shocks (Hallegatte, Rentschler, and Walsh 2018).

Within this broader context, a three-pronged strategy can address the specific challenge of extreme weather events, especially for low-income countries (IMF 2019). The first prong involves building structural resilience by investment in disaster-proof infrastructure, early warning systems, and stricter enforcement of building codes and zoning rules. The second prong calls for building financial resilience by ensuring access to preapproved contingent credit lines, participation in risk pooling insurance facilities, provision in the budget for financial buffers, and better measurement and greater disclosure of exposure and vulnerability to climatic hazards (see Chapter 5 of the April 2020 *Global Financial Stability Report*). The third prong involves building social resilience through enhanced disaster preparedness and management capacity to limit the disruption of critical public services, strengthening existing social protection systems to limit the impact on the most vulnerable, and improving the timeliness and scope of international assistance.

[2] The econometric specification used to estimate the impact of weather-related natural disasters on real GDP per capita during 1980–2019 is given by $\Delta\ln(y_{i,t}) = \beta_1 d_{i,t} + \beta_2 d_{i,t-1} + \theta_1 X_{i,t} + \alpha_i + \mu_t + \varepsilon_{i,t}$, in which i indexes countries, t indexes years; $\Delta\ln(y_{i,t})$ is growth in real GDP per capita; $d_{i,t}$ is the natural disaster indicator variable, which takes a value of 1 when damages to property and capital stock as a percent of the previous year's GDP exceed 10 percent or when the number of people killed or affected exceeds 10 percent of the population (total for all disasters within a country for a given year) and takes a value of 0 otherwise—these criteria correspond to very extreme natural disasters; β_1 is the coefficient of interest; $X_{i,t}$ is a set of controls that includes two lags of growth and log GDP per capita in purchasing-power-parity terms; α_i and μ_t are country and year fixed effects, respectively, with standard errors clustered at the country level

Special Feature: Commodity Market Developments and Forecasts

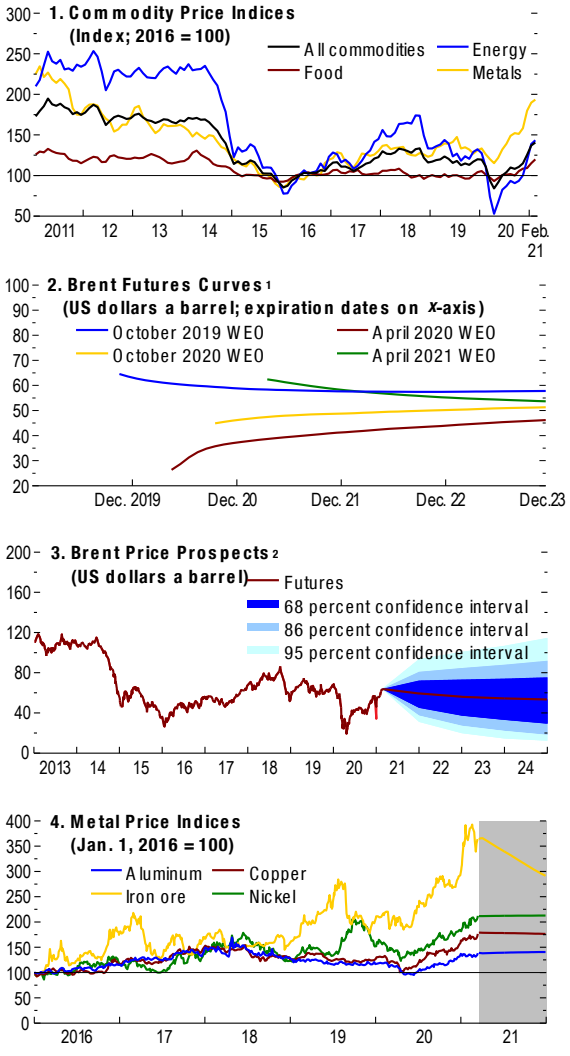
The IMF's primary commodity price index increased by 29 percent between August 2020 and February 2021, the reference period for the current World Economic Outlook (WEO) (Figure 1.SF.1, panel 1). The broad-based increase, led by energy commodities, followed announcement of effective COVID-19 vaccines last November and continued until January despite renewed lockdowns that weakened the demand outlook, especially for petroleum products. This special feature also includes an in-depth analysis of food security.

The Oil Market Rebalance Continues, while Natural Gas Prices Showed Seasonal Volatility

Oil prices increased by 39 percent between August 2020 and February 2021, on positive vaccine news and the rapid economic recovery in Asia. A resurgence of COVID-19 cases and difficulties in vaccine rollout at the beginning of the year weakened the oil demand outlook and led the OPEC+ (Organization of the Petroleum Exporting Countries, including Russia and other non-OPEC oil exporters) coalition to review more prudently the relaxation of the 7 million barrels a day production curbs announced in April 2020 (see the October 2020 WEO).

Futures markets point to *backwardation* (a downward sloping futures curve), with oil prices at $58.5 a barrel in 2021—42 percent higher than the 2020 average—falling to $50.7 in 2025. This is mostly because of a temporary tight demand-supply balance expected this year—in line with International Energy Agency projections of a steady decline in oil inventories, with oil demand (supply) projected at 96.4 million barrels a day (95.5 million barrels a day) in 2021. Although oil prices persistently above $60 a barrel may induce a substantial production recovery of higher-cost producers in non-OPEC+ countries, including of US shale oil, most of them seem focused on balance sheet repair. Risks to oil prices are tilted to the upside as upside risks from large cuts in oil and gas upstream investments exceed downside risks

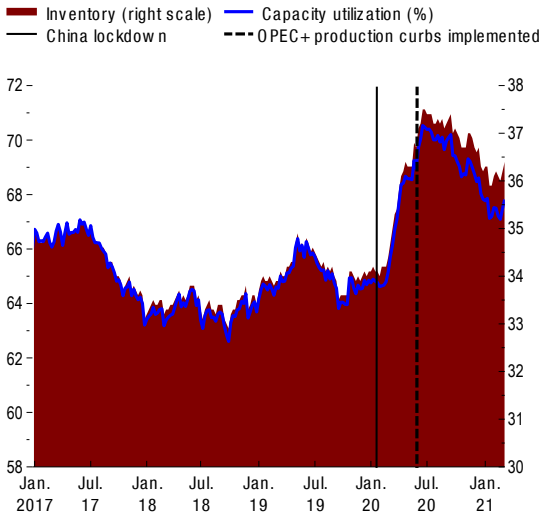
Figure 1.SF.1. Commodity Market Developments



Sources: Bloomberg Finance L.P.; IMF, Primary Commodity Price System; Refinitiv Datastream; and IMF staff estimates.
Note: WEO = *World Economic Outlook*.
1WEO futures prices are baseline assumptions for each WEO and are derived from futures prices. April 2021 WEO prices are based on February 12, 2021, closing.
2Derived from prices of futures options on February 18, 2021.

from a setback in global oil demand recovery, still elevated inventories, and, in the medium term, a breakdown of the OPEC+ coalition. (Figure 1.SF.1, panels 2 and 3, and Figure 1.SF.2).

Figure 1.SF.2. Global Oil Inventory
(Percent of capacity; number of days, right scale)



Sources: KPLER; and IMF staff calculations.
Note: Inventory is expressed in days of 2019 oil consumption. OPEC+ = Organization of the Petroleum Exporting Countries, including Russia and other non-OPEC oil exporters.

Natural gas prices showed strong weather-induced seasonal volatility. Asian liquefied natural gas prices spiked to almost $40 per million British thermal units (MMBTU) in January 2021, spilling over to European prices (for example, the Dutch Title Transfer Facility (TTF) price rose to $7.3 per MMBTU), while US Henry Hub spot prices reached $17.5 per MMBTU as a cold snap crippled shale gas output in Texas amid strong electricity demand in mid-February. High natural gas price volatility sustained the power sector's demand for thermal coal. South African coal prices were also boosted by strong Indian steel and cement industry demand. Phase-out plans and rising emission costs continue to weigh on the demand outlook for coal over the medium term.

Base Metal Prices Rallied on a Stronger Recovery in Industrial Production

Base metal prices increased by 30 percent between August 2020 and February 2021. The resurgent industrial activity in China and other advanced economies, coupled with optimism about US fiscal stimulus, boosted sentiment toward metals. The prices of copper and iron ore, heavily used in the construction and manufacturing sectors, increased by 30 percent and 35 percent. The strong demand for electric vehicles also pushed up prices of metals, such as cobalt and nickel, that are used in their batteries. Precious metal prices decreased by 6 percent after reaching highs in August 2020, as demand for safe assets faded.

The IMF base metal price index is projected to increase by 32.1 percent in 2021 and decrease by 4.5 percent in 2022. Uncertainty over the speed of the global economic recovery and potential production and trade disruptions due to the pandemic are the main risks to the forecast (Figure 1.SF.1, panel 4). Precious metal prices are expected to increase by 6.0 percent in 2021 and by 0.4 percent in 2022 because monetary policies are expected to continue to be accommodative.

Disappointing Crops and Precautionary Stockpiling Sent Food Prices Higher

The IMF's food and beverage price index increased by 20 percent, led by vegetable oils and cereals, which rose by 45 percent and 41 percent, respectively. The second half of 2020 saw a surge in prices of many staple crops including wheat, corn, soybeans, and palm oil, reversing an earlier trend of stable or declining prices over the first months of the pandemic when large global supplies and weaker demand weighed on prices.

Soybean and corn prices surged by more than 50 percent between August 2020 and February 2021. These prices were supported by weaker-than-expected harvests, first in the United States and more recently in South America, and strong demand from China, which is seeking to rebuild its hog population after an outbreak of African swine fever in 2019. Wheat increased by 38 percent, following dry winter wheat conditions across the US Great Plains, a small 2020 crop in the European Union, and strong stockpiling demand. Wheat prices received further support from a looming Russian export tax scheduled between February 15 and June 30 this year, aimed at combating domestic food price inflation.

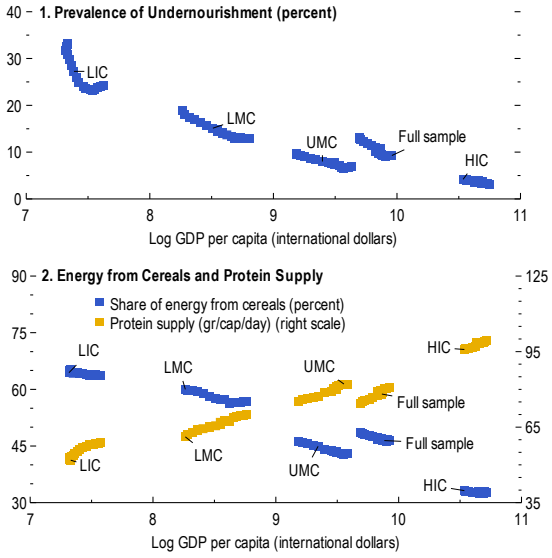
Food (In)security: Collateral Damage of the Pandemic?

Changes in access to and availability of food (*food security*) have been important across human history not only for their impact on people's health and their ability to thrive, but also by catalyzing political change and triggering conflict. The first world food crisis of modern times, between 1972 and 1975, led to 2 million hunger-related deaths and the violent toppling of incumbent governments. The increase in global food prices in the late 2000s ignited a series of anti-government protests that spread across the Middle East and North Africa.

Food (in)security also has significant repercussions on economic development. Undernourishment, especially in childhood, can have negative effects on physical and cognitive development, limiting educational attainment and lifetime earning potential, possibly, perpetuating inequality (Atinmo and others 2009). When the phenomenon is widespread across the population, it can reduce human capital accumulation and, thus, potential growth (Fogel 2004).

Despite the progress of the past two decades, undernourishment is still elevated in many countries (Figure 1.SF.3). The quality of institutions and income per capita are major long-term determinants (Timmer 2000); however, economic cycles, such as downturns, tend to exacerbate food security problems, halting progress and even reversing past gains. The ongoing global health crisis, by leading to a dramatic fall in incomes (Figure 1.SF.4), has, thus raised serious concerns about access to food in some regions and for some segments of the population. In some cases disruptions in food supply chains have exacerbated the problem, reducing the availability of food and raising domestic food prices (Figure 1.SF.4). The COVID-19 pandemic thus risks erasing decades of progress in reducing undernourishment globally, which jeopardizes United Nations Sustainable Development Goal No.2 bringing the number of undernourished people to zero by 2030.

Figure 1.SF.3. Undernourishment, Diet Composition, and Income



Sources: Food and Agriculture Organization; World Bank; and IMF staff calculations.
Note: The statistics refer to the estimation sample. Data labels use World Bank income group classification. Gr/cap/day = grams per capita a day; LIC = low income; LMC = lower middle income; UMC = upper middle income; HIC = high income.

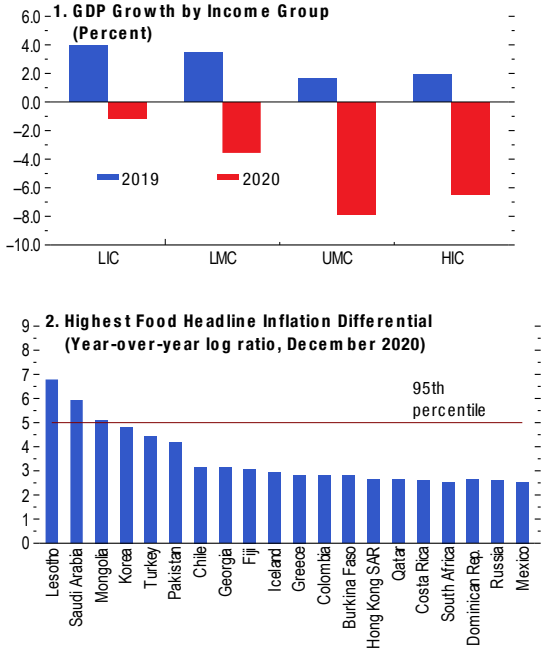
This Special Feature tries to answer the following questions: How is food insecurity affected by fluctuations in GDP and food prices? How effective are social transfers in containing increases in undernourishment in the short term? What drives domestic food price inflation?

What Is Food (In)security?

According to the United Nations, there is food and nutrition security if all people at all times have "physical, social and economic access to sufficient, safe and nutritious food that meets their preferences and dietary needs for an active and healthy life" (CSF, 2012). Absent these conditions, food insecurity arises.

This Special Feature focuses on the two dimensions of food security that are measurable and economically relevant: (1) caloric intake, proxied by "prevalence of undernourishment" which is the share of households with a caloric intake below a given threshold; and (2) diet composition (proxied by the cereal contribution to the overall caloric intake and protein supply).[6]

Figure 1.SF.4. The Impact of the Pandemic



Source: IMF staff calculations.
Note: In Panel 1, data labels use World Bank income group classification. Data are simple averages of each group. In Panel 2, the horizontal line is the 95th percentile for the food headline inflation differential since January 2015, which is 5 percent. HIC = high income; LIC = low income; LMC = lower middle income; UMC = upper middle income.

The next section studies how undernourishment and diet vary with fluctuations in economic activity and food prices and whether they react to countercyclical stabilizers such as spending on social transfers.

The Business Cycle Determinants of Food (In)security

Four main candidate factors have been selected to explain *changes* in the prevalence of undernourishment (Timmer, 2000): GDP per capita growth (to capture household income), food price inflation (to capture food supply and external factors), initial conditions, and social transfers (government policies aimed at protecting the vulnerable segments of the population).

Results indicate that GDP growth is the most important driver of fluctuations in undernourishment (Figure 1.SF.5). A 1 percentage point increase in GDP growth drives down undernourishment by 0.95 percent. The elasticity of undernourishment to GDP growth becomes more sizable for poorer countries but vanishes for high-income countries. This happens because a bigger share of the population is closer to undernourishment in middle- and low-income countries. Higher inequality reduces the elasticity of undernourishment to GDP

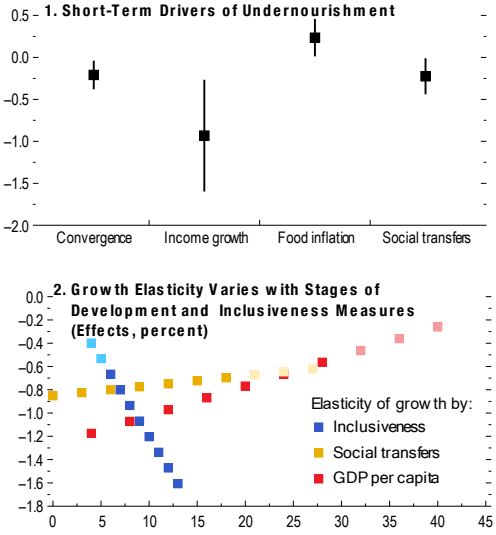
[6] Prevalence of undernourishment is measured by the Food and Agriculture Organization and is defined as the share of the population whose habitual food consumption is insufficient to provide adequate energy levels.

growth, suggesting that the same process that during good times makes growth more inclusive reverts when growth declines or the economy contracts.

Food price inflation is also relevant: a typical 2 percentage point increase in food price inflation tends to increase undernourishment by 0.24 percent.[7] Food inflation remains especially relevant for countries with per capita income between $10,000 and $20,000 (2017 purchasing-power-parity dollars) as these countries usually have a high weight of food in the consumer price index. (See the online annex). Social protection is a valuable shield against income and food price shocks as it mitigates their effects for a given level of economic development. Moreover, social transfers have a direct positive effect in reducing undernourishment (Figure 1.SF.5).[8]

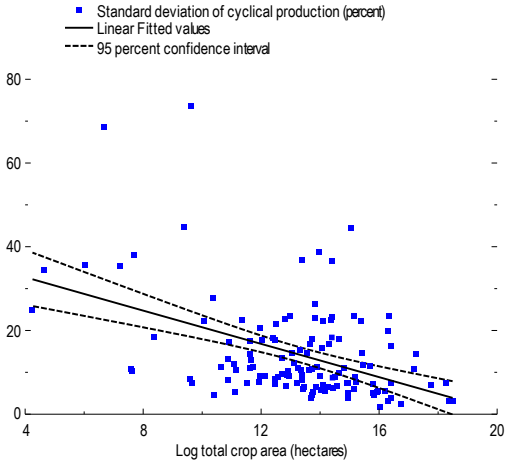
Finally, diet composition matters. Before descending into undernourishment when incomes decline, households change their diet by moving to cheaper staple foods. This margin of adjustment is quantitatively relevant in the econometric results (see the online annex). Negative GDP shocks tend to increase cereal consumption, and decrease protein consumption, as cereals are cheaper than animal protein. Changes in diet habits, however, are often perceived by lower-middle-income people as a descent into poverty—a major factor in raising social tension.

Figure 1.SF.5. Food Insecurity and the Business Cycle



Sources: Food and Agriculture Organization; and IMF staff calculations.
Note: In panel 1, the vertical lines show the 95 percent confidence intervals. Coefficients have been adjusted for the different variability of each regressor. In panel 2, the x-axis includes social transfers (as percent of GDP), inclusiveness (income share to the bottom 20 percent), and GDP per capita (thousands of international dollars). Statistically significant effects are shown by darker squares.

Figure 1.SF.6. Small Crop-Area Countries Experience Larger Production Shocks



Sources: Food and Agriculture Organization; World Bank; and IMF staff calculations

Determinants of Food Inflation

To analyze major determinants of domestic food inflation, this section uses a sample of 121 countries between 2001 and 2018 where annual food consumer price index inflation is regressed on world food price inflation, exchange rate appreciation against the US dollar, trend headline inflation (to control for monetary factors), and food supply shocks.

Econometric results show that the annual pass-through from international food prices to the domestic food consumer price index is about 0.26 for middle- and low- income countries and 0.14 for high-income countries. Not surprisingly, the pass-through is far below 1.0 since the

[7] Food inflation and changes in social transfer are two and eight times more volatile, respectively, than GDP growth in the econometric sample.
[8] In terms of how countries move together, convergence from high initial shares of undernourished is slow in absence of other improvements, about 0.4 percentage point year for a typical low-income country that starts with a 20 percent share of population undernourished.

transmission of international price variations across borders is often limited by taxes, subsidies, price controls, weak market integration, and local distribution costs. Similarly, the exchange rate pass-through is larger for middle- and low-income countries (0.23) than for high-income countries (0.08).

Even though external factors are relevant, food production is mostly consumed domestically. In fact, domestic food price shocks are an important driver of food price inflation. Moreover, countries with a small arable area tend to experience relatively larger shocks (Figure 1.SF.6). A typical domestic food production shock increases food inflation by about 0.3 percentage point, and the same shock on a regional scale increases food inflation by 0.7 percentage point (Table 1.SF.1). Even though heavy reliance on food imports can leave a country more affected by external factors, the increase in the pass-through is rather small and not significant in the econometric analysis. However, high dependence on food imports, tends to mitigate the impact of domestic food production shocks on food prices (see the online annex).

Table 1.SF.1. Food Supply Shocks' Impact on Food Inflation

	Domestic	Regional	World
Food Inflation Elasticity	-0.02	-0.13	-0.15
Supply Shock	-16.34	-5.84	-2.06
Impact on Food Inflation	0.28	0.73	0.31

Sources: International Energy Agency; and IMF staff calculations.
Note: The table shows the food inflation effects of negative food supply shocks at different aggregation levels (domestic, regional, and rest of the world). The "impact" is the product of the food inflation elasticity and the supply shock.

Table 1.SF.2. Food Supply Shocks Correlations

	Domestic	Rest-of-the-Region
Domestic	1.00	
Rest-of-the-Region	0.20	1.00
Rest-of-the-World	0.00	0.02

Sources: Food and Agriculture Organization; United States Department of Agriculture; and IMF staff calculations.
Note: Food production is the sum of production of maize, rice, soybeans, and wheat (in calorie terms). For each country domestic shocks are calculated as deviations from its Hodrick-Prescott production trend for 1990-2018. Rest-of-the-region shocks represent the population-weighted average of the shocks of other countries in the region. Rest-of-the-world shocks are constructed analogously. Standard World Bank classification is used for the regions.

Additional evidence that food trade can improve welfare comes from a simple observation: domestic food production shocks have a low correlation with those in other countries, and especially with global food production shocks (Table 1.SF.2). Since regional food supply shocks have a larger impact than domestic shocks, food trade integration should ideally extend beyond the region.

Conclusions

Income is the most important driver of food (in)security in low-income countries and some emerging markets. The COVID-19 pandemic, therefore, risks delaying the process of bringing the number of undernourished people to zero by 2030. Absent policy interventions, the 2020 decline in income and increase in food prices would lead, respectively, to a 62 million and 4 million increase in the number of hungry people. Governments should thus strengthen safety nets for the most vulnerable and mitigate the risk of food price spikes by guaranteeing the smooth functioning of food supply chains. Smaller food producers should exploit international food markets to smooth the impact of domestic production shocks on local food prices. This is particularly relevant as climate change is increasing the volatility of those shocks. International food markets should be kept open and food exporters should avoid export restrictions that exacerbate the global price impact of food production shocks and undermine confidence in international food markets. Finally, since trade is not a hedge against *global* food supply shocks, governments must take alternative measures that stimulate sufficient strategic food reserves at the regional level and encourage the development and adoption of more climate-resilient crops and production methods.

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Annex Table 1.1.1. European Economies: Real GDP, Consumer Prices, Current Account Balance, and Unemployment
(Annual percent change, unless noted otherwise)

	Real GDP			Consumer Prices 1/			Current Account Balance 2/			Unemployment 3/		
		Projections			Projections			Projections			Projections	
	2020	2021	2022	2020	2021	2022	2020	2021	2022	2020	2021	2022
Europe	**–5.3**	**4.4**	**4.0**	**2.0**	**3.1**	**2.7**	**2.0**	**2.1**	**2.1**	. . .	. . .	. . .
Advanced Europe	**–6.8**	**4.4**	**4.0**	**0.4**	**1.4**	**1.3**	**2.4**	**2.4**	**2.4**	**7.1**	**7.9**	**7.8**
Euro Area 4/,5/	–6.6	4.4	3.8	0.3	1.4	1.2	2.3	2.6	2.6	7.9	8.7	8.5
Germany	–4.9	3.6	3.4	0.4	2.2	1.1	7.1	7.6	7.0	4.2	4.4	3.7
France	–8.2	5.8	4.2	0.5	1.1	1.2	–2.3	–2.1	–1.8	8.2	9.1	9.2
Italy	–8.9	4.2	3.6	–0.1	0.8	0.9	3.6	3.5	3.3	9.1	10.3	11.6
Spain	–11.0	6.4	4.7	–0.3	1.0	1.3	0.7	0.8	1.5	15.5	16.8	15.8
The Netherlands	–3.8	3.5	3.0	1.1	1.4	1.5	10.0	9.0	8.9	3.8	4.9	4.7
Belgium	–6.4	4.0	3.1	0.4	1.7	1.9	–0.7	–0.9	–1.5	5.6	6.8	6.6
Austria	–6.6	3.5	4.0	1.4	1.6	1.8	2.3	2.4	2.5	5.3	5.5	5.3
Ireland	2.3	4.3	4.6	–0.5	0.6	1.9	5.8	5.8	5.9	5.9	5.8	5.2
Portugal	–7.6	3.7	4.8	–0.1	0.9	1.2	–1.2	–2.1	–1.3	6.8	7.7	7.3
Greece	–10.7	3.5	5.3	–1.3	0.4	0.9	–7.5	–5.8	–3.7	16.4	16.6	15.2
Finland	–3.7	2.2	2.6	0.4	0.7	1.5	–1.1	–0.8	–0.1	8.2	8.4	7.7
Slovak Republic	–5.2	4.4	4.5	2.0	1.2	1.9	–0.4	–1.5	–1.6	6.7	7.3	6.7
Lithuania	–0.8	3.2	3.2	1.1	1.5	1.9	7.9	6.2	4.8	8.9	8.4	7.6
Slovenia	–5.5	3.7	4.5	–0.1	0.8	1.5	7.3	6.9	6.6	5.1	5.4	5.0
Luxembourg	–3.5	4.6	3.6	0.0	0.9	1.8	4.4	4.9	4.8	6.3	6.7	6.4
Latvia	–3.6	3.9	5.2	0.1	2.1	2.2	3.0	0.5	0.2	8.2	7.2	6.7
Estonia	–3.2	3.7	4.0	–0.9	1.0	2.0	2.4	2.3	2.5	7.0	7.1	6.5
Cyprus	–5.0	3.0	3.9	–1.0	0.4	0.8	–9.5	–8.3	–6.1	8.5	7.5	7.0
Malta	–7.0	4.7	5.6	0.8	1.1	1.4	–0.6	0.2	1.2	4.3	4.3	4.1
United Kingdom	–9.9	5.0	5.5	0.9	1.5	1.9	–3.9	–3.9	–4.0	4.5	6.1	6.1
Switzerland	–3.0	3.5	2.5	–0.7	0.1	0.3	7.9	7.9	9.2	3.1	3.5	3.4
Sweden	–3.0	3.3	2.9	0.7	0.7	1.0	5.0	4.5	4.3	8.3	8.7	8.4
Czech Republic	–6.0	3.8	4.0	3.1	2.3	2.0	3.5	1.5	0.4	2.7	3.4	3.2
Norway	–0.8	3.9	4.0	1.3	2.2	2.0	2.5	5.4	4.8	4.6	4.3	4.0
Denmark	–3.3	2.8	2.9	0.3	1.1	1.4	7.4	7.5	7.4	5.6	5.6	5.5
Iceland	–6.6	3.7	3.6	2.9	3.2	2.5	1.0	1.0	1.7	6.4	6.0	5.0
San Marino	–9.7	4.5	3.4	0.2	0.8	0.9	1.9	1.1	1.1	7.3	6.6	6.4
Emerging and Developing Europe 6/	**–2.0**	**4.4**	**3.9**	**5.4**	**6.5**	**5.4**	**0.0**	**0.6**	**0.3**	. . .	. . .	. . .
Russia	–3.1	3.8	3.8	3.4	4.5	3.4	2.2	3.9	3.3	5.8	5.4	5.0
Turkey	1.8	6.0	3.5	12.3	13.6	11.8	–5.1	–3.4	–2.2	13.1	12.4	11.0
Poland	–2.7	3.5	4.5	3.4	3.4	2.7	3.5	1.8	1.0	3.2	4.9	4.5
Romania	–3.9	6.0	4.8	2.6	2.8	2.1	–5.1	–5.0	–4.7	5.0	4.9	4.9
Ukraine 7/	–4.2	4.0	3.4	2.7	7.9	6.8	4.3	–2.5	–3.6	9.0	8.6	8.4
Hungary	–5.0	4.3	5.9	3.3	3.6	3.5	–0.2	–0.4	–0.3	4.1	3.8	3.5
Belarus	–0.9	–0.4	0.8	5.5	6.9	5.5	0.1	–0.3	–1.7	4.1	4.5	4.4
Bulgaria 5/	–3.8	4.4	4.4	1.2	1.0	2.0	0.1	1.4	1.2	5.2	4.8	4.4
Serbia	–1.0	5.0	4.5	1.7	2.2	2.4	–4.3	–5.7	–5.5	13.3	13.0	12.7
Croatia	–9.0	4.7	5.0	0.3	0.7	1.2	–3.5	–2.3	–1.6	9.2	9.4	9.0

Source: IMF staff estimates.
Note: Data for some countries are based on fiscal years. Please refer to Table F in the Statistical Appendix for a list of economies with exceptional reporting periods.
1/ Movements in consumer prices are shown as annual averages. Year-end to year-end changes can be found in Tables A5 and A6 in the Statistical Appendix.
2/ Percent of GDP.
3/ Percent. National definitions of unemployment may differ.
4/ Current account position corrected for reporting discrepancies in intra-area transactions.
5/ Based on Eurostat's harmonized index of consumer prices except for Slovenia.
6/ Includes Albania, Bosnia and Herzegovina, Kosovo, Moldova, Montenegro, and North Macedonia.
7/ See country-specific note for Ukraine in the "Country Notes" section of the Statistical Appendix.

Annex Table 1.1.2. Asian and Pacific Economies: Real GDP, Consumer Prices, Current Account Balance, and Unemployment
(Annual percent change, unless noted otherwise)

	Real GDP			Consumer Prices 1/			Current Account Balance 2/			Unemployment 3/		
		Projections			Projections			Projections			Projections	
	2020	2021	2022	2020	2021	2022	2020	2021	2022	2020	2021	2022
Asia	**–1.5**	**7.5**	**5.4**	**2.5**	**1.6**	**2.3**	**2.6**	**2.1**	**1.7**	. . .	. . .	. . .
Advanced Asia	**–3.1**	**3.9**	**3.0**	**0.2**	**0.7**	**1.0**	**4.5**	**4.4**	**4.0**	**3.7**	**3.8**	**3.4**
Japan	–4.8	3.3	2.5	–0.0	0.1	0.7	3.3	3.6	3.2	2.8	2.8	2.4
Korea	–1.0	3.6	2.8	0.5	1.4	0.9	4.6	4.2	4.0	3.9	4.6	4.1
Australia	–2.9	3.5	2.9	0.8	1.3	1.6	2.1	1.5	–0.1	6.5	6.8	5.9
Taiwan Province of China	3.1	4.5	3.1	–0.2	0.9	1.2	14.0	13.5	13.5	3.9	3.8	3.8
Singapore	–5.4	5.2	3.2	–0.2	0.2	0.8	17.6	14.6	14.4	3.1	2.8	2.5
Hong Kong SAR	–6.1	4.3	3.8	0.3	1.4	1.9	6.5	5.5	5.0	5.9	5.3	4.3
New Zealand	–0.9	3.5	2.3	1.7	1.0	1.0	–0.8	–2.3	–2.7	4.8	5.9	5.3
Macao SAR	–59.4	62.5	36.6	1.0	2.4	2.5	–42.1	2.3	23.7	2.9	2.5	2.1
Emerging and Developing Asia	**–1.0**	**8.4**	**6.0**	**3.2**	**1.8**	**2.7**	**1.7**	**1.0**	**0.7**	. . .	. . .	. . .
China	2.3	8.1	5.6	2.5	0.3	1.9	2.0	1.6	1.4	3.8	3.6	3.6
India 4/	–8.0	12.5	6.9	6.2	4.9	4.1	1.0	–1.2	–1.6	. . .	. . .	. . .
ASEAN-5	**–3.4**	**4.9**	**6.1**	**1.4**	**2.3**	**2.7**	**1.8**	**0.3**	**0.3**	. . .	. . .	. . .
Indonesia	–2.1	4.3	5.8	2.0	2.0	3.1	–0.4	–1.3	–1.4	7.1	6.5	5.8
Thailand	–6.1	2.3	5.6	–0.8	1.3	1.0	3.3	0.3	2.4	2.0	1.5	1.0
Vietnam	2.9	6.5	7.2	3.2	3.9	3.9	2.2	2.4	1.9	3.3	2.7	2.4
Philippines	–9.5	6.9	6.5	2.6	3.4	3.0	3.2	–0.4	–2.2	10.4	7.4	6.3
Malaysia	–5.6	6.5	6.0	–1.1	2.0	2.0	4.4	3.8	3.7	4.5	3.8	3.6
Other Emerging and Developing Asia 5/	**–1.2**	**4.7**	**5.8**	**5.2**	**5.0**	**5.2**	**–2.3**	**–1.6**	**–2.3**	. . .	. . .	. . .
Memorandum												
Emerging Asia 6/	–1.0	8.5	6.0	3.1	1.7	2.5	1.8	1.1	0.8	. . .	. . .	. . .

Source: IMF staff estimates.
Note: Data for some countries are based on fiscal years. Please refer to Table F in the Statistical Appendix for a list of economies with exceptional reporting periods.
1/ Movements in consumer prices are shown as annual averages. Year-end to year-end changes can be found in Tables A5 and A6 in the Statistical Appendix.
2/ Percent of GDP.
3/ Percent. National definitions of unemployment may differ.
4/ See country-specific note for India in the "Country Notes" section of the Statistical Appendix.
5/ Other Emerging and Developing Asia comprises Bangladesh, Bhutan, Brunei Darussalam, Cambodia, Fiji, Kiribati, Lao P.D.R., Maldives, Marshall Islands, Micronesia, Mongolia, Myanmar, Nauru, Nepal, Palau, Papua New Guinea, Samoa, Solomon Islands, Sri Lanka, Timor-Leste, Tonga, Tuvalu, and Vanuatu.
6/ Emerging Asia comprises the ASEAN-5 economies, China, and India.

Annex Table 1.1.3. Western Hemisphere Economies: Real GDP, Consumer Prices, Current Account Balance, and Unemployment
(Annual percent change, unless noted otherwise)

	Real GDP			Consumer Prices 1/			Current Account Balance 2/			Unemployment 3/		
		Projections			Projections			Projections			Projections	
	2020	2021	2022	2020	2021	2022	2020	2021	2022	2020	2021	2022
North America	**–4.1**	**6.1**	**3.5**	**1.4**	**2.3**	**2.4**	**–2.8**	**–3.4**	**–2.7**	**. . .**	**. . .**	**. . .**
United States	–3.5	6.4	3.5	1.2	2.3	2.4	–3.1	–3.9	–3.1	8.1	5.8	4.2
Mexico	–8.2	5.0	3.0	3.4	3.5	3.1	2.5	1.8	1.0	4.4	3.6	3.3
Canada	–5.4	5.0	4.7	0.7	1.7	2.0	–1.9	–0.8	–1.3	9.6	8.0	6.5
Puerto Rico 4/	–7.5	1.5	0.7	–1.2	1.8	0.7	. . .	. . .	. . .	12.0	11.5	10.0
South America 5/	**–6.6**	**4.3**	**2.8**	**8.1**	**8.8**	**8.2**	**–0.7**	**–0.5**	**–0.8**	**. . .**	**. . .**	**. . .**
Brazil	–4.1	3.7	2.6	3.2	3.9	3.6	–0.9	–0.6	–0.9	13.2	14.9	13.6
Argentina	–10.0	5.5	2.5	42.0	. . .	. . .	1.0	2.5	1.5	11.4	10.6	9.3
Colombia	–6.8	5.1	3.6	2.5	2.1	2.6	–3.3	–3.8	–3.9	16.1	12.8	12.3
Chile	–6.0	5.8	3.7	3.0	3.1	3.0	0.3	–1.6	–1.3	10.9	9.3	8.5
Peru	–11.1	8.5	5.2	1.8	2.0	2.0	0.5	–0.4	–0.7	13.9	9.7	7.6
Ecuador	–7.5	2.5	1.3	-0.3	0.5	2.4	0.5	1.9	2.0	5.3	4.5	4.4
Venezuela	–30.0	–10.0	–5.0	2,355	5,500	5,500	–3.5	–0.8	–2.3	55.5	58.4	60.1
Bolivia	–7.7	5.5	4.2	0.9	3.9	3.7	–2.5	–3.7	–4.2	8.0	4.0	4.0
Paraguay	–0.9	4.0	4.0	1.8	2.7	3.2	1.6	0.7	0.0	6.6	6.1	5.9
Uruguay	–5.7	3.0	3.1	9.8	8.3	7.4	–1.4	–2.2	–1.5	10.4	10.3	9.1
Central America 6/	**–5.7**	**4.2**	**4.1**	**1.9**	**3.1**	**2.8**	**–0.2**	**–2.1**	**–2.0**	**. . .**	**. . .**	**. . .**
Caribbean 7/	**–4.3**	**3.3**	**11.1**	**7.7**	**8.4**	**7.5**	**–4.7**	**–5.6**	**–3.2**	**. . .**	**. . .**	**. . .**
Memorandum												
Latin America and the Caribbean 8/	–6.9	4.5	3.1	6.4	7.0	6.4	0.1	–0.2	–0.5	. . .	. . .	. . .
Eastern Caribbean Currency Union 9/	–16.0	–0.2	9.3	–0.5	1.4	1.7	–15.3	–21.6	–12.5	. . .	. . .	. . .

Source: IMF staff estimates.
Note: Data for some countries are based on fiscal years. Please refer to Table F in the Statistical Appendix for a list of economies with exceptional reporting periods.
1/ Movements in consumer prices are shown as annual averages. Year-end to year-end changes can be found in Tables A5 and A6 in the Statistical Appendix. Aggregates exclude Venezuela.
2/ Percent of GDP.
3/ Percent. National definitions of unemployment may differ.
4/ Puerto Rico is a territory of the United States, but its statistical data are maintained on a separate and independent basis.
5/ See country-specific notes for Argentina and Venezuela in the "Country Notes" section of the Statistical Appendix.
6/ Central America refers to CAPDR (Central America, Panama, and the Dominican Republic) and comprises Costa Rica, Dominican Republic, El Salvador, Guatemala, Honduras, Nicaragua, and Panama.
7/ The Caribbean comprises Antigua and Barbuda, Aruba, The Bahamas, Barbados, Belize, Dominica, Grenada, Guyana, Haiti, Jamaica, St. Kitts and Nevis, St. Lucia, St. Vincent and the Grenadines, Suriname, and Trinidad and Tobago.
8/ Latin America and the Caribbean comprises Mexico and economies from the Caribbean, Central America, and South America. See country-specific notes for Argentina and Venezuela in the "Country Notes" section of the Statistical Appendix.
9/ Eastern Caribbean Currency Union comprises Antigua and Barbuda, Dominica, Grenada, St. Kitts and Nevis, St. Lucia, and St. Vincent and the Grenadines as well as Anguilla and Montserrat, which are not IMF members.

Annex Table 1.1.4. Middle East and Central Asia Economies: Real GDP, Consumer Prices, Current Account Balance, and Unemployment
(Annual percent change, unless noted otherwise)

	Real GDP			Consumer Prices 1/			Current Account Balance 2/			Unemployment 3/		
		Projections			Projections			Projections			Projections	
	2020	2021	2022	2020	2021	2022	2020	2021	2022	2020	2021	2022
Middle East and Central Asia	**–3.2**	**3.8**	**3.8**	**10.1**	**11.1**	**8.0**	**–3.1**	**0.3**	**0.1**	**. . .**	**. . .**	**. . .**
Oil Exporters 4/	**–4.8**	**4.7**	**3.4**	**8.1**	**10.2**	**7.7**	**–2.8**	**2.1**	**1.8**	**. . .**	**. . .**	**. . .**
Saudi Arabia	–4.1	2.9	4.0	3.4	2.7	2.0	–2.1	2.8	1.9	. . .	. . .	. . .
Iran	–1.4	3.0	2.1	36.5	39.0	27.5	–0.7	1.1	1.1	11.6	11.8	12.3
United Arab Emirates	–5.9	3.1	2.6	–2.1	2.9	1.2	3.1	7.1	6.3	. . .	. . .	. . .
Algeria	–6.0	2.9	2.7	2.4	4.9	6.0	–10.5	–7.7	–8.7	14.2	14.5	14.9
Kazakhstan	–2.6	3.2	4.0	6.8	6.4	5.0	–3.6	–1.0	–1.5	5.5	5.2	5.0
Iraq	–10.9	1.1	4.4	0.6	9.4	7.5	–14.8	–0.0	–0.6	. . .	. . .	. . .
Qatar	–2.6	2.3	3.6	–2.5	2.4	2.9	–3.4	7.1	9.6	. . .	. . .	. . .
Kuwait	–8.1	0.7	3.2	2.1	2.3	2.5	–1.1	8.5	8.1	. . .	. . .	. . .
Azerbaijan	–4.3	2.3	1.7	2.8	3.5	3.2	–0.9	1.1	0.5	6.5	5.8	5.7
Oman	–6.4	1.8	7.4	–0.9	3.8	2.4	–10.0	–6.4	–2.7	. . .	. . .	. . .
Turkmenistan	0.8	4.6	3.9	7.6	8.0	6.5	–0.5	0.8	–0.1	. . .	. . .	. . .
Oil Importers 5/	**–0.7**	**2.4**	**4.4**	**13.3**	**12.5**	**8.6**	**–3.8**	**–4.4**	**–4.3**	**. . .**	**. . .**	**. . .**
Egypt	3.6	2.5	5.7	5.7	4.8	7.2	–3.1	–4.0	–4.0	8.3	9.8	9.4
Pakistan	–0.4	1.5	4.0	10.7	8.7	8.0	–1.1	–1.5	–1.8	4.5	5.0	4.8
Morocco	–7.0	4.5	3.9	0.6	0.8	1.2	–2.2	–3.8	–4.0	11.9	10.5	9.7
Uzbekistan	1.6	5.0	5.3	12.9	10.3	11.2	–5.4	–6.4	–5.9	. . .	. . .	. . .
Sudan	–3.6	0.4	1.1	163.3	197.1	44.5	–17.5	–11.2	–13.5	26.8	28.4	29.7
Tunisia	–8.2	3.8	2.4	5.7	5.8	6.3	–6.8	–9.5	–9.4	. . .	. . .	. . .
Jordan	–2.5	2.2	2.8	0.4	1.3	1.7	–7.9	–7.3	–5.3	. . .	. . .	. . .
Lebanon 6/	–25.0	. . .	. . .	88.2	. . .	. . .	–14.3	. . .	. . .	. . .	. . .	. . .
Afghanistan	–5.0	4.0	4.5	5.6	5.1	4.5	10.7	10.0	8.3	. . .	. . .	. . .
Georgia	–6.1	3.5	5.8	5.2	3.8	2.7	–12.3	–11.5	–8.0	. . .	. . .	. . .
Armenia	–7.6	1.0	3.5	1.2	3.9	3.2	–4.6	–6.7	–6.6	24.2	22.8	22.7
Kyrgyz Republic	–8.0	6.0	4.6	6.3	8.6	5.4	–8.2	–8.2	–7.0	6.6	6.6	6.6
Tajikistan	4.5	6.0	4.5	8.6	8.0	6.5	–2.3	–2.3	–2.3	. . .	. . .	. . .
Memorandum												
Caucasus and Central Asia	–1.9	3.7	4.1	7.4	6.9	6.2	–3.6	–2.1	–2.3	. . .	. . .	. . .
Middle East, North Africa, Afghanistan, and Pakistan	–3.4	3.8	3.8	10.5	11.7	8.3	–3.0	0.6	0.4	. . .	. . .	. . .
Middle East and North Africa	–3.8	4.1	3.7	10.5	12.3	8.4	–3.3	0.7	0.5	. . .	. . .	. . .
Israel 7/	–2.4	5.0	4.3	–0.6	0.3	0.6	4.9	4.1	3.8	4.3	5.0	4.6
Maghreb 8/	–8.7	14.7	3.3	3.1	4.9	5.3	–7.3	–5.9	–6.5	. . .	. . .	. . .
Mashreq 9/	1.4	2.0	5.2	8.4	7.1	7.4	–4.3	–5.0	–4.5	. . .	. . .	. . .

Source: IMF staff estimates.
Note: Data for some countries are based on fiscal years. Please refer to Table F in the Statistical Appendix for a list of economies with exceptional reporting periods.
1/ Movements in consumer prices are shown as annual averages. Year-end to year-end changes can be found in Tables A5 and A6 in the Statistical Appendix.
2/ Percent of GDP.
3/ Percent. National definitions of unemployment may differ.
4/ Includes Bahrain, Libya, and Yemen.
5/ Includes Djibouti, Mauritania, Somalia, and West Bank and Gaza. Excludes Syria because of the uncertain political situation. See country-specific note for Lebanon in the "Country Notes" section of the Statistical Appendix.
6/ See country-specific note for Lebanon in the "Country Notes" section of the Statistical Appendix.
7/ Israel, which is not a member of the economic region, is included for reasons of geography but is not included in the regional aggregates.
8/ The Maghreb comprises Algeria, Libya, Mauritania, Morocco, and Tunisia.
9/ The Mashreq comprises Egypt, Jordan, Lebanon, and West Bank and Gaza. Syria is excluded because of the uncertain political situation.

Annex Table 1.1.5. Sub-Saharan African Economies: Real GDP, Consumer Prices, Current Account Balance, and Unemployment
(Annual percent change, unless noted otherwise)

	Real GDP			Consumer Prices 1/			Current Account Balance 2/			Unemployment 3/		
		Projections			Projections			Projections			Projections	
	2020	2021	2022	2020	2021	2022	2020	2021	2022	2020	2021	2022
Sub-Saharan Africa	**–2.0**	**3.3**	**4.0**	**10.8**	**9.7**	**7.7**	**–3.9**	**–3.8**	**–3.8**	**. . .**	**. . .**	**. . .**
Oil Exporters 4/	**–2.3**	**2.2**	**2.2**	**13.9**	**16.0**	**12.7**	**–3.6**	**–2.0**	**–1.6**	**. . .**	**. . .**	**. . .**
Nigeria	–1.8	2.5	2.3	13.2	16.0	13.5	–3.7	–2.2	–1.8	. . .	. . .	. . .
Angola	–4.0	0.4	2.4	22.3	22.3	13.1	–0.6	0.8	0.5	. . .	. . .	. . .
Gabon	–1.8	1.2	2.7	1.3	2.0	2.0	–5.1	–0.3	–0.2	. . .	. . .	. . .
Chad	–0.9	1.8	2.6	3.5	3.0	3.0	–8.8	–6.6	–6.3	. . .	. . .	. . .
Equatorial Guinea	–5.8	4.0	–5.9	4.8	1.5	3.1	–8.4	–3.6	–4.4	. . .	. . .	. . .
Middle-Income Countries 5/	**–4.6**	**3.6**	**3.5**	**4.5**	**4.7**	**4.7**	**–1.6**	**–2.8**	**–3.1**	**. . .**	**. . .**	**. . .**
South Africa	–7.3	2.8	2.0	3.3	3.9	4.4	1.4	–1.1	–1.9	28.8	29.5	30.6
Ghana	0.6	4.3	6.0	9.9	9.1	8.3	–4.2	–4.2	–5.0	. . .	. . .	. . .
Côte d'Ivoire	2.3	6.0	6.5	2.5	2.0	1.6	–3.6	–3.6	–3.4	. . .	. . .	. . .
Cameroon	–2.8	3.4	4.3	2.8	2.2	2.1	–5.3	–4.4	–3.2	. . .	. . .	. . .
Zambia	–3.5	0.6	1.1	16.3	17.8	14.7	1.5	6.5	5.6	. . .	. . .	. . .
Senegal	0.8	5.2	6.0	2.5	2.0	1.7	–11.0	–12.8	–11.7	. . .	. . .	. . .
Low-Income Countries 6/	**0.9**	**4.2**	**6.2**	**14.2**	**8.5**	**6.0**	**–6.8**	**–7.1**	**–7.2**	**. . .**	**. . .**	**. . .**
Ethiopia	6.1	2.0	8.7	20.4	13.1	8.0	–4.6	–3.6	–3.9	. . .	. . .	. . .
Kenya	–0.1	7.6	5.7	5.3	5.0	5.0	–4.8	–5.3	–5.4	. . .	. . .	. . .
Tanzania	1.0	2.7	4.6	3.0	3.3	3.6	–2.7	–4.3	–4.0	. . .	. . .	. . .
Uganda	–2.4	5.9	6.2	3.8	3.2	4.9	–8.2	–7.0	–5.2	. . .	. . .	. . .
Democratic Republic of the Congo	–0.1	3.8	4.9	11.3	10.9	7.5	–4.0	–3.4	–3.4	. . .	. . .	. . .
Mali	–2.0	4.0	6.0	0.7	1.5	2.0	–2.0	–3.6	–3.9	. . .	. . .	. . .
Burkina Faso	0.8	4.3	5.2	1.9	2.7	2.6	–3.7	–4.5	–4.8	. . .	. . .	. . .

Source: IMF staff estimates.
Note: Data for some countries are based on fiscal years. Please refer to Table F in the Statistical Appendix for a list of economies with exceptional reporting periods.
1/ Movements in consumer prices are shown as annual averages. Year-end to year-end changes can be found in Table A6 in the Statistical Appendix.
2/ Percent of GDP.
3/ Percent. National definitions of unemployment may differ.
4/ Includes Equatorial Guinea and South Sudan.
5/ Includes Botswana, Cabo Verde, Eswatini, Lesotho, Mauritius, Namibia, and Seychelles.
6/ Includes Benin, Burkina Faso, Burundi, Central African Republic, Comoros, Eritrea, The Gambia, Guinea, Guinea-Bissau, Liberia, Malawi, Mali, Mozambique, Niger, Rwanda, São Tomé and Príncipe, Sierra Leone, Togo, and Zimbabwe.

Annex Table 1.1.6. Summary of World Real per Capita Output

(Annual percent change; in constant 2017 international dollars at purchasing power parity)

	Average									Projections	
	2003–12	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
World	**2.5**	**2.0**	**2.2**	**2.1**	**2.0**	**2.5**	**2.4**	**1.6**	**–4.5**	**4.8**	**3.4**
Advanced Economies	**1.0**	**0.9**	**1.6**	**1.9**	**1.2**	**2.0**	**1.9**	**1.2**	**–5.2**	**4.7**	**3.3**
United States	1.0	1.2	1.8	2.3	1.0	1.7	2.4	1.7	–4.0	5.8	2.9
Euro Area 1/	0.5	–0.5	1.1	1.7	1.6	2.4	1.7	1.1	–7.0	4.3	3.7
Germany	1.3	0.2	1.8	0.6	1.4	2.2	1.0	0.3	–5.0	3.4	3.3
France	0.6	0.1	0.4	0.7	0.8	2.0	1.5	1.3	–8.4	5.5	3.9
Italy	–0.7	–2.4	–0.5	0.8	1.5	1.8	1.1	0.5	–8.7	4.3	3.7
Spain	–0.2	–1.1	1.7	3.9	2.9	2.8	2.0	1.1	–11.0	6.3	4.3
Japan	0.7	2.2	0.5	1.7	0.8	1.8	0.8	0.5	–4.5	3.6	2.9
United Kingdom	0.7	1.5	2.1	1.6	0.9	1.1	0.6	0.9	–10.3	4.5	5.0
Canada	0.8	1.3	1.8	–0.1	–0.0	1.8	1.0	0.4	–6.5	4.2	3.5
Other Advanced Economies 2/	2.6	1.8	2.2	1.5	1.7	2.4	2.0	1.2	–3.0	3.6	2.7
Emerging Market and Developing Economies	**4.8**	**3.5**	**3.1**	**2.8**	**3.0**	**3.4**	**3.2**	**2.3**	**–3.6**	**5.2**	**3.8**
Emerging and Developing Asia	7.4	5.9	5.9	5.9	5.8	5.7	5.6	4.5	–1.9	7.6	5.3
China	10.0	7.2	6.9	6.5	6.2	6.4	6.3	5.6	2.0	7.8	5.3
India 3/	6.3	5.1	6.2	6.8	7.1	5.7	5.4	2.9	–8.7	11.5	5.9
ASEAN-5 4/	4.1	3.7	3.4	3.7	3.9	4.3	4.2	3.7	–4.6	3.9	5.1
Emerging and Developing Europe	4.5	2.8	1.5	0.5	1.6	3.9	3.3	2.3	–2.2	4.3	3.8
Russia	4.9	1.5	–1.1	–2.2	0.0	1.8	2.9	2.1	–3.1	3.8	3.8
Latin America and the Caribbean	2.6	1.7	0.1	–0.8	–1.8	0.2	0.2	–1.1	–8.0	3.6	2.3
Brazil	2.7	2.1	–0.3	–4.4	–4.1	0.5	1.0	0.6	–4.6	3.0	1.9
Mexico	0.8	0.1	1.6	2.1	1.5	1.0	1.1	–1.0	–9.1	4.0	2.1
Middle East and Central Asia	2.4	0.4	0.5	0.5	2.4	–0.0	–0.2	–0.6	–5.4	1.2	1.9
Saudi Arabia	2.2	–0.0	2.5	1.7	–0.6	–3.3	–0.0	–1.6	–6.0	0.9	2.0
Sub-Saharan Africa	2.8	2.3	2.5	0.5	–1.2	0.4	0.5	0.5	–4.6	0.7	1.3
Nigeria	4.9	2.6	3.5	–0.0	–4.2	–1.8	–0.7	–0.4	–4.3	–0.0	–0.2
South Africa	2.0	0.9	0.3	–0.3	–1.1	–0.1	–0.7	–1.3	–8.6	1.3	0.4
Memorandum											
European Union	1.0	–0.2	1.5	2.1	1.9	2.8	2.1	1.5	–6.4	4.2	3.8
Middle East and North Africa	1.7	–0.5	–0.2	0.2	2.6	–1.0	–1.0	–1.3	–6.2	1.4	1.9
Emerging Market and Middle-Income Economies	5.1	3.7	3.3	3.0	3.3	3.6	3.5	2.5	–3.5	5.7	4.1
Low-Income Developing Countries	3.6	3.5	3.8	2.1	1.5	2.6	2.7	2.9	–2.2	2.0	3.0

Source: IMF staff estimates.
Note: Data for some countries are based on fiscal years. Please refer to Table F in the Statistical Appendix for a list of economies with exceptional reporting periods.
1/ Data calculated as the sum of individual euro area countries.
2/ Excludes the Group of Seven (Canada, France, Germany, Italy, Japan, United Kingdom, United States) and euro area countries.
3/ See country-specific note for India in the "Country Notes" section of the Statistical Appendix.
4/ Indonesia, Malaysia, Philippines, Thailand, Vietnam.

CHAPTER 1

ONLINE ANNEX

Annex 1.SF.1.

Food Insecurity and the Business Cycle

This appendix presents the econometric analysis behind 1) Figure 1.SF.3 (prevalence of undernourished); 2) the results about the effect of income shocks on the diet; and 3) Figure 1.SF.5 (transmission channels).

Main Econometric Specification. The share of households that falls below some hypothetical national food security line depends on average income, on distributional aspects related to the shape of income distribution (inequality), and on the general level of food prices. More formally,

$$\Delta y_{it} = \beta_0 + \theta ln y_0 + \beta_1 \Delta X_{it} + \beta_2 W_{it} + \beta_3 W_{it} \Delta X_{it} + \gamma_i + e_{it} \qquad (1)$$

where y_{it} measures food insecurity for country i at time t, proxied by two variables, namely, the (log) prevalence of undernourished and diet composition. The right-hand side includes country-specific unobserved changes, γ_i, while the matrix X_{it} includes (log) GDP per capita, food CPI, and a redistribution measure proxied by per capita social protection expenditure. The initial (log) level of undernourishment has been introduced to investigate convergence among countries towards some "common level" of food insecurity. The Hausman test does not reject random effects, which are preferred being more efficient and necessary to identify the convergence coefficient. To investigate transmission channels, regressors are interacted with selected structural characteristics of the economy such as GDP per capita, the income share held by the bottom 20 percent, the level of social protection expenditure, and food import dependency ratio. Finally, to warn off concerns of endogeneity bias from contemporaneous reverse causality for ΔX_{it}, we adopt an instrumental variables approach, whereby the instruments are given by lagged values of the right-hand side variables (Reed, 2015). The set of instruments for W_{it} is sourced from the literature and includes the contemporaneous age dependency ratio in the population, the rainfall deviations from their long-term average and seasonal temperature levels.

Annex Table 1.SF.1.1. Prevalence of Undernourished. GDP Growth by Far The Lasrgest Driver Globally

	(1)	(2)	(3)	(4)
y0		-0.013***		-0.008**
		(0.002)		(0.003)
Δln GDP pc	-0.263***	-0.283***	-1.120*	-0.932***
	(0.094)	(0.093)	(0.582)	(0.340)
Δ Food inflation	0.031	0.030	0.171*	0.151**
	(0.023)	(0.023)	(0.096)	(0.073)
Δln Social transfers	-0.009**	-0.010**	-0.023	-0.028**
	(0.004)	(0.004)	(0.016)	(0.014)
_cons	-0.010***	-0.043***		-0.013
	(0.002)	(0.007)		(0.016)
N	2232	2232	1935	1937
Estimation	FE	RE	FE-IV	RE-IV
Instruments			L.X, L2.X	L.X, L2.X, y0
Instrumented			All ΔX	All ΔX

Sources: UN' FAO, IMF data and IMF staff calculations.

Note: The standard deviation in the estimation sample of the covariates are 0.939, 0.037, 0.057 and 0.298, respectively.

Prevalence of Undernourished. Results are presented in Annex Table 1.SF.1.1. A 1 percentage point increase in economic growth leads to an approximately 1 percent reduction in the share of undernourished (Annex Table 1.SF.1.1).

The elasticity of undernourishment to inflation is close to 0.2 percent. In the absence of instruments, magnitudes decline.

Diet Composition. Economic growth is the only driver of changes in the share of energy derived from non-meat items. For a 1 percentage point increase in economic growth, the share of energy from cereals, roots and tubers decreases by 0.06 percent (Annex Table 1.SF.1.2). For every 1 percentage point increase in growth, average total protein intake increases by 0.55 percent, while an increase in food inflation of 1 percentage point reduces protein consumption by 0.1 percent.[1]

Annex Table 1.SF.1.2. Diet (Re)composition Acts As Growth Shock Absorber

	(1) Cereal share	(2) Total protein	(3) Cereal share	(4) Total protein
ΔIn GDP pc	-0.066***	0.102***	-0.265	0.551*
	(0.015)	(0.014)	(0.177)	(0.331)
Δ Food inflation	0.001	-0.006	0.053	-0.104*
	(0.009)	(0.008)	(0.038)	(0.059)
ΔIn Social transfers	0.001	-0.001	-0.008	0.006
	(0.002)	(0.002)	(0.011)	(0.014)
_cons	-0.001	0.002***		
	(0.001)	(0.001)		
N	2139	2139	1810	1810
Estimation	FE	FE	FE-IV	FE-IV
Instruments			L.X, L2.X	L.X, L2.X
Instrumented			All ΔX	All ΔX

Sources: UN' FA O, IMF data and IMF staff calculations.

Note: The standard deviation in the estimation sample of the covariates are 0.040, 0.059 and 0.300, respectively.

Transmission Channels. Economic growth is interacted with the four variables in W_{it} and similarly for food inflation and social transfer changes (Annex Table 1.SF.1.3). The coefficient on growth ranges from -1.1 towards zero as countries grow richer. Growth is more effective in reducing hunger in countries with more inclusive economic systems in which the bottom 20 percent of society holds larger shares of national income. Further, growth is complementary with social protection in reducing hunger, since while social protection spending reaches considerable levels in the economy, growth becomes irrelevant in reducing undernourishment.

Annex Table 1.SF.1.3. Prevalence of Undernourished. Transmission Channels

	(1)
ΔIn GDP pc	-0.468
	(1.389)
Δ Food inflation	0.153
	(0.104)
ΔIn Social transfers	-0.021
	(0.063)
ΔIn GDP pc # GDP pc	0.020
	(0.040)
ΔIn GDP pc # Income bottom 20%	-16.14
	(14.32)
ΔIn GDP pc # Soc. prot. exp.	1.920
	(6.608)
ΔIn GDP pc # Food import dep.	0.960
	(5.588)
N	1644

Sources: UN FAO, IMF data and IMF staff calculation

Note: Column 1 shows estimates of the equation with interactions of W with growth. Only relevant coefficients are reported.

Domestic Food Price Inflation: Econometric Analysis.

To explain variation in domestic food price inflation, a panel dataset that covers 121 countries between 2001-2018 is employed. The main goals of the regression analysis are to estimate (i) the pass-through from world food price inflation to domestic food price inflation and (ii) the effect of food production shocks on domestic food price inflation.

Letting the indices *i* and *t* refer to countries and years respectively, the following specification is estimated, which relates domestic food price inflation, Δy_{it}, to contemporaneous and lagged world food price inflation, $\Delta y_{i,t}^{w}$ and $\Delta y_{i,t-1}^{w}$, and a vector of lagged per capita food supply shocks (in logs) $\boldsymbol{S_{i,t-1}}$:

$$\Delta y_{it} = \beta_0 + \beta_1 \Delta y_{i,t}^{w} + \beta_2 \Delta y_{i,t-1}^{w} + \boldsymbol{\beta_3 S_{i,t-1}} + \boldsymbol{\beta_4 X_{it}} + u_i + year + \varepsilon_{it} \qquad (2)$$

[1] For the cereal energy share we prefer the FE to the FE-IV estimates, since the overidentification test did not provide sufficient evidence in support of the null hypothesis of valid instruments, while for total protein we rely on the FE-IV estimates based on the IV diagnostic test.

where $\boldsymbol{X_{it}}$ is a vector of control variables, including trend headline inflation (to control for monetary factors) and exchange rate appreciation (as most international food commodities are traded in USD), u_i represents country fixed effects to control for average differences across countries of (unobservable) time-invariant predictors of food inflation, and $year$ represents a year trend.[2] Food supply per capita shocks are calculated at domestic, regional, and rest-of-world level.[3]

Using the benchmark specification (Annex Table 1.SF.1.4, column 4) results indicate that the pass-through from world food inflation to domestic food inflation is about 26.4 percent. A negative 10 percent domestic food supply shock raises domestic food inflation by 0.24 p.p. At the 10th percentile in terms of food import dependency, however, the effect is much larger, that is, 0.82 p.p., whereas at the 90th percentile the effect is very close to 0. The exchange rate pass-through equals 19 percent.

In Annex Table 1.SF.1.5 we extend our empirical specification by also including food supply shocks at the regional and rest-of-world level. Once we control for world food price inflation, the rest-of-world food supply shock is no longer significant[4], while the domestic and regional shocks remain statistically significant (column 6). Based on this specification, domestic and regional supply shocks of 10 percent raise domestic food prices by 0.1 p.p. and 0.7 p.p. respectively, showing the importance of stable food supply also at the local and regional level. Since the bulk of international trade including food is intra-regional rather than inter-regional, this can explain why regional supply shocks remain a strong determinant of domestic food prices.

Regional shocks tend to be smaller than domestic shocks, however, as the effects of a negative shock in one country of the region tend to be washed out by a positive shock in another. It is found that a negative supply shock of one standard deviation increases food price inflation by 0.3 p.p. in the case of a domestic shock, and by 0.7 p.p. in the case of a regional shock. Thus, regional shocks can explain more of the variation in food price inflation than domestic shocks, but the difference between those is smaller than the difference in magnitude between the regression coefficients.

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[2] Food CPI and headline CPI represent a combination of data from Haver Analytics and the International Monetary Fund (where we use log-differences and multiply by 100 to obtain the inflation variables (in % change)); exchange rates (in US$/LCU) are from the International Monetary Fund (and transformed into our appreciation variable using log-differences); food supply per capita is the sum of production of 4 major staple foods (maize, rice, soybeans, wheat) (in kcal/capita/day) and is from the Food and Agriculture Organization (and for which we obtain the % deviation from trend production using the cyclical component from a Hodrick-Prescott decomposition); and import dependency is the ratio of food imports (in current USD) divided by the sum of food production, food imports minus food exports (all in current USD) and comes from the Food and Agriculture Organization.

[3] The regional supply shock for country *i* represents the average percentage deviation from trend production in all countries within the region, except country *i*. The rest-of-world shock for country i represents the average percentage deviation from trend production in all countries outside the country's region. Regions are defined following the World Bank classification which distinguishes between 7 regions in the world.

[4] Indeed, a simple regression of annual world food price inflation on global GDP growth and world food supply shocks shows that negative world food supply shocks increase world food price inflation.

Annex Table 1.SF.1.4. Static Specification With Supply Shocks Obtained From HP Filter

(Domestic food supply shocks only)

	(1) Food Inflation	(2) Food Inflation	(3) Food Inflation	(4) Food Inflation
Headline Inflation - trend	1.281***	1.078***	1.076***	1.076***
	(0.121)	(0.0815)	(0.0817)	(0.0814)
Exchange Rate (in USD/LCU) (log difference)	-0.0598*	-0.168***	-0.169***	-0.170***
	(0.0252)	(0.0264)	(0.0265)	(0.0267)
L.Domestic Food Supply p.c. - detrended (log)	-0.0236***	-0.0126*	-0.0124*	-0.0831**
	-0.0069	-0.005	-0.0049	(0.0268)
FAO Food Price Index (log difference)		0.134***	0.135***	0.165***
		(0.0132)	(0.0133)	(0.0425)
L.FAO Food Price Index (log difference)		0.0758***	0.0763***	0.0992**
		-0.0076	-0.0077	(0.0300)
Food Import Dependency (log) # FAO food price index (log difference)				-0.00782
				-0.0095
Food Import Dependency (log) # L.FAO food price index (log difference)				-0.00615
				-0.0067
Food Import Dependency (log)			-0.248	-0.178
			(0.300)	(0.301)
Food Import Dependency (log) # L.Domestic Food Supply p.c. - detrended (log)				0.0171**
				(0.00614)
Year Trend	-0.00646	0.0717***	0.0800**	0.0774**
	(0.0247)	(0.0208)	(0.0240)	(0.0239)
Model	fe	fe	fe	fe
R^2	0.348	0.484	0.485	0.487
Observations	1596	1596	1596	1596
# of countries	114	114	114	114

Sources: Food and Agriculture Organization; United States Department of Agriculture; World Bank, Climate Change Knowledge Portal; World Bank, World Development Indicators database; and IMF staff calculations.

Note: Standard errors are in parentheses. Robust standard errors clustered at the country level in parentheses. Constant and country fixed effects included in all regressions but not reported. fe = country fixed effects; LCU = Local currency unit; USD = dollar. + p<0.10; * p < 0.05; ** p < 0.01; *** p < 0.001.

Annex Table 1.SF.1.5. Static Specification With Supply Shocks Obtained From HP Filter.
(Also includes regional and rest-of-world shocks next to domestic food supply shocks)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Food Inflation	**Food Inflation**	**Food Inflation**	**Food Inflation**	**Food Inflation**	**Food Inflation**	**Food Inflation**
Headline Inflation - trend	0.990***	0.985***	1.104***	0.989***	1.119***	0.984***	1.097***
	(0.193)	(0.192)	(0.221)	(0.193)	(0.226)	(0.193)	(0.222)
Exchange Rate (in USD/LCU) (log difference)	-0.186***	-0.191***	-0.102***	-0.187***	-0.0875***	-0.192***	-0.107***
	(0.0252)	(0.0250)	(0.0248)	(0.0249)	(0.0258)	(0.0247)	(0.0252)
L.Domestic Food Supply p.c. - detrended (log)	-0.0143**	-0.0108*	-0.0175**	-0.0143**	-0.0244**	-0.0107*	-0.0173**
	-0.0054	-0.0049	-0.0061	-0.0054	-0.0074	-0.0049	-0.0061
L.Regional Food Supply p.c. - detrended (log)		-0.0706***	-0.128***			-0.0729***	-0.125***
		(0.0162)	(0.0201)			(0.0155)	(0.0199)
L.RoW Food Supply p.c. - detrended (log)				-0.107+	-0.170*	-0.120+	-0.152*
				(0.0640)	(0.0674)	(0.0634)	(0.0683)
FAO Food Price Index (log difference)	0.137***	0.128***		0.132***		0.122***	
	-0.0127	(0.0125)		(0.0124)		(0.0119)	
L.FAO Food Price Index (log difference)	0.0780***	0.0791***		0.0828***		0.0845***	
	-0.0074	-0.0074		-0.008		-0.008	
Year Trend	0.0653+	0.0601	-0.0354	0.0737+	-0.0190	0.0694+	-0.0242
	(0.0383)	(0.0385)	(0.0458)	(0.0396)	(0.0466)	(0.0398)	(0.0461)
Model	fe	fe	fe	fe	fe	fe	fe
R^2	0.542	0.548	0.447	0.544	0.432	0.55	0.45
Observations	1728	1728	1728	1728	1728	1728	1728
# of countries	121	121	121	121	121	121	121

Sources: Food and Agriculture Organization; United States Department of Agriculture; World Bank, Climate Change Knowledge Portal; World Bank, World Development Indicators database; and IMF

Note: Standard errors are in parentheses. Robust standard errors clustered at the country level in parentheses. Constant and country fixed effects included in all regressions but not reported. fe = country fixed effects; LCU = Local currency unit; RoW = Rest-of-World; USD = dollar.

+ p<0.10; * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$.