CHAPTER 1

GLOBAL PROSPECTS AND POLICIES

A Rocky Recovery

The global economy is yet again at a highly uncertain moment, with the cumulative effects of the past three years of adverse shocks—most notably, the COVID-19 pandemic and Russia's invasion of Ukraine—manifesting in unforeseen ways. Spurred by pent-up demand, lingering supply disruptions, and commodity price spikes, inflation reached multidecade highs last year in many economies, leading central banks to tighten aggressively to bring it back toward their targets and keep inflation expectations anchored.

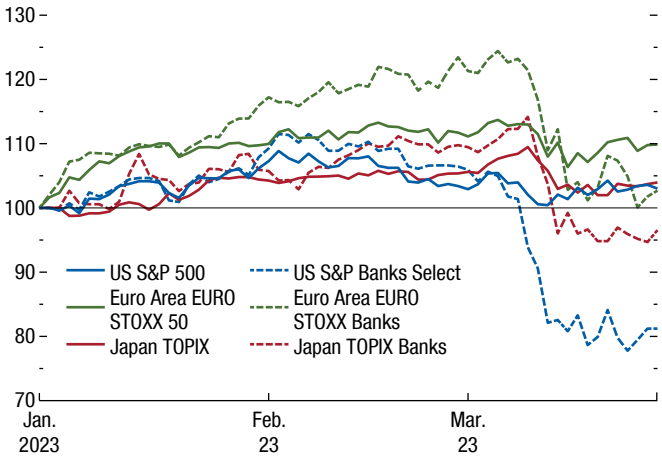
Although telegraphed by central banks, the rapid rise in interest rates and anticipated slowing of economic activity to put inflation on a downward path have, together with supervisory and regulatory gaps and the materialization of bank-specific risks, contributed to stresses in parts of the financial system, raising financial stability concerns. Banks' generally strong liquidity and capital positions suggested that they would be able to absorb the effects of monetary policy tightening and adapt smoothly. However, some financial institutions with business models that relied heavily on a continuation of the extremely low nominal interest rates of the past years have come under acute stress, as they have proved either unprepared or unable to adjust to the fast pace of rate rises.

The unexpected failures of two specialized regional banks in the United States in mid-March 2023 and the collapse of confidence in Credit Suisse—a globally significant bank—have roiled financial markets, with bank depositors and investors reevaluating the safety of their holdings and shifting away from institutions and investments perceived as vulnerable. The loss of confidence in Credit Suisse resulted in a brokered takeover. Broad equity indices across major markets have fallen below their levels prior to the turmoil, but bank equities have come under extreme pressure (Figure 1.1). Despite strong policy actions to support the banking sector and reassure markets, some depositors and investors have become highly sensitive to any news, as they struggle to discern the breadth of vulnerabilities across banks and nonbank financial institutions and their implications for the likely near-term path of the economy. Financial conditions have tightened, which is likely to entail lower lending and activity if they persist (see also Chapter 1 of the April 2023 *Global Financial Stability Report*).

Prior to recent financial sector ructions, activity in the world economy had shown nascent signs of stabilizing in early 2023 after the adverse shocks of last year (Figure 1.2, panels 1 and 2). Russia's invasion of Ukraine and the ongoing war caused severe commodity and energy price shocks and trade disruptions, provoking the beginning of a significant reorientation and adjustment across many economies. More contagious COVID-19 strains emerged and spread widely. Outbreaks particularly affected activity in economies in which populations had lower levels of immunity and in which strict lockdowns were implemented, such as in China. Although these developments imperiled the recovery, activity in many economies turned out better than expected in the second half of 2022, typically reflecting stronger-than-anticipated domestic conditions. Labor markets in advanced economies—most notably, the United States—have stayed very strong, with unemployment rates historically low. Even so, confidence remains depressed across all regions compared with where it was at the beginning of 2022, before Russia invaded Ukraine and the resurgence of COVID-19 in the second quarter (Figure 1.2, panel 3).

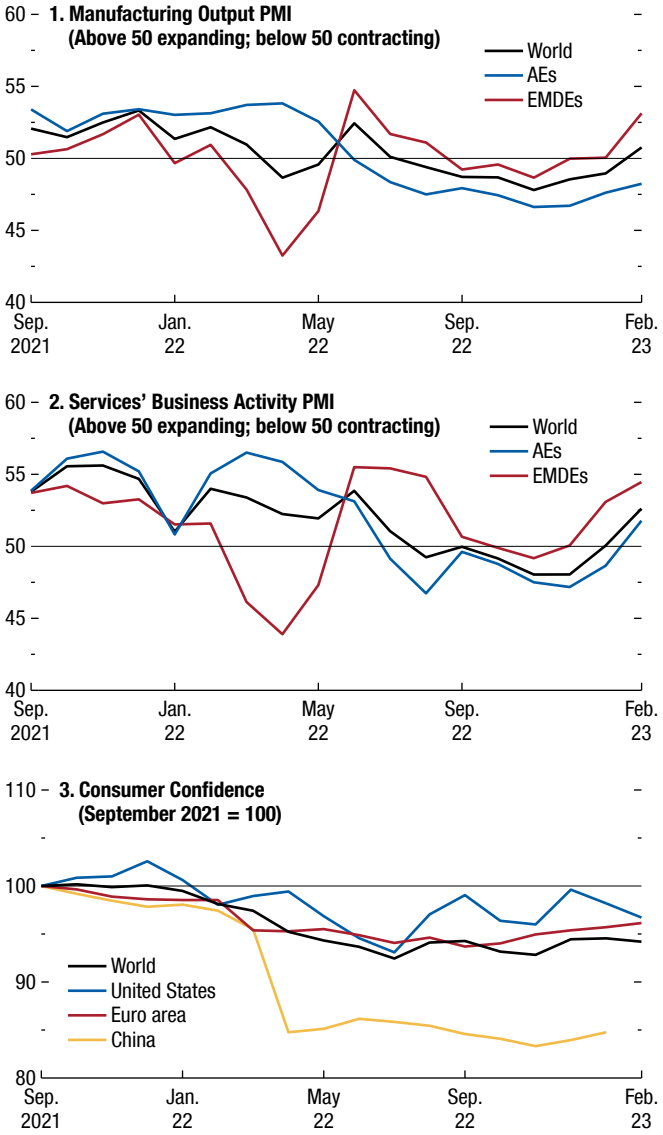
With the recent increase in financial market volatility and multiple indicators pointing in different directions, the fog around the world economic outlook has thickened. Uncertainty is high, and the balance of risks has shifted firmly to the downside so long as the financial sector remains unsettled. The major forces that affected the world in 2022—central banks' tight monetary stances to allay inflation, limited fiscal buffers to absorb shocks amid historically high debt levels, commodity price spikes and geoeconomic fragmentation with Russia's war in Ukraine, and China's economic reopening—seem likely to continue into 2023. But these forces are now overlaid by and interacting with new financial stability concerns. A hard landing—particularly for advanced economies—has become

Figure 1.1. Broad Equity and Bank Equity Indices for Selected Major Economies
(Index; January 1, 2023 = 100)



Sources: Bloomberg Finance L.P.; and IMF staff calculations.
Note: Latest data available are for March 28, 2023.

Figure 1.2. Early 2023 Activity Indicators Strengthened but Confidence Remained Depressed
(Indices)



Sources: Haver Analytics; IHS Markit; and IMF staff calculations.
Note: For AEs in panel 1, sample comprises AUS, AUT, CAN, CHE, DEU, DNK, ESP, FRA, GBR, GRC, ITA, IRL, JPN, NLD, NZL, and USA. Contribution to AE manufacturing GVA is used as weights. For EMDEs in panel 1, sample comprises ARE, BRA, CHN, CZE, COL, EGY, GHA, IND, IDN, KEN, LBN, MYS, MEX, NGA, PHL, POL, RUS, SAU, THA, TUR, VNM, and ZAF. For AEs in panel 2, sample comprises AUS, DEU, ESP, FRA, GBR, ITA, IRL, JPN, NZL, and USA. Contribution to AE services GVA is used as weights. For EMDEs in panel 2, sample comprises BRA, CHN, CZE, COL, EGY, GHA, IND, IDN, KEN, LBN, MYS, MEX, NGA, PHL, POL, RUS, SAU, THA, TUR, VNM, and ZAF. Economy list uses International Organization for Standardization (ISO) country codes. AEs = advanced economies; EMDEs = emerging market and developing economies; GVA = gross value added. PMI = purchasing managers' index.

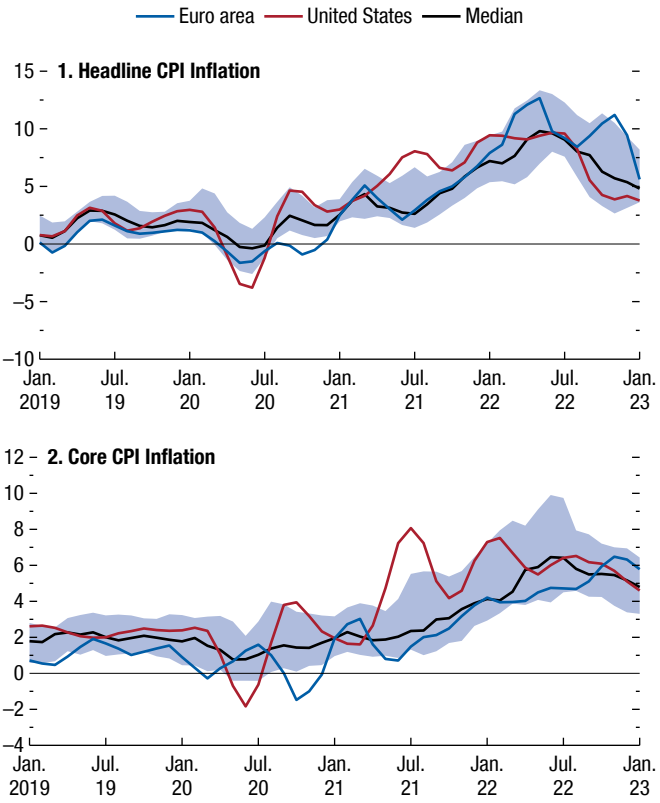
a much larger risk. Policymakers may face difficult trade-offs to bring sticky inflation down and maintain growth while also preserving financial stability.

Inflation Is Declining with Rapid Rate Rises but Remains Elevated amid Financial Sector Stress

Global headline inflation has been declining since mid-2022 at a three-month seasonally adjusted annualized rate (Figure 1.3). A fall in fuel and energy commodity prices, particularly for the United States, euro area, and Latin America, has contributed to this decline (see Figure 1.SF.1). To dampen demand and reduce underlying (core) inflation, the lion's share of central banks around the world have been raising interest rates since 2021, both at a faster pace and in a more synchronous manner than in the previous global monetary tightening episode just before the global financial crisis (Figure 1.4). This more restrictive monetary policy has started to show up in a slowdown in new home construction in many countries (see Box 1.1). Inflation excluding volatile food and energy prices has been declining at a three-month rate—although at a slower pace than headline inflation—in most (though not all) major economies since mid-2022.

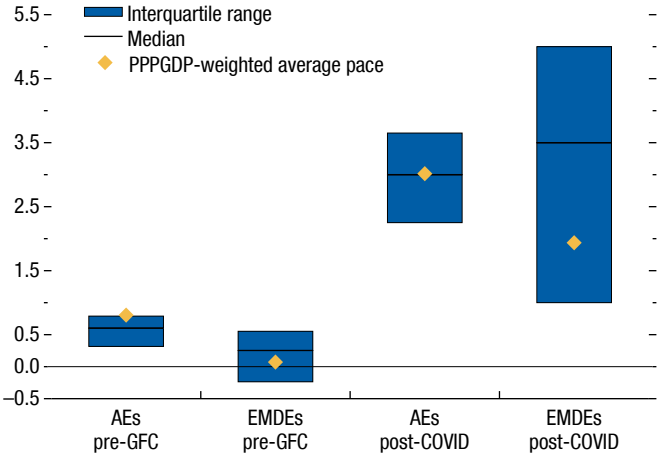
Even so, both headline and core inflation rates remain at about double their pre-2021 levels on average and far above target among almost all

Figure 1.3. Inflation Turning Down or Plateauing?
(Percent, three-month moving average; SAAR)



Sources: Haver Analytics; and IMF staff calculations.
Note: The figure shows the distribution of headline and core CPI inflation developments across 18 advanced economies and 17 emerging market and developing economies. Core inflation is the percent change in the consumer price index for goods and services, but excluding food and energy (or the closest available measure). For the euro area (and other European economies for which data are available), energy, food, alcohol, and tobacco are excluded. The shaded band depicts the 25th to the 75th percentiles of the cross-economy distribution of the indicated inflation measure. The 35 economies in the sample for the figure account for about 81 percent of 2022 world output. CPI = consumer price index; SAAR = seasonally adjusted annualized rate.

Figure 1.4. Monetary Policy Tightening Rapidly across Many Economies
(Percentage point change a year by episode, distribution by economy group)



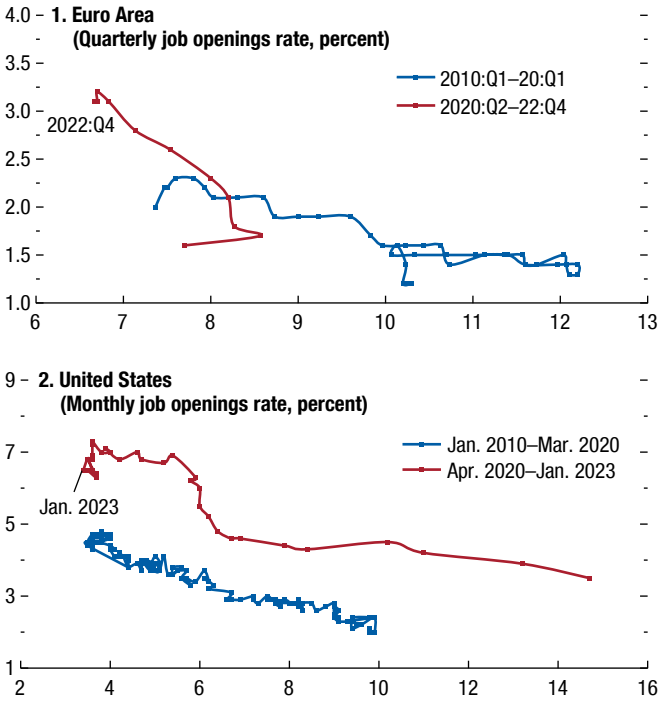
Sources: Haver Analytics; and IMF staff calculations.
Note: The figure shows the distribution (25th to 75th percentiles, median, and weighted average) of the annualized average percentage point change in policy rates by economy group over two episodes: May 2004 to July 2007 (pre-GFC) and Jan. 2022 to Jan. 2023 (post-COVID). AEs = advanced economies; EMDEs = emerging market and developing economies; GFC = global financial crisis; PPPGDP = nominal gross domestic product in purchasing-power-parity international dollars.

inflation-targeting countries. Moreover, differences across economies reflect their varying exposure to underlying shocks. For example, headline inflation is running at nearly 7 percent (year over year) in the euro area—with some member states seeing rates near 15 percent—and above 10 percent in the United Kingdom, leaving household budgets stretched.

The effects of earlier cost shocks and historically tight labor markets are also translating into more persistent underlying price pressures and stickier inflation. The labor market tightness in part reflects a slow post-pandemic recovery in labor supply, with, in particular, fewer older workers participating in the labor force (Duval and others 2022). The ratios of job openings to the number of people unemployed in the United States and the euro area at the end of 2022 were at their highest levels in decades (Figure 1.5). At the same time, the cost pressures from wages have so far remained contained despite the tightness of labor markets, with no signs of a wage-price spiral dynamic—in which both wages and prices accelerate in tandem for a sustained period—taking hold. In fact, real wage growth in advanced economies has been lower than it was at the end of 2021, unlike what took place in most of the earlier historical episodes with circumstances similar to those prevailing in 2021, when prices were accelerating and real wage growth was declining, on average (Figure 1.6).

Inflation expectations have so far remained anchored, with professional forecasters maintaining their five-year-ahead projected inflation rates near their pre-pandemic levels (Figure 1.7). To ensure this remains the case, major central banks have generally stayed firm in their communications about the need for a restrictive monetary policy stance, signaling that interest rates will stay higher for longer than previously expected to address sticky inflation.

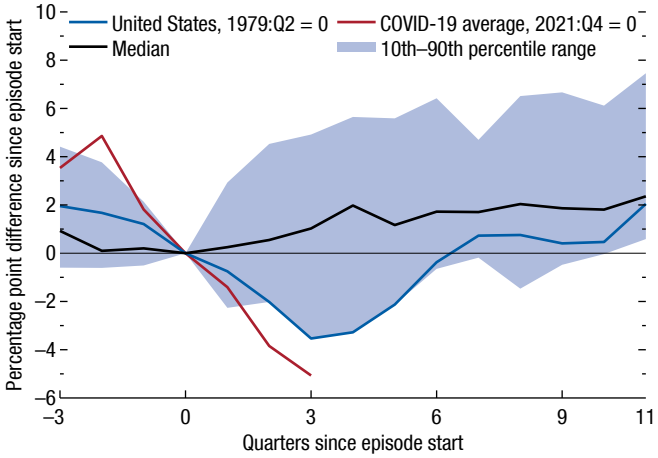
Figure 1.5. Labor Markets Have Tightened in Selected Advanced Economies



Sources: Eurostat; US Bureau of Labor Statistics; and IMF staff calculations.
Note: The figure shows the evolution of the Beveridge curve in the indicated economy, before and after the start of the COVID-19 pandemic. The relationship describes how the job openings rate (vacancies as a proportion of employment plus vacancies, *y*-axes) varies with the unemployment rate (number of unemployed as a proportion of the labor force, *x*-axes). Curves that are farther out from the origin may indicate greater labor market frictions. Labor markets are tight when the unemployment rate is low and the job openings rate is high.

Figure 1.6. Wage-Price Spiral Risks Appear Contained So Far

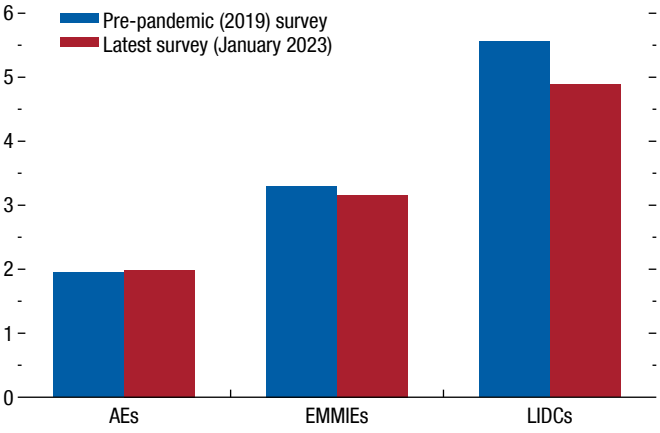
(Distribution of real wage growth across historical episodes similar to today)



Sources: International Labour Organization; Organisation for Economic Co-operation and Development; US Bureau of Economic Analysis; and IMF staff calculations.
Note: The figure shows the evolution over time of historical episodes similar to 2021 in which three of the preceding four quarters had (1) rising price inflation, (2) falling real wages, and (3) stable or falling unemployment. Twenty-two such episodes are identified for a sample of 30 advanced economies from 1960 to 2021. See Chapter 2 of the October 2022 *World Economic Outlook* for more details. The COVID-19 line shows the average behavior for economies in the sample starting in 2021:Q4.

Figure 1.7. Anchored Inflation Expectations

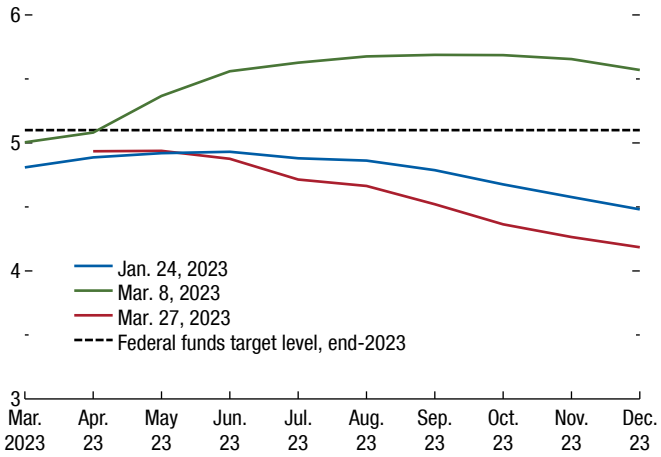
(Percent, average five-year-ahead CPI inflation expectations)



Sources: Consensus Economics; and IMF staff calculations.
Note: The figure shows the average five-year-ahead inflation expectation for the indicated economy group from the indicated survey vintage. The sample covers economies in the indicated economy group for which Consensus Economics surveys are available. The pre-pandemic survey is from long-term consensus forecasts in 2019. AEs = advanced economies; CPI = consumer price index; EMMIEs = emerging market and middle-income economies; LIDCs = low-income developing countries.

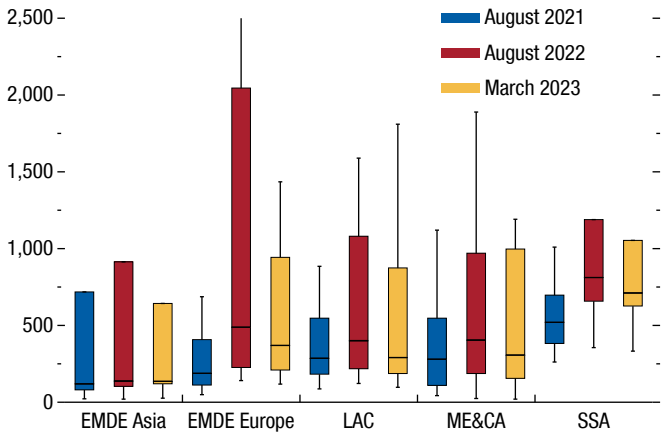
As of early 2023, however, financial markets anticipated that less policy tightening would be needed than central banks suggested, leading to a divergence that raised the risks for a significant market repricing. This is most clearly evident in the case of the United States (Figure 1.8, blue versus dashed black lines). A repricing materialized in early March, with the market-implied policy path shifting up to close much of the gap with the Federal Reserve's announced expected policy path as markets responded to news about inflation (Figure 1.8, green line). But recent financial sector turbulence and the associated tightening of credit conditions have pushed the market-implied policy rate path back down, reopening the gap in the United States (Figure 1.8, red line). This may reflect in part the emergence of liquidity and safety premiums in response to financial market volatility rather than pure policy expectations. Nevertheless, the risks to financial

Figure 1.8. Shifting Market-Implied US Policy Rate Expectations by Vintage and Repricing Risks
(Annualized percent)



Sources: Federal Reserve Board; and Haver Analytics.
Note: The three solid lines plot the market-implied federal funds rate expectations for the United States over the next months by vintage (indicated in the legend). Expectations are calculated based on federal funds futures and forward overnight index swaps. The dashed, black line is the median federal funds rate target level for end-2023, taken from the Federal Reserve's Mar. 22, 2023 Summary of Economic Projections. US = United States.

Figure 1.9. Sovereign Spreads in Emerging Market and Developing Economies Have Narrowed
(Basis points, distribution by economy group)



Sources: Bloomberg Finance L.P.; and IMF staff calculations.
Note: The figure shows the distribution (box-whisker plot) by economy group and date of sovereign spreads. Line in the middle is the median, upper limit of the box is the third quartile, and lower limit of the box is the first quartile. Whiskers show the maximum and minimum within the boundary of 1.5 times the interquartile range from upper and lower quartiles, respectively. A country's sovereign spread is the par-value weighted average of all a country's bonds with more than one year remaining maturity. *Y*-axis is cut off at 2,500 basis points. The box-whisker plots for March 2023 are computed with daily data until March 17, 2023.
EMDE = emerging market and developing economy; LAC = Latin America and the Caribbean; ME&CA = Middle East and Central Asia; SSA = sub-Saharan Africa.

markets from sudden repricing due to policy rate expectation changes—also highlighted in the January 2023 *World Economic Outlook* (WEO) *Update*—remain highly relevant (see also Chapter 1 of the April 2023 *Global Financial Stability Report*).

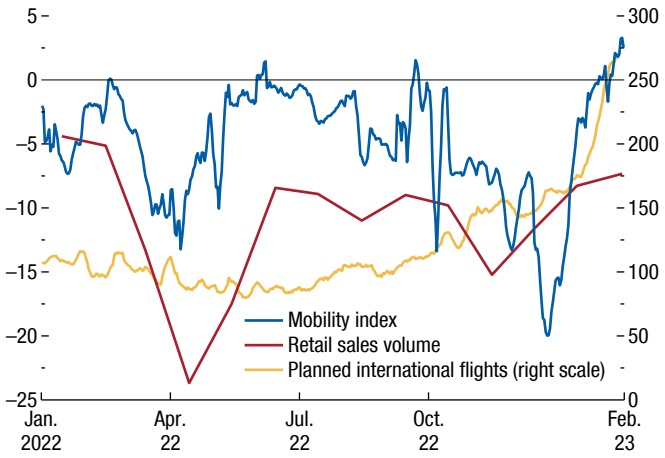
Indebtedness Staying High

As a result of the pandemic and economic upheaval over the past three years, private and public debt have reached levels not seen in decades in most economies and remain high, despite their fall in 2021–22 on the back of the economic rebound from COVID-19 and the rise in inflation (see Chapter 1 of the April 2023 *Fiscal Monitor* and Chapter 3 of this report). Monetary policy tightening—particularly by major advanced economies—has led to sharp increases in borrowing costs, raising concerns about the sustainability of some economies' debts. Among the group of emerging market and developing economies, the average level and distribution of sovereign spreads increased markedly in the summer of 2022, before coming down in early 2023 (Figure 1.9). The effects of the latest financial market turmoil on emerging market and developing economy sovereign spreads have been limited so far, but there is a tangible risk of a surprise increase in coming months should global financial conditions tighten further. The share of economies at high risk of debt distress remains high in historical context, leaving many of them susceptible to unfavorable fiscal shocks in the absence of policy actions (see Chapter 3).

Commodity Shocks Unwinding Even as Russia's War in Ukraine Persists

The shock of Russia's invasion of Ukraine in February 2022 continues to reverberate around the world. Economic activity in Europe in 2022 was more resilient than expected given the large negative terms-of-trade fallout from the war and associated economic sanctions. Large budgetary support measures for households and firms—on the order of about 1.3 percent of GDP (net budgetary cost) in the case of the European Union—were deployed to help them weather the energy crisis. The stinging hike in prices galvanized a reorientation of gas flows, with marked increases in non-Russian pipeline and liquefied natural gas deliveries to Europe, alongside

Figure 1.10. China's Reopening and Recovery
(Percent deviation from trend; right scale is international flights a day)



Sources: National Bureau of Statistics of China; Wind Data Service; and IMF staff calculations.
Note: The blue line shows the percent deviation of the seven-day moving average of national average mobility index from its average behavior over the lunar years 2017–19. The red line shows the percent deviation of the national retail sales volume index from its 2017–19 linear trend. The gold line shows the seven-day moving average of planned international flights into and out of China by day. Data for all series are as of February 16, 2023.

demand compression in the context of a mild winter and adjustments by industries to substitute for gas and to change production processes where feasible. Oil and gas prices also began trending downward from their peaks in mid-2022. Together, these actions and channels have dampened the negative effects of the energy crisis in Europe, with better-than-expected levels of consumption and investment in the third quarter of 2022.

Beyond Europe, a broad decline in food and energy prices in the fourth quarter of 2022—although prices are still high—has brought some relief to consumers and commodity importers, contributing to the fall in headline inflation. Sustaining lower prices this year will depend on the absence of further negative supply shocks.

China's Economic Reopening

The evolution of especially contagious SARS-CoV-2 variants kindled a surge in COVID-19 around the world in 2022. Eventually, these variants made their way to China, which had hitherto escaped much of the disease's spread, partly through strict containment measures. As the country's COVID restrictions were ultimately lifted, multiple large outbreaks led to declines in mobility and economic activity in the fourth quarter of 2022 due to the disease's direct effects on human health and heightened fears of contagion (Figure 1.10). Supply disruptions also returned to the fore, even if temporarily, leading to a rise in supplier delivery times. The surge in infections compounded the headwinds from property market stresses in China. Declining property sales and real estate investment posed a drag on economic activity last year. There remains a large backlog of presold unfinished housing to be delivered, generating downward pressure on house prices, which price floors have so far limited in some regions.

The Chinese authorities have responded with a variety of measures, including additional monetary easing, tax relief for firms, new vaccination targets for the elderly, and measures to encourage the completion and delivery of unfinished real estate projects. As COVID-19 waves subsided in January of this year, mobility normalized, and high-frequency economic indicators—such as retail sales and travel bookings—started picking up (Figure 1.10). With China absorbing about a quarter of exports from Asia and between 5 and 10 percent from other geographic regions, the reopening and growth of its economy will likely generate positive spillovers (Figure 1.11; see also Srinivasan, Helbling, and Peiris 2023), with even greater spillovers for countries with stronger trade links and reliance on Chinese tourism.

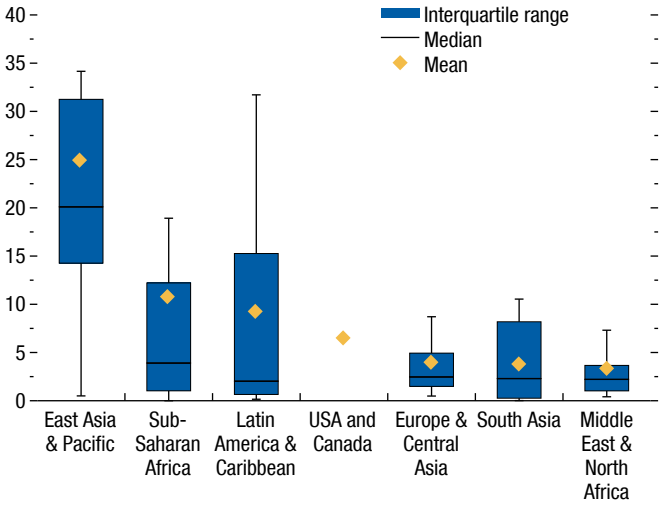
A Challenging Outlook

A return of the world economy to the pace of economic growth that prevailed before the bevy of shocks in 2022 and the recent financial sector turmoil is increasingly elusive. More than a year after Russia's invasion of Ukraine and the outbreak of more contagious COVID-19 variants, many economies are still absorbing the shocks. The recent tightening in global financial conditions is also hampering the recovery. As a result, many economies are likely to experience slower growth in incomes in 2023, amid rising joblessness. Moreover, even with central banks having driven up interest rates to reduce inflation, the road back to price stability could be long. Over the medium term, the prospects for growth now seem dimmer than in decades.

This section first describes the baseline projections for the global economy and the assumptions on which they are predicated. The baseline scenario

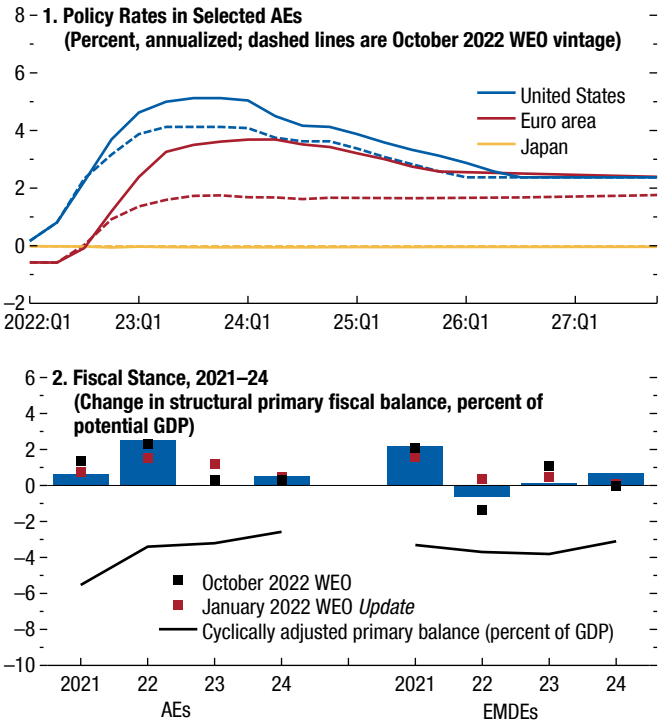
Figure 1.11. Shares of Economies' Total Exports Directed to China in 2021

(Percent of total exports, distribution by economy group)



Sources: United Nations Comtrade Database; World Bank; and IMF staff calculations.
Note: The figure shows the distribution (box-whisker plot) of total export shares to China in 2021 by geographic region. Line and diamond inside the box denote median and simple mean, respectively; upper limit of the box is the third quartile, lower limit of the box is the first quartile. Whiskers show the maximum and minimum within the boundary of 1.5 times the interquartile range from upper and lower quartiles, respectively. Geographic groupings come from the World Bank.

Figure 1.12. Assumptions on Monetary and Fiscal Policy Stances



Source: IMF staff calculations.
Note: In panel 2, cyclically adjusted primary balance is the general government balance (excluding interest income or expenses) adjusted for the economic cycle. Structural primary fiscal balance is the cyclical adjusted primary balance corrected for a broader range of noncyclical factors, such as asset and commodity price changes. AEs = advanced economies; EMDEs = emerging market and developing economies; WEO = *World Economic Outlook*.

assumes that the recent financial sector turmoil is contained and does not generate material disruptions to global economic activity with widespread recession (a broad-based contraction in economic activity that usually lasts more than a few months). Fuel and nonfuel commodity prices are generally expected to decline in 2023, amid slowing global demand (see the Commodity Special Feature). Crude oil prices are projected to fall by about 24 percent in 2023 and a further 5.8 percent in 2024, while nonfuel commodity prices are expected to remain broadly unchanged. The forecasts are also based on the assumption that global interest rates will stay elevated for longer than expected at the time the October 2022 WEO was published, as central banks remain focused on returning inflation to targets while deploying tools to maintain financial stability as needed (Figure 1.12). Governments are on average expected to gradually withdraw fiscal policy support, including, as commodity prices decline, by scaling back packages designed to shield households and firms from the effects of the fuel and energy price spikes in 2022.

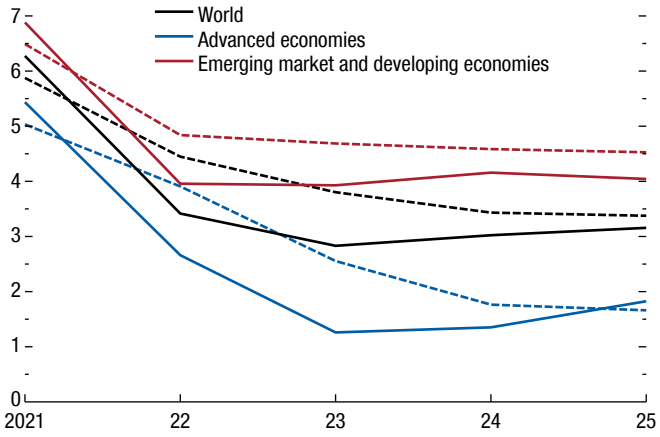
At the same time, in consideration of the elevated risks and uncertainties stemming from the recent global financial market turmoil, this section also places strong emphasis on a plausible alternative scenario that illustrates the impact of downside risks materializing.

Feeble and Uneven Growth

Baseline Scenario

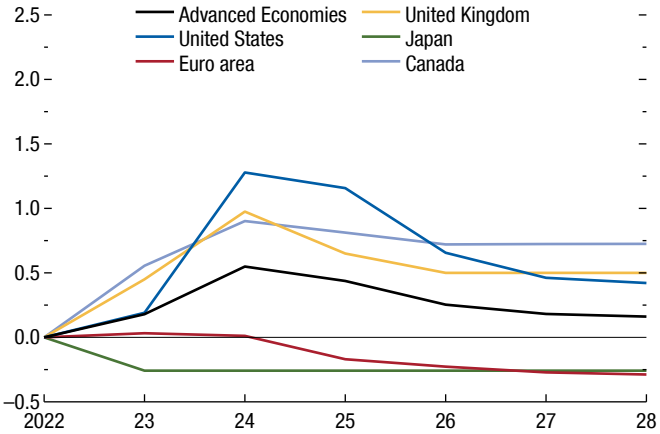
The baseline forecast is for global output growth, estimated at 3.4 percent in 2022, to fall to 2.8 percent in 2023, 0.1 percentage point lower than predicted in the January 2023 WEO *Update* (Table 1.1), before rising to 3.0 percent in 2024. This forecast for the coming years is well below what was expected before the onset of the adverse shocks since early 2022. Compared with the January 2022 WEO *Update* forecast, global growth in 2023 is 1.0 percentage point

Figure 1.13. Growth Outlook: Feeble and Uneven
(Percent; dashed lines are from January 2022 WEO Update vintage)



Source: IMF staff calculations.
Note: The figure shows the projected evolution of real GDP growth for the indicated economy groups. WEO = *World Economic Outlook*.

Figure 1.14. Projected Unemployment Rate Rises in Advanced Economies
(Percentage point difference from 2022 level)



Source: IMF staff calculations.

lower, and this growth gap is expected to close only gradually in the coming two years (Figure 1.13). The baseline prognosis is also weak by historical standards. During the two pre-pandemic decades (2000–09 and 2010–19), world growth averaged 3.9 and 3.7 percent a year, respectively.

For *advanced economies*, growth is projected to decline by half in 2023 to 1.3 percent, before rising to 1.4 percent in 2024. Although the forecast for 2023 is modestly higher (by 0.1 percentage point) than in the January 2023 WEO *Update*, it is well below the 2.6 percent forecast of January 2022. About 90 percent of advanced economies are projected to see a decline in growth in 2023. With the sharp slowdown, advanced economies are expected to see higher unemployment: a rise of 0.5 percentage point on average from 2022 to 2024 (Figure 1.14).

For *emerging market and developing economies*, economic prospects are on average stronger than for advanced economies, but these prospects vary more widely across regions. On average, growth is expected to be 3.9 percent in 2023 and to rise to 4.2 percent in 2024. The forecast for 2023 is modestly lower (by 0.1 percentage point) than in the January 2023 WEO *Update* and significantly below the 4.7 percent forecast of January 2022. In *low-income developing countries*, GDP is expected to grow by 5.1 percent, on average, over 2023–24, but projected per capita income growth averages only 2.8 percent during 2023–24, below the average for middle-income economies (3.2 percent) and so below the path needed for standards of living to converge with those in middle-income economies.

Plausible Alternative Scenario

Recent events have revealed how greater-than-expected fragilities in segments of the banking systems of the United States and of other regions can cause financial sector turmoil. The fragilities come from a combination of unrealized losses, which reflect the speed and magnitude of monetary policy tightening, and reliance on uninsured or wholesale funding. Further shocks stemming from such fragilities are plausible, with potentially significant impact on the global economy. This subsection uses the IMF's Group of Twenty (G20) Model to analyze the economic consequences of a scenario in which pertinent and plausible risks materialize.

The plausible alternative scenario assumes a moderate additional tightening in credit conditions. The tightening stems from further stress in individual banks that are vulnerable on two metrics: share of nonretail or uninsured depositors and unrealized losses. Funding conditions for all banks tighten, due to greater concern for bank solvency and potential exposures across the financial system. Stricter supervision also adds to more cautious bank behavior. The overall impact is a decrease in the supply of credit and higher spreads for nonfinancial firms and for households. It is assumed that the stock of real bank lending in the United States

Table 1.1. Overview of the *World Economic Outlook* Projections

(Percent change, unless noted otherwise)

		Projections		Difference from January 2023 WEO *Update*[1]		Difference from October 2022 WEO[1]	
	2022	2023	2024	2023	2024	2023	2024
World Output	**3.4**	**2.8**	**3.0**	**–0.1**	**–0.1**	**0.1**	**–0.2**
Advanced Economies	**2.7**	**1.3**	**1.4**	**0.1**	**0.0**	**0.2**	**–0.2**
United States	2.1	1.6	1.1	0.2	0.1	0.6	–0.1
Euro Area	3.5	0.8	1.4	0.1	–0.2	0.3	–0.4
Germany	1.8	–0.1	1.1	–0.2	–0.3	0.2	–0.4
France	2.6	0.7	1.3	0.0	–0.3	0.0	–0.3
Italy	3.7	0.7	0.8	0.1	–0.1	0.9	–0.5
Spain	5.5	1.5	2.0	0.4	–0.4	0.3	–0.6
Japan	1.1	1.3	1.0	–0.5	0.1	–0.3	–0.3
United Kingdom	4.0	–0.3	1.0	0.3	0.1	–0.6	0.4
Canada	3.4	1.5	1.5	0.0	0.0	0.0	–0.1
Other Advanced Economies[2]	2.6	1.8	2.2	–0.2	–0.2	–0.5	–0.4
Emerging Market and Developing Economies	**4.0**	**3.9**	**4.2**	**–0.1**	**0.0**	**0.2**	**–0.1**
Emerging and Developing Asia	4.4	5.3	5.1	0.0	–0.1	0.4	–0.1
China	3.0	5.2	4.5	0.0	0.0	0.8	0.0
India[3]	6.8	5.9	6.3	–0.2	–0.5	–0.2	–0.5
Emerging and Developing Europe	0.8	1.2	2.5	–0.3	–0.1	0.6	0.0
Russia	–2.1	0.7	1.3	0.4	–0.8	3.0	–0.2
Latin America and the Caribbean	4.0	1.6	2.2	–0.2	0.1	–0.1	–0.2
Brazil	2.9	0.9	1.5	–0.3	0.0	–0.1	–0.4
Mexico	3.1	1.8	1.6	0.1	0.0	0.6	–0.2
Middle East and Central Asia	5.3	2.9	3.5	–0.3	–0.2	–0.7	0.0
Saudi Arabia	8.7	3.1	3.1	0.5	–0.3	–0.6	0.2
Sub-Saharan Africa	3.9	3.6	4.2	–0.2	0.1	–0.1	0.1
Nigeria	3.3	3.2	3.0	0.0	0.1	0.2	0.1
South Africa	2.0	0.1	1.8	–1.1	0.5	–1.0	0.5
Memorandum							
World Growth Based on Market Exchange Rates	3.0	2.4	2.4	0.0	–0.1	0.3	–0.2
European Union	3.7	0.7	1.6	0.0	–0.2	0.0	–0.5
ASEAN-5[4]	5.5	4.5	4.6	0.2	–0.1	0.0	–0.3
Middle East and North Africa	5.3	3.1	3.4	–0.1	–0.1	–0.5	0.1
Emerging Market and Middle-Income Economies	3.9	3.9	4.0	–0.1	–0.1	0.3	–0.1
Low-Income Developing Countries	5.0	4.7	5.4	–0.2	–0.2	–0.2	–0.1
World Trade Volume (goods and services)	**5.1**	**2.4**	**3.5**	**0.0**	**0.1**	**–0.1**	**–0.2**
Imports							
Advanced Economies	6.6	1.8	2.7	–0.1	0.2	–0.2	–0.1
Emerging Market and Developing Economies	3.5	3.3	5.1	0.2	0.7	0.3	0.4
Exports							
Advanced Economies	5.2	3.0	3.1	0.4	0.2	0.5	–0.3
Emerging Market and Developing Economies	4.1	1.6	4.3	–0.6	–0.4	–1.3	–0.2
Commodity Prices (US dollars)							
Oil[5]	39.2	–24.1	–5.8	–7.9	1.3	–11.2	0.4
Nonfuel (average based on world commodity import weights)	7.4	–2.8	–1.0	3.5	–0.6	3.4	–0.3
World Consumer Prices[6]	**8.7**	**7.0**	**4.9**	**0.4**	**0.6**	**0.5**	**0.8**
Advanced Economies[7]	7.3	4.7	2.6	0.1	0.0	0.3	0.2
Emerging Market and Developing Economies[6]	9.8	8.6	6.5	0.5	1.0	0.5	1.2

Source: IMF staff estimates.

Note: Real effective exchange rates are assumed to remain constant at the levels prevailing during February 15, 2023–March 15, 2023. 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 2023 WEO *Update*, and October 2022 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. Quarterly data are non-seasonally adjusted and differences from the January 2023 WEO *Update* and October 2022 WEO are not available.

[4]Indonesia, Malaysia, Philippines, Singapore, Thailand.

Table 1.1. Overview of the *World Economic Outlook* Projections *(continued)*

(Percent change, unless noted otherwise)

	Q4 over Q4[8]						
		Projections		Difference from January 2023 WEO *Update*[1]		Difference from October 2022 WEO[1]	
	2022	2023	2024	2023	2024	2023	2024
World Output	**2.0**	**2.9**	**3.1**	**–0.3**	**0.1**	**0.2**	**. . .**
Advanced Economies	**1.2**	**1.1**	**1.6**	**0.0**	**0.0**	**–0.2**	**. . .**
United States	0.9	1.0	1.3	0.0	0.0	0.0	. . .
Euro Area	1.9	0.7	1.8	0.0	–0.3	–0.7	. . .
Germany	0.9	0.2	1.8	0.2	–0.5	–0.3	. . .
France	0.5	0.8	1.4	–0.1	–0.4	–0.1	. . .
Italy	1.4	0.4	1.1	0.3	0.1	–0.1	. . .
Spain	2.7	1.3	2.1	0.0	–0.7	–0.7	. . .
Japan	0.6	1.3	1.0	0.3	0.0	0.4	. . .
United Kingdom	0.4	–0.4	2.0	0.1	0.2	–0.6	. . .
Canada	2.1	1.4	1.8	0.2	–0.1	0.1	. . .
Other Advanced Economies[2]	1.0	1.9	1.8	–0.2	–0.4	–0.4	. . .
Emerging Market and Developing Economies	**2.8**	**4.5**	**4.4**	**–0.5**	**0.3**	**0.6**	**. . .**
Emerging and Developing Asia	3.8	5.8	5.3	–0.4	0.4	1.6	. . .
China	3.0	5.8	4.7	–0.1	0.6	3.2	. . .
India[3]	4.5	6.2	6.4	. . .	. . .	. . .	. . .
Emerging and Developing Europe	–1.7	2.4	2.5	–1.1	–0.3	–2.1	. . .
Russia	–4.0	0.9	1.4	–0.1	–0.6	–0.1	. . .
Latin America and the Caribbean	2.5	1.2	2.1	–0.7	0.2	–1.0	. . .
Brazil	2.3	0.9	2.0	0.1	–0.2	0.2	. . .
Mexico	3.7	1.2	1.9	0.1	0.0	0.0	. . .
Middle East and Central Asia	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Saudi Arabia	5.5	3.1	3.2	0.4	–0.3	–0.6	. . .
Sub-Saharan Africa	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Nigeria	3.1	3.0	3.7	–0.1	0.8	0.7	. . .
South Africa	1.3	1.1	1.7	0.6	–0.1	0.1	. . .
Memorandum							
World Growth Based on Market Exchange Rates	1.7	2.4	2.6	–0.1	0.1	0.3	. . .
European Union	1.8	1.0	1.9	–0.2	–0.1	–1.0	. . .
ASEAN-5[4]	4.7	4.3	5.3	–1.4	1.3	–1.3	. . .
Middle East and North Africa	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Emerging Market and Middle-Income Economies	2.7	4.5	4.3	–0.5	0.2	0.6	. . .
Low-Income Developing Countries	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Commodity Prices (US dollars)							
Oil[5]	8.8	–17.3	–3.4	–7.5	2.5	–9.0	. . .
Nonfuel (average based on world commodity import weights)	–0.7	3.5	–0.5	2.1	–0.3	3.8	. . .
World Consumer Prices[6]	9.2	5.6	3.7	0.6	0.2	0.9	. . .
Advanced Economies	7.7	3.2	2.2	0.1	–0.1	0.1	. . .
Emerging Market and Developing Economies[6]	10.5	7.6	5.0	1.0	0.5	1.5	. . .

Source: IMF staff estimates.

Note: Real effective exchange rates are assumed to remain constant at the levels prevailing during February 15, 2023–March 15, 2023. Economies are listed on the basis of economic size. The aggregated quarterly data are seasonally adjusted. WEO = *World Economic Outlook*.

[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 $96.36 in 2022; the assumed price, based on futures markets, is $73.13 in 2023 and $68.90 in 2024.

[6]Excludes Venezuela. See the country-specific note for Venezuela in the "Country Notes" section of the Statistical Appendix.

[7]The inflation rates for 2023 and 2024, respectively, are as follows: 5.3 percent and 2.9 percent for the euro area, 2.7 percent and 2.2 percent for Japan, and 4.5 percent and 2.3 percent for the United States.

[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 85 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 2023 WEO *Update*[1]		Difference from October 2022 WEO[1]	
	2022	2023	2024	2023	2024	2023	2024
World Output	**3.0**	**2.4**	**2.4**	**0.0**	**–0.1**	**0.3**	**–0.2**
Advanced Economies	**2.6**	**1.2**	**1.3**	**0.0**	**–0.1**	**0.1**	**–0.2**
Emerging Market and Developing Economies	**3.6**	**4.0**	**4.0**	**–0.1**	**–0.1**	**0.4**	**0.0**
Emerging and Developing Asia	3.9	5.2	4.8	0.0	–0.1	0.5	–0.1
Emerging and Developing Europe	0.3	1.0	2.3	–0.2	–0.2	0.8	–0.1
Latin America and the Caribbean	3.7	1.5	2.1	–0.2	0.1	–0.1	–0.2
Middle East and Central Asia	5.6	3.0	3.5	–0.2	0.0	–0.3	0.5
Sub-Saharan Africa	3.8	3.4	4.0	–0.3	0.1	–0.2	0.2
Memorandum							
European Union	3.5	0.7	1.5	0.0	–0.2	0.1	–0.5
Middle East and North Africa	5.8	3.1	3.3	–0.1	0.0	–0.1	0.4
Emerging Market and Middle-Income Economies	3.5	3.9	3.9	–0.1	–0.1	0.4	–0.1
Low-Income Developing Countries	4.9	4.7	5.4	–0.1	–0.1	–0.1	0.0

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 2023 WEO *Update*, and October 2022 WEO forecasts.

declines by 2 percent in 2023, relative to the baseline—about one-tenth of the decrease experienced during 2008–09 and equivalent to a 150 basis point increase in corporate spreads, on average, in 2023. The tightening gradually dissipates after 2023. A similar decrease in credit and a similar increase in spreads occur in the euro area and in Japan. Other countries also experience a tightening in financial conditions, with the magnitude related to how closely correlated their respective financial conditions are with conditions in the United States. Countries are also affected through trade spillovers and the impact on global commodity prices.

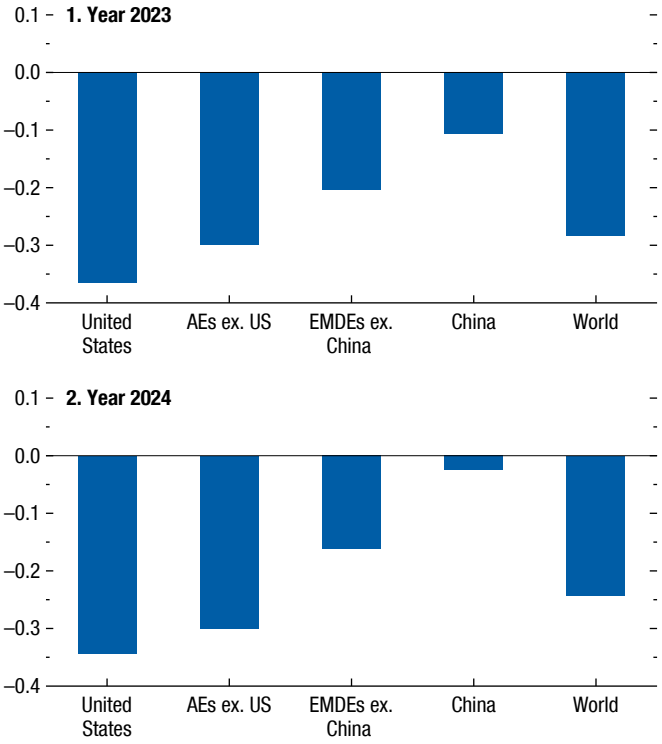
The scenario assumes that monetary policy responds to the resulting decline in economic activity and inflationary pressures, with policy rates lower than in the baseline. Regarding fiscal policy, it is assumed that automatic stabilizers operate but that there is no additional legislated stimulus. Balance sheet policies and other interventions by central banks and regulators, to preserve the stability of the financial system, are not explicitly modeled but are implicitly assumed to help avert a larger crisis.

Figure 1.15 summarizes the global effects of this plausible alternative scenario on the level of real GDP in 2023 and 2024. Results are presented as percent deviations from the baseline forecast. The moderate tightening in financial conditions leads to a decrease in the level of world output by 0.3 percent in 2023, implying real growth of about 2.5 percent instead of 2.8 percent in the baseline forecast—the lowest outcome since the global slowdown of 2001, excluding the initial COVID-19 crisis in 2020 and the global financial crisis in 2009. Real GDP is 0.2 percent lower than the baseline in 2024 and gradually recovers thereafter. The effects are generally larger in advanced economies than in emerging market economies, with growth falling below 1 percent compared with 1.3 percent in the baseline forecast. The United States, the euro area, and Japan have the largest declines in growth compared with the baseline: about 0.4 percentage point lower in 2023. Countries with greater trade exposures to the United States (such as Mexico and Canada) experience a sharper impact; those with smaller exposures (such as China) are less affected.

Inflation: Still High but Falling

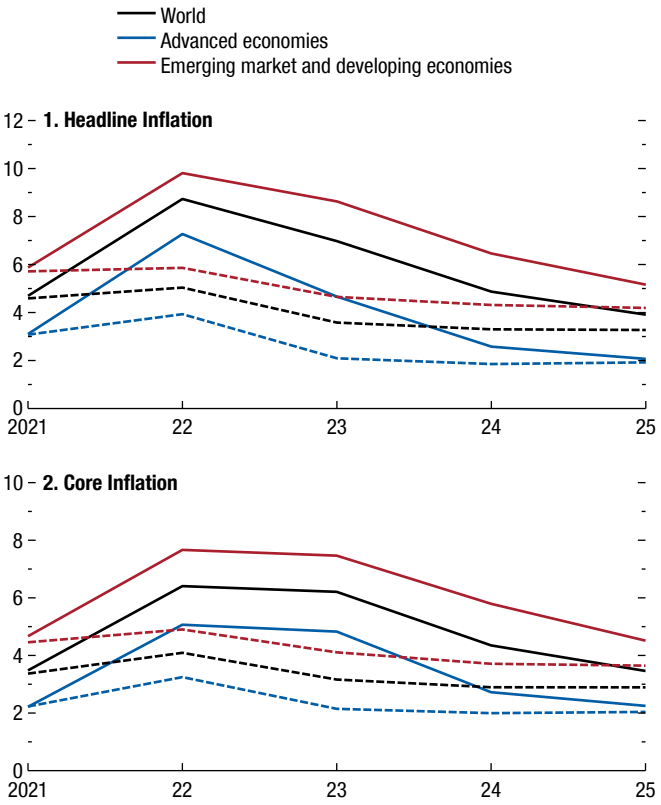
The baseline forecast is for global headline (consumer price index) inflation to decline from 8.7 percent in 2022 to 7.0 percent in 2023. This forecast is higher (by 0.4 percentage point) than that of January 2023 but nearly double the January 2022 forecast (Figure 1.16). Disinflation is expected in all major country groups, with about 76 percent of economies expected to experience lower headline inflation in 2023. Initial differences in the level of inflation between advanced economies and emerging market and developing economies are, however, expected to persist. The projected disinflation reflects declining fuel and nonfuel commodity prices as well as the expected cooling effects of monetary tightening on economic activity. At the same time, inflation excluding that for food and energy is expected to decline globally

Figure 1.15. Real GDP Level in Plausible Alternative Scenario in 2023–24
(Percent deviation from baseline)



Source: IMF staff calculations.
Note: AEs ex. US = advanced economies excluding United States; EMDEs ex. China = emerging market and developing economies excluding China.

Figure 1.16. Inflation Coming Down over Time
(Percent; dashed lines from January 2022 WEO Update vintage)



Source: IMF staff calculations.
Note: Inflation is based on the consumer price index. Core inflation excludes volatile food and energy prices. Emerging market and developing economies' core inflation from January 2022 WEO *Update* is estimated using available data.
WEO = *World Economic Outlook*.

much more gradually in 2023: by only 0.2 percentage point, to 6.2 percent, reflecting the aforementioned stickiness of underlying inflation. This forecast is higher (by 0.5 percentage point) than that of January 2023.

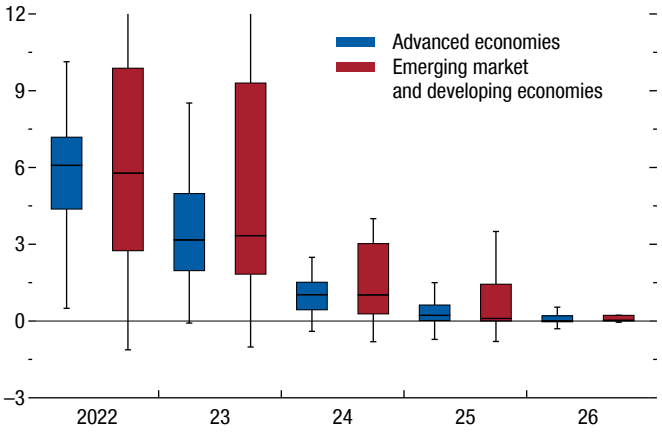
Overall, returning inflation to target is expected to take until 2025 in most cases. A comparison of official inflation targets with the latest forecasts for 72 inflation-targeting economies (34 advanced economies and 38 major emerging market and developing economies) suggests that annual average inflation will exceed targets (or the midpoints of target ranges) in 97 percent of cases in 2023 (Figure 1.17). The median deviation from target is expected to be 3.3 percentage points. In 2024, inflation is still expected to exceed targets in 91 percent of cases, with an expected median deviation of about 1 percentage point. Among countries with an inflation target range, however, inflation is expected to be in the target range in about 50 percent of cases in 2024. By 2025, inflation is expected to be close to targets (or the midpoints of target ranges), with a median deviation of only 0.2 percentage point.

In the aforementioned plausible alternative scenario, with additional tightening in credit conditions, global headline inflation decreases by about 0.2 percentage point more in 2023, partly on the back of lower global commodity prices. Oil prices decline by 3 percent more, on average, in 2023 than in the baseline. There is a modest additional fall in inflation excluding food and energy.

The Medium Term: Not What It Used to Be

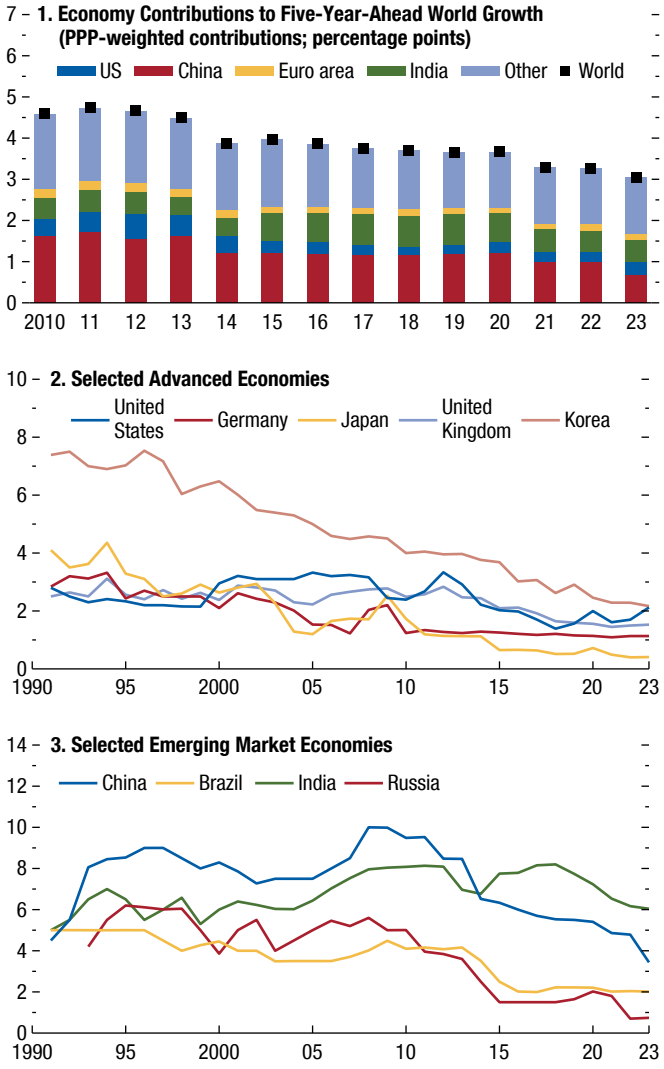
The world economy is not currently expected to return over the medium term to the rates of growth that prevailed before the pandemic. Looking out to 2028, global growth is forecast at 3.0 percent—the lowest medium-term growth forecast published in all WEO reports since 1990 (Figure 1.18). Forecasts of medium-term growth peaked at about 4.9 percent

Figure 1.17. Inflation Slowly Converging to Target
(Percentage point, distribution of gap from inflation target)



Sources: Central banks' websites; Haver Analytics; and IMF staff calculations.
Note: The figure shows the distribution (box-whisker plot) for the indicated economy group by year. Line in the middle is the median, upper limit of the box is the third quartile, and lower limit of the box is the first quartile. Whiskers show the maximum and minimum within the boundary of 1.5 times the interquartile range from upper and lower quartiles respectively. The *y*-axis is cut at 12 percentage points.

Figure 1.18. Five-Year-Ahead Real Growth Projections by *World Economic Outlook* Forecast Vintage
(Percent; unless noted otherwise)



Source: IMF staff calculations.
Note: In panel 1, US = United States and Other = all other economies excluding China, India, United States, and the euro area. Spring *World Economic Outlook* forecast vintages in the indicated years are used across all figures.
PPP = purchasing power parity.

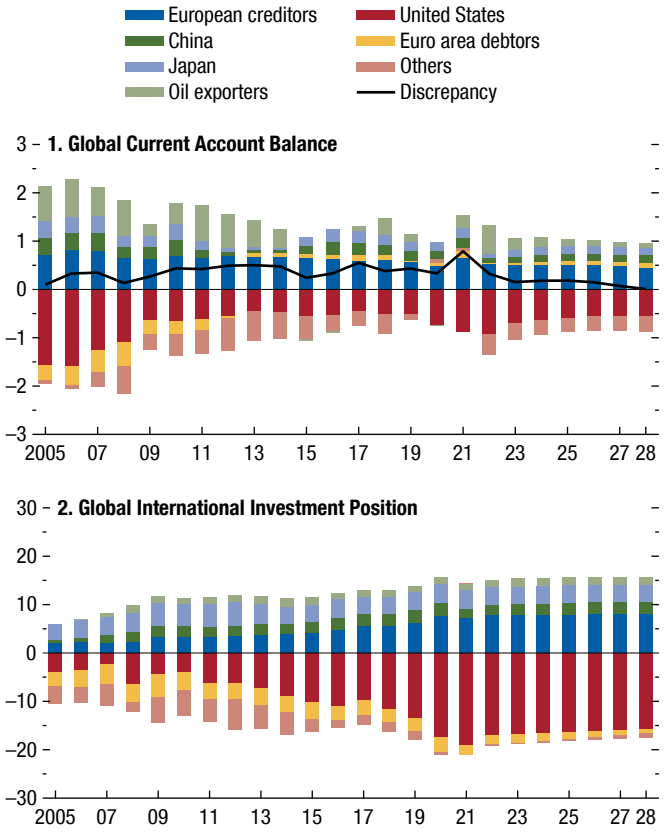
in 2008. The decline in medium-term global growth prospects reflects the progress that several economies, such as China and Korea, have made in increasing their living standards and the associated decline in the rate of change (see Chapter 2 and Kremer, Willis, and You 2022). It also reflects slower global labor force growth—United Nations medium-term population growth projections have declined since 2010 by about one-quarter of a percentage point. Geoeconomic fragmentation, including developments stemming from Brexit, ongoing US-China trade disputes, and Russia's invasion of Ukraine (Aiyar and others 2023), has also contributed to the weaker outlook, as has a slower expected pace of supply-enhancing reforms. Dimmer prospects for growth in China and other large emerging market economies will weigh on the prospects of trading partners through the world's highly integrated supply chains. It will also complicate the efforts of middle- and low-income countries seeking to converge to higher standards of living.

Moreover, with global growth over the coming years not expected to overshoot pre-2022 shock forecasts, the level of global output is unlikely to recover to its previous path. The shortfall of global GDP in 2022 compared with January 2022 WEO *Update* forecasts is about 1 percent. By 2026, the output loss (cumulative growth gap) is projected to widen to 2.7 percent: more than double the initial impact. Persistent effects are consistent with economic fluctuations affecting investments in capital, training, and research and development.

Global Trade Slowdown, with Narrowing Balances

Growth in the volume of world trade is expected to decline from 5.1 percent in 2022 to 2.4 percent in 2023, echoing the slowdown in global demand after two years of rapid catch-up growth from the pandemic

Figure 1.19. Current Account and International Investment Positions
(Percent of global GDP)



Source: IMF staff calculations.
Note: European creditors = Austria, Belgium, Denmark, Finland, Germany, Luxembourg, The Netherlands, Norway, Sweden, Switzerland; euro area debtors = Cyprus, Greece, Ireland, Italy, Portugal, Slovenia, Spain; oil exporters = Algeria, Azerbaijan, Iran, Kazakhstan, Kuwait, Nigeria, Oman, Qatar, Russia, Saudi Arabia, United Arab Emirates, Venezuela.

recession and the shift in the composition of spending from traded goods back toward domestic services. Rising trade barriers and the lagged effects of US dollar appreciation in 2022, which made traded products more costly for numerous economies given the dollar's dominant role in invoicing, are also expected to weigh on trade growth in 2023. Overall, the outlook is for weaker trade growth than during the two pre-pandemic decades (2000–19), when it averaged 4.9 percent.

Meanwhile, global current account balances—the sums of absolute surpluses and deficits—are expected to narrow in 2023, following their significant increase in 2022 (Figure 1.19). As reported in the IMF's 2022 *External Sector Report*, the rise in current account balances in 2022 largely reflected commodity price increases triggered by the war in Ukraine, which caused a widening in oil and other commodity trade balances. Over the medium term, global balances are expected to narrow gradually as commodity prices decline.

Creditor and debtor stock positions remained historically elevated in 2022, reflecting the offsetting effects of widening current account balances and the dollar's strength, which caused valuation gains in countries with long positions in foreign currency. Over the medium term, elevated positions are expected to moderate only slightly as current account balances narrow.

Downside Risks Dominate

Risks to the outlook are squarely to the downside. Much uncertainty clouds the short- and medium-term outlook as the global economy adjusts to the shocks of 2020–22 and the recent financial sector turmoil. Recession concerns have gained prominence, while worries about stubbornly high inflation persist.

There is a significant risk that the recent banking system turbulence will result in a sharper and more persistent tightening of global financial conditions than anticipated in the baseline and plausible alternative scenarios, which would further deteriorate business and consumer confidence. Additional downside risks include sharper contractionary effects than expected from the synchronous central bank rate hikes amid historically high private and public debt levels (see Box 1.2). The combination of higher borrowing costs and lower growth could cause systemic debt distress in emerging market and developing economies. In addition, inflation may prove stickier than expected, prompting further monetary tightening than currently anticipated. Other adverse risks include a faltering in China's post–COVID-19 recovery, escalation of the war in Ukraine, and geoeconomic fragmentation further hindering multilateral efforts to address economic challenges. With debt levels, inflation, and financial market volatility elevated, policymakers have limited space to offset new negative shocks, especially in low-income countries.

On the upside, the global economy could prove more resilient than expected, just as it did in 2022. With a stock of excess savings from the pandemic years and tight labor markets in a number of economies, household consumption could again overshoot forecasts, although this would complicate the fight against inflation. A renewed easing in supply-chain

bottlenecks—the Federal Reserve Bank of New York's Global Supply Chain Pressure Index recently eased to more normal levels, for example—and a cooling in labor markets from falling vacancies rather than rising unemployment could allow for a softer-than-expected landing, requiring less monetary tightening.

Overall, the estimated probability of global growth in 2023 falling below 2.0 percent—an outcome that has occurred on only five occasions since 1970 (in 1973, 1981, 1982, 2009, and 2020)—is now about 25 percent: more than double the normal probability (see Box 1.3). Growth falling below 2.0 percent could occur in the case of a severe credit disruption or from a combination of shocks materializing together. A contraction in global per capita real GDP in 2023—which often happens when there is a global recession—has an estimated probability of about 15 percent. Turning to prices, the probability of global headline inflation exceeding its 2022 level in 2023, is less than 10 percent, as Box 1.3 explains. However, for core inflation, which is set to decline more gradually in 2023, the probability is higher, at 30 percent. Stickier services inflation, amid still-overheating labor markets, could push core inflation above its 2022 level. In what follows, the most prominent downside risks to the outlook are discussed.

A severe tightening in global financial conditions: In many countries, the financial sector will remain highly vulnerable to the realized rise in real interest rates in the coming months, both in banks and in nonbank financial institutions (see Chapter 1 of the April 2023 *Global Financial Stability Report*). In a severe downside scenario in which risks stemming from bank balance sheet fragilities materialize, bank lending in the United States and other advanced economies could sharply decline, with macroeconomic effects amplified by a number of channels. Household and business confidence would deteriorate, leading to higher household precautionary saving and lower investment. Depressed activity in the most affected economies would spill over to the rest of the world through lower demand for imports and lower commodity prices. As in past episodes of global financial stress, a broad-based outflow of capital from emerging market and developing economies could occur, causing further dollar appreciation, which would worsen vulnerabilities in economies with dollar-denominated external debt. The dollar appreciation would further depress global trade, as many products are invoiced in dollars. In an environment of elevated financial fragility, contagion could occur, with a sharp loss of investor appetite spreading across geographic regions and asset types. The market for safe assets (such as US or German government bonds) could also seize up, with reduced ease of trading amid a rush out of riskier assets.

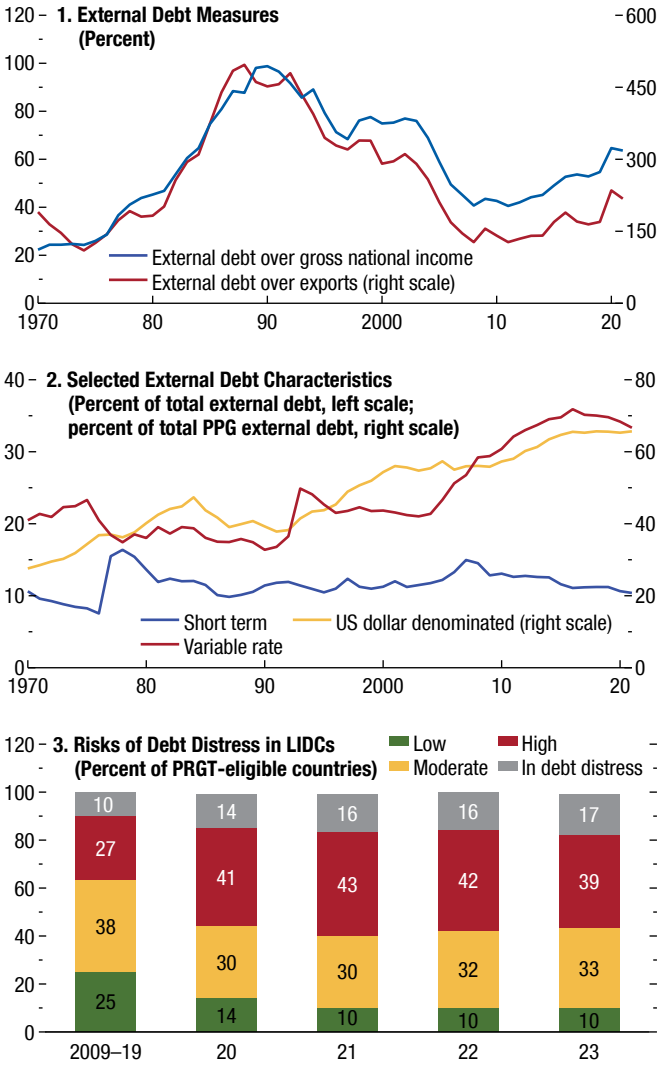
Box 1.3 provides a quantification of such a scenario of severe financial sector stress and concludes that, even with monetary policy responding to the decline in economic activity and inflation and even with fiscal automatic stabilizers operating, global real GDP growth in 2023 could be 1.8 percentage points below the baseline. Such an outcome would imply near-zero growth in global GDP per capita. The downturn in global aggregate demand would have a strong disinflationary impulse, with global headline and core inflation lower by about 1 percentage point in 2023.

Sharper monetary policy impact amid high debt: The interaction between rising real interest rates and historically elevated corporate and household debt is another source of downside risk, as debt servicing costs rise amid weaker income growth. This can lead to debt overhang, with lower-than-expected investment and consumption, higher unemployment, and widespread bankruptcies, especially in economies with elevated house prices and high levels of household debt issued at floating rates (see Box 1.1). In such a case, inflation would decline faster and growth would be lower than in the baseline forecast.

Stickier inflation: With labor markets remaining exceptionally tight in many countries, the incipient decline in headline and core inflation could stall before reaching target levels, amid stronger-than-expected wage growth. An even-stronger-than-predicted economic rebound in China could—especially if combined with an escalation of the war in Ukraine—reverse the expected decline in commodity prices, raise headline inflation, and pass through into core inflation and inflation expectations. Such conditions could prompt central banks in major economies to tighten policies further and keep a restrictive stance for longer, with adverse effects on growth and financial stability.

Systemic sovereign debt distress in emerging market and developing economies: Several emerging market and developing economies still face sovereign credit spreads above 1,000 basis points. The easing in spreads since October, which partly reflects the depreciation of the US dollar and lower import bills from declining commodity prices, has provided some relief.

Figure 1.20. External Debt Vulnerabilities for Emerging Market and Developing Economies Are High



Sources: IMF-World Bank LIDC Debt Sustainability Analysis Database; World Bank International Debt Statistics; and IMF staff calculations.
Note: *X*-axes show the calendar year across panels. Panels 1 and 2 show unweighted averages across emerging market and developing economies. For panel 3, details on the classification of debt riskiness in LIDCs can be found in IMF (2018). LIDCs = low-income developing countries; PPG = public and publicly guaranteed; PRGT = Poverty Reduction and Growth Trust.

But vulnerabilities remain high. About 56 percent of low-income developing countries are estimated to be either already in debt distress or at high risk of it (Figure 1.20, panel 3), and about 25 percent of emerging market economies are also estimated to be at high risk. While the level of external debt as a share of gross national income is on average one-third lower today than in the 1980s and 1990s (Figure 1.20, panel 1), some vulnerabilities are more acute. A higher share of external debt is now issued at variable interest rates and in US dollars, implying greater exposure to monetary tightening in advanced economies (Figure 1.20, panel 2). And for low-income countries, comparisons with the situation in the mid-1990s are increasingly relevant (IMF 2022a). A new wave of debt-restructuring requests could take place, but the creditor landscape has become more complex, making restructuring potentially more difficult than in the past (see Chapter 3). The share of external debt owed to Paris Club official bilateral creditors fell from 39 percent in 1996 to 12 percent in 2020, and that owed to non–Paris Club official bilateral creditors rose from 8 percent to 22 percent; the share of private creditors doubled from 8 percent to 16 percent (IMF 2022a).

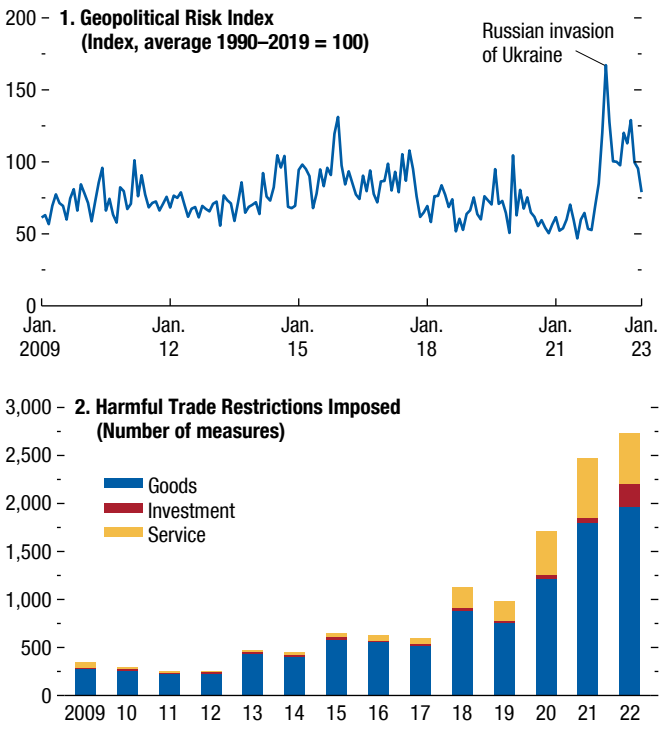
Faltering growth in China: With a substantial share of economies' exports absorbed by China, a weaker-than-expected recovery in China would have significant cross-border effects, especially for commodity exporters and tourism-dependent economies. Risks to the outlook include the ongoing weakness in the Chinese real estate market, which could pose a larger-than-expected drag on growth and potentially lead to financial stability risks (see Box 1.1 and IMF 2023).

Escalation of the war in Ukraine: An escalation of Russia's war in Ukraine—now in its second year—could trigger a renewed energy crisis in Europe and exacerbate food insecurity in low-income countries. For the winter of 2022–23, a gas crisis was averted, with ample storage at European facilities thanks to higher liquefied natural gas imports, lower gas demand amid high prices, and atypically mild weather. The risks of price spikes, however, remain for next winter (see the Commodity Special Feature). A possible increase in food prices from a failed extension of the Black Sea Grain Initiative would weigh further on food importers, particularly those that lack fiscal space to cushion the impact on households and businesses. Amid elevated food and fuel prices, social unrest might increase.

Fragmentation further hampers multilateral cooperation: The ongoing retreat from cross-border economic integration began more than a decade ago after the global financial crisis, with notable developments including Brexit and China-US trade tensions. The war in Ukraine has reinforced this trend by raising geopolitical tensions (Figure 1.21, panel 1) and splitting the world economy into geopolitical blocs. Barriers to trade are steadily

increasing (Figure 1.21, panel 2). They range from the imposition of export bans on food and fertilizers in response to the commodity price spike following Russia's invasion of Ukraine to restrictions on trade in microchips and semiconductors (as in the US Creating Helpful Incentives to Produce Semiconductors and Science Act) and on green investment that are aimed at preventing the transfer of technology and include local-content requirements. Further geoeconomic fragmentation risks not only lower cross-border flows of labor, goods, and capital (see Chapter 4 of this report and Chapter 3 of the April 2023 *Global Financial Stability Report*) but also reduced international action on vital global public goods, such as climate change mitigation and pandemic resilience. Some countries may benefit from an associated rearrangement in global production, but the overall impact on economic well-being would likely be negative (see Aiyar and others 2023 and Chapter 3 of the October 2022 *Regional Economic Outlook: Asia and the Pacific*), with costs particularly high in the short term, as replacing disrupted flows takes time.

Figure 1.21. Geopolitical and Trade Tensions Rising over Time



Sources: Caldara and Iacoviello (2022); and Global Trade Alert.
Note: In panel 2, data on harmful trade restrictions are as of February 1, 2023.

Policy Priorities: Walking a Narrow Path

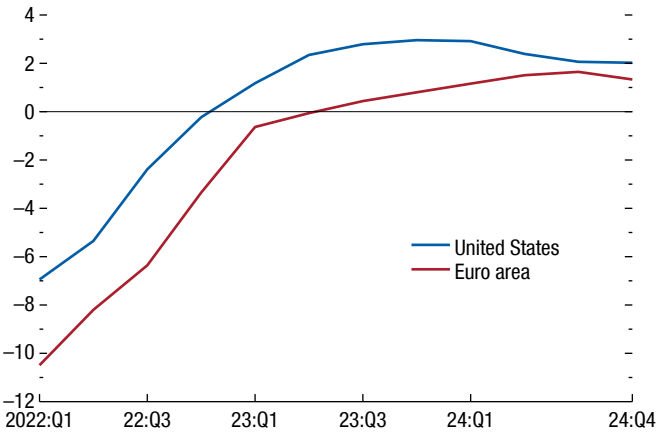
With the fog around current and prospective economic conditions thickening, policymakers have a narrow path to walk toward restoring price stability while avoiding a recession and maintaining financial stability. Achieving strong, sustainable, and inclusive growth will require policymakers to stay agile and be ready to adjust as information becomes available.

Policies with Immediate Impact

Ensuring a durable fall in inflation: With inflation still well above targets for most economies, the priority remains reducing inflation and ensuring that expectations stay anchored while containing financial market strains and minimizing the risk of further turbulence. Achieving this outcome in the midst of heightened market volatility and a sizable disconnect between markets' anticipation of monetary policy paths and central bank communications requires the following:

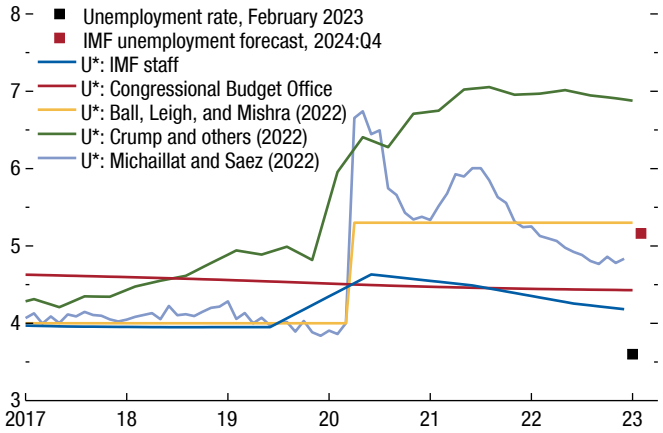
- *Steady but ready monetary policy:* Under the baseline forecast, real (inflation-adjusted) policy rates in major economies are expected to increase gradually, even as the pace of nominal rate rises slows on the back of declining inflation (Figure 1.22). Where core inflation pressures persist, raising real policy rates and holding them above their neutral levels would ward off the risk of de-anchoring inflation expectations. Given the elevated volatility in financial markets, central banks should stand ready to address liquidity and financial sector risks if and when needed, as discussed later. Under the plausible alternative scenario, in which the tightening of financial conditions leads to a cooling in real activity and lower price pressures, central banks would need to carefully recalibrate monetary policy, including the timing and size of policy rate changes needed to align inflation rates with their targets. If the severe downside scenario materializes and financial stability is at stake, substantial readjustment of monetary policy paths might be needed in response to the disinflationary shock to minimize economic damage and contain financial sector contagion.
- *Clear communication:* Given heightened uncertainty regarding the effects of monetary policy on both inflation and financial stability, and the reemerging disconnect between central banks, and markets' expectations of monetary policy paths, clear communication about central bank policy objectives and responses will be crucial. Estimates of the real interest

Figure 1.22. Real Policy Rates in Selected Advanced Economies
(Percent, annualized)



Source: IMF staff calculations.
Note: The real policy rate is calculated as the nominal policy rate minus average expected headline inflation over the next year. Nominal policy rates are the federal funds target rate for the United States and the euro short-term rate for the euro area.

Figure 1.23. Is US Unemployment Unnaturally Low?
(Percent)



Sources: April 2023 *World Economic Outlook*; Ball, Leigh, and Mishra (2022); Crump and others (2022); US Bureau of Labor Statistics; US Congressional Budget Office; and IMF staff calculations.
Note: U* denotes estimates of the natural rate of unemployment in the United States (the level of the unemployment rate that is associated with stable inflation). The estimate from the Congressional Budget Office is the noncyclical unemployment rate series. The estimate labeled Michaillat and Saez (2022) is calculated by IMF staff using their method. Estimate of Crump and others reflects both the secular trend of the unemployment rate as well as the behavior of wage and price inflation and inflation expectations as explained in the paper.

rate consistent with stable inflation (commonly called the "natural rate of interest" and denoted r^*) are uncertain (see Chapter 2). An unemployment rate above the level consistent with stable inflation (commonly called the "natural rate of unemployment" and denoted u^*) would contribute to reducing inflation. But as with r^*, estimates are highly uncertain. For example, recent estimates of u^* for the United States range from 4 percent to 7 percent, which is above the current unemployment rate. This has contributed to projections of rising unemployment by 2024 (Figure 1.23). It will be essential that, faced with such uncertainty, monetary policymakers calibrate policy in a data-dependent manner. In addition, volatility has been unusually high: markets have reacted strongly to any news, leading to sudden repricing in the path of policy rates and amplifying the disconnect between market expectations and the rate path communicated by central banks. In that context, policymakers should reinforce their communication about the likely need for a restrictive monetary policy stance until there is tangible evidence that inflation is returning toward target. At the same time, policymakers should reassure market participants that they stand ready to change course and use the full set of available instruments should market turmoil deepen.

- *Applying the lessons from past premature easing:* An easing of rates before price pressures have adequately receded could increase the costs of disinflation, as exemplified by the experience of the United States in the early 1980s. The Federal Reserve loosened policy after a first wave of tightening and an increase in unemployment, which contributed to expectations that high inflation would solidify (Goodfriend and King 2005). A second wave of sharp policy rate increases was required to bring inflation down and reestablish credibility, with more negative growth and employment implications (Figure 1.24).

Safeguarding financial stability: Minimizing financial stability risks will require careful monitoring of risks, managing market strains, and strengthening oversight.

- *Monitoring risks:* In this period of high uncertainty and market volatility, monitoring the buildup of risks across industries and promptly addressing vulnerabilities that come to the fore will be crucial to restore confidence and safeguard financial stability (see Chapter 1 of the April 2023 *Global Financial Stability Report*). As central banks continue raising rates to fight inflation and gradually unwind their

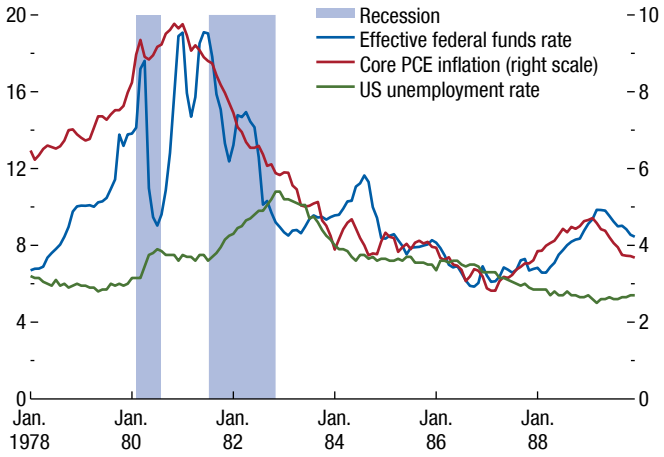
balance sheets, more intensive and high-frequency monitoring of risks in the banking sector, nonbank financial institutions, and the housing sector will be essential.

- *Managing market strains:* Where market strains emerge, deploying tools that provide liquidity support promptly and forcefully, while mitigating the risk of moral hazard, will be necessary to ease pressures and limit contagion. Liquidity support should be targeted as well as properly collateralized and preserve the transmission of monetary policy. Intervention and resolution procedures may need to be initiated promptly for weak and nonviable institutions.
- *Strengthening oversight:* Financial sector regulations introduced after the global financial crisis contributed to the resilience of banks throughout the pandemic. More efforts are needed, however, to address shortcomings in the supervisory oversight of banks, including in the prudential framework for exposures to interest rate risk, and to ensure that stringent prudential requirements align with the Basel framework on capital and liquidity regulations. In addition, the intensity of supervision must be commensurate with banks' risks and systemic importance, and it is essential to address supervisory gaps in the nonbank financial sector (see also Chapter 1 of the April 2023 *Global Financial Stability Report*).
- *Using the global financial safety net:* With multiple shocks hitting the global economy, it is appropriate to make full use of the global financial safety net afforded by international financial institutions. This includes proactively employing the IMF's precautionary financial arrangements and focusing aid from the international community on low-income countries facing shocks, including through the rechanneling of special drawing rights and support from the Poverty Reduction and Growth Trust and the Resilience and Sustainability Trust. The recent enhancement of dollar funding swap lines between the Federal Reserve and major advanced economy central banks should help limit financial strains. It is important to ensure that other central banks are also able to access liquidity to guard against potential external funding shocks.

Dealing with currency swings: The US dollar has depreciated in real terms since October 2022—by 6 percent on a trade-weighted basis—but remains stronger than it has been since 2000, reflecting economic fundamentals such as the rapid tightening of US monetary policy and more favorable terms of trade for the *United States* (Figure 1.25). Emerging market economies should let their currencies adjust as much as possible in response to such fundamentals (Gopinath and Gourinchas 2022). As guided by the IMF's Integrated Policy Framework, foreign exchange interventions may be appropriate on a temporary basis if currency movements and capital flows substantially raise financial stability risks—as in the context of shallow foreign exchange markets or high foreign currency debt—or jeopardize the central bank's ability to maintain price stability. Temporary capital flow management measures on outflows may also be useful in a crisis or when one is imminent but should not substitute for needed macroeconomic policy adjustment. In response to developments in 2022, some economies resorted to capital flow management measures (for example, *China* and *Malawi*, among others).

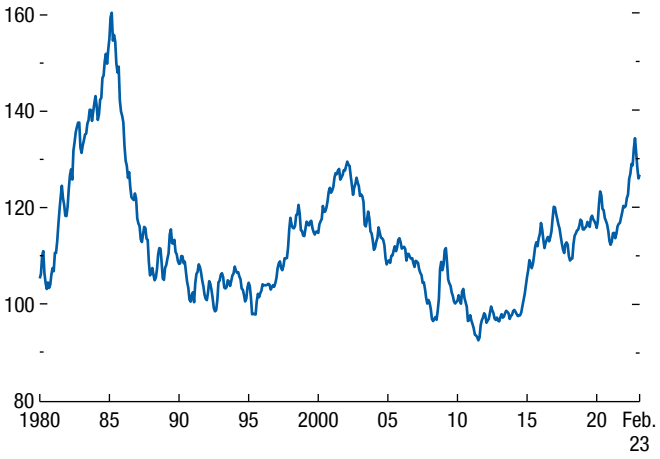
Normalizing fiscal policy: As deficits and debts remain above pre-pandemic levels, fiscal efforts will be warranted in 2023. Fiscal policymakers should support monetary policy in getting inflation back to target. Where inflation remains high, a steady tightening of

Figure 1.24. Sticky Inflation and Premature Easing: The US Experience in the 1980s
(Percent)



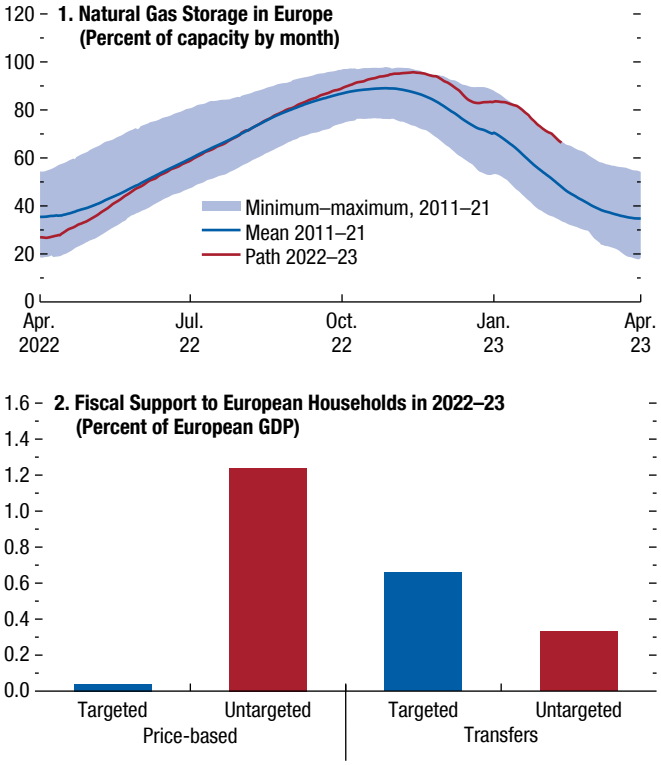
Sources: Federal Reserve Board; and US Bureau of Economic Analysis.
Note: The figure shows the evolution of the effective federal funds rate, along with core inflation and unemployment rate during the late 1970s and early 1980s. The PCE price index measures prices that US consumers face for goods and services. Core PCE inflation is the annual percent change in the PCE price index for goods and services, excluding food and energy. PCE = personal consumption expenditures.

Figure 1.25. US Dollar Remains Strong Despite Some Moderation
(US REER index, 2010 = 100)



Source: IMF staff calculations.
Note: The figure shows the evolution of the real effective exchange rate (REER) index based on the consumer price index for the United States.

Figure 1.26. Europe's Energy Crisis: Status and Costs of Fiscal Support in 2022–23



Sources: Ari and others (2022); Gas Infrastructure Europe, Aggregated Gas Storage Inventory; and IMF staff calculations.
Note: Panel 1 shows natural gas in storage as a percent of storage for European economies for which data are available. In panel 2, European GDP is the aggregate of 24 economies in an IMF survey of fiscal costs in 2023.

the fiscal stance would moderate the need for monetary tightening. In a severe downside scenario, automatic stabilizers should be allowed to operate fully, and temporary support measures should be used as needed (including to buttress the financial system), with due consideration of available fiscal space (see Chapter 1 of the April 2023 *Fiscal Monitor*). Protecting the vulnerable through targeted measures should remain a priority.

Supporting the vulnerable: The surge in global energy and food prices in 2022 triggered a cost-of-living crisis in many countries, especially low-income countries, many of which are still suffering from food insecurity. Governments acted swiftly to extend support to households and firms, which helped cushion the effects on growth. However, the fiscal support extended to households and firms in many European economies was largely untargeted (Figure 1.26). Such broad-based measures are becoming increasingly costly and should be replaced by more targeted approaches (Ari and others 2022). Moreover, in the event of a renewed commodity price spike, measures taken should preserve the market signal from higher energy prices as much as possible, as high prices encourage a reduction in energy consumption, limiting the risks of shortages (see also the October 2022 *Fiscal Monitor*).

Improving food security everywhere: Trade restrictions on food and fertilizers run the risk of pushing a large share of the global population into food insecurity. For example, emerging market and developing economies' net imports of wheat account for more than half of total wheat consumption, but domestic storage in these economies tends to be low, making them more vulnerable to trade shocks (Figure 1.27). Restrictions on exports of food and fertilizers—particularly those most recently imposed—should be lifted to safeguard food supplies and their distribution globally.

Policies with Payoffs in the Medium Term

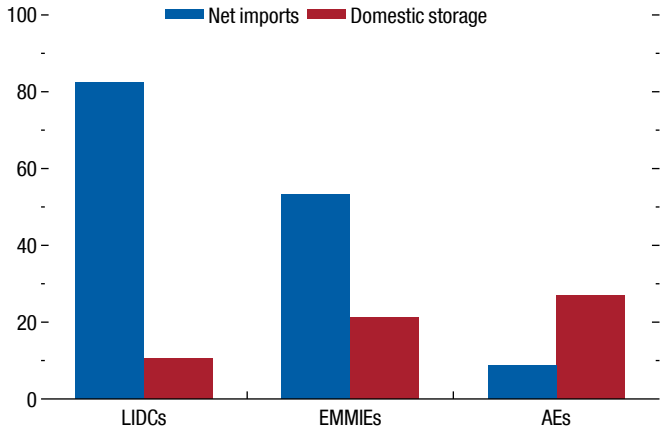
Restoring debt sustainability: With lower growth and higher borrowing costs, public debt ratios are becoming unsustainable in many countries. Actions must be taken to put them on a credible downward path. For economies at high risk of debt distress (Figure 1.20), fiscal consolidation and structural reforms to create sound policy frameworks and revitalize growth remain the fundamental solution to sustainable debt

(Box 3.1). In some cases, debt restructuring may be necessary to help reduce fiscal vulnerabilities. As shown in Chapter 3, waiting to restructure debt until after a default occurs is associated with larger declines in a country's output, investment, private sector credit, and capital inflows than when debt restructuring is preemptive. The world is at a critical juncture, and international cooperation is needed to reduce the likelihood of a snowballing global debt crisis. Progress has been made in regard to countries that requested debt treatment under the G20 Common Framework (for example, *Chad*). Official and private creditors need to stand ready to respond swiftly to requests from a broad set of countries, including the poorest nations that were part of the Debt Service Suspension Initiative, as well as middle-income economies under stress (for example, *Sri Lanka*). It is also necessary to agree on mechanisms to address debt-restructuring needs for a broader set of economies, including middle-income economies that are not eligible under the current Common Framework. Large creditors, including non–Paris Club and private creditors, have a crucial role to play in ensuring effective, predictable, and timely debt resolution processes. The newly created Global Sovereign Debt Roundtable (GSDR) will help multilateral agencies and private and public creditors identify key impediments to restructurings and design standards and processes that can address them.

Reinforcing supply: Well-designed supply-side policies could help address structural factors impeding medium-term growth and recoup some of the output losses accumulated since the pandemic. Policy actions could include structural reforms to reduce harmful market power and rent-seeking behavior as well as overly rigid regulation and planning processes. They could also involve stimulating investment in infrastructure improvements and productive digitalization initiatives and enhancing access to and quality of education. Policies intended to reduce labor market tightness—by encouraging participation and reducing job search and matching frictions—would also help smooth inflation's path back to target. They could include adopting measures to bolster active labor market policies, such as short-term training programs for professions experiencing shortages, passing labor laws and regulations that increase work flexibility through telework and leave policies, and allowing for the resumption of regular immigration flows. Industrial policy could be pursued if frictions (for instance, market failures) are well established and if other policies are not available. Industrial policy should not introduce distortions and should be consistent with international agreements and World Trade Organization (WTO) rules. This will also help prevent unnecessary business uncertainty. Where industrial policies are rolled out, wasteful subsidy races or the imposition of domestic production requirements should be avoided. Such measures could lead to lower productivity and undermine trade relations and would be particularly damaging to emerging market and developing economies.

Figure 1.27. Vulnerability to Food Insecurity: The Case of Wheat

(Percent of annual wheat consumption)



Sources: United Nations; USDA Foreign Agricultural Service; and IMF staff calculations.
Note: The share of wheat consumption that is imported is calculated as the ratio of an economy's imports of wheat in 2022 to the annual consumption of the economy's consumption of wheat in 2022. Storage levels are estimated as of the beginning of 2022. Ratios are averaged across economies within each income group. AEs = advanced economies; EMMIEs = emerging market and middle-income economies; LIDCs = low-income developing countries.

Containing pandemic risks: Authorities should remain vigilant to the risks of a reemergence of the COVID-19 virus and new pandemics and their potential impacts on the global economy. This includes coordinated efforts to boost access to vaccines and medicines where immunity is low and greater public support for vaccine development and systematic responses to future epidemics.

Policies for a Better Long Term

Strengthening multilateral cooperation: The host of complex challenges currently facing the world necessitates a coordinated and common response to

bolster the global economy's resilience and achieve the best outcomes. To this end, actions on fundamental areas of common interest are critical to improving trust and limiting the risks stemming from increasing geopolitical fragmentation. Strengthening the multilateral trading system would help reduce the risks to growth and resilience from such fragmentation by providing fair and predictable rules for exchange. To achieve such strengthening, WTO rules in critical areas such as agricultural and industrial subsidies must be upgraded, new WTO-based agreements implemented, and the WTO dispute settlement system fully restored.

Speeding up the green transition: Progress in emission reductions needed to contain global warming at 2°C or less remains inadequate. Implementing credible policies now will limit the overall costs of mitigation (see Chapter 3 of the October 2022 *World Economic Outlook*). International coordination on carbon pricing or equivalent policies would facilitate a faster decarbonization in a cost-efficient way. With declining investment in fossil fuels, a concerted push on alternative clean energy investment could help ensure sufficient energy supplies and achieve the needed decarbonization. This could be achieved through investment incentives for green materials and electricity grid upgrades, easing of permitting processes for renewables, and support for research and development, among other efforts. The meetings at the 27th United Nations Climate Change Conference of the Parties resulted in encouraging signs of international cooperation on adaptation to climate change, but more needs to be done, including channeling aid to vulnerable countries.

Box 1.1. House Prices: Coming off the Boil

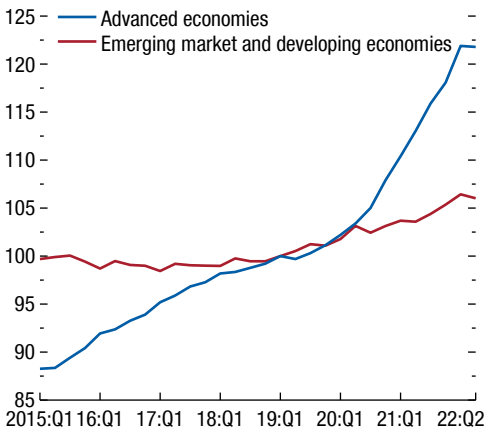
As central banks raised borrowing costs to fight inflation in 2022, real house price growth turned negative in both advanced and emerging market economies. If mortgage rates continue to rise, demand for borrowing is likely to weaken, further depressing house prices. Economies with elevated house prices and high levels of household debt issued at floating rates are particularly vulnerable to any ensuing financial sector stress.

During the COVID-19 pandemic, real house prices rose to record levels in many countries—especially among advanced economies—reflecting a combination of ample policy support and limited numbers of available properties on the market. In the second quarter of 2022, however, quarterly real house prices fell, with about two-thirds of economies experiencing negative growth and the remainder positive but slower growth (Figure 1.1.1). Among advanced economies, the deterioration in the housing market was more pronounced in those that showed signs of overvaluation before and during the pandemic. With central banks hiking interest rates, mortgage rates climbed to an average of 6.8 percent in advanced economies in late 2022, up from 2.8 percent in January 2022. If mortgage rates continue to rise, demand for borrowing and house prices are likely to weaken further.

Who Is at Risk?

Housing markets and prices are likely to cool more and be more sensitive to policy rate hikes in economies in which house prices rose more during the pandemic. Economies with high levels of household debt and a large share of debt issued at floating rates are more exposed to higher mortgage payments, with a greater risk of experiencing a wave of defaults (Figure 1.1.2). In economies in which house prices increased rapidly and affordability declined, but household debt levels

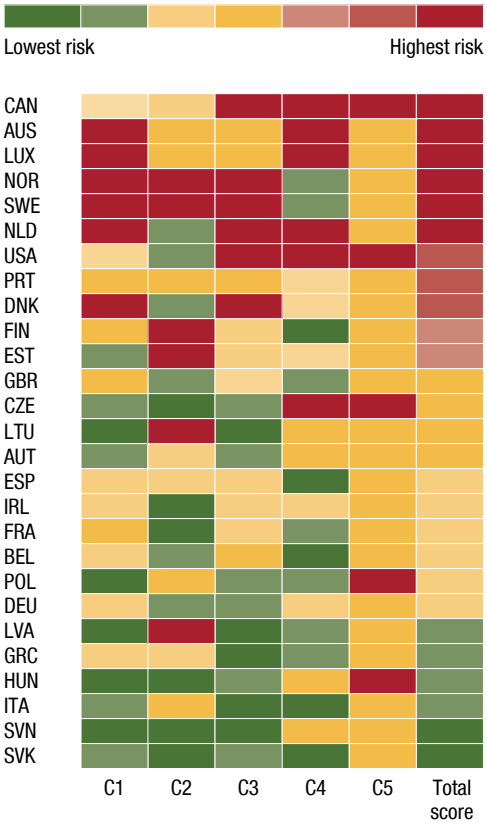
Figure 1.1.1. Global Average Real House Index
(Index, GDP-weighted; 2019:Q1 = 100)



Sources: Bank for International Settlements; and IMF staff calculations.

Prepared by Nina Biljanovska.

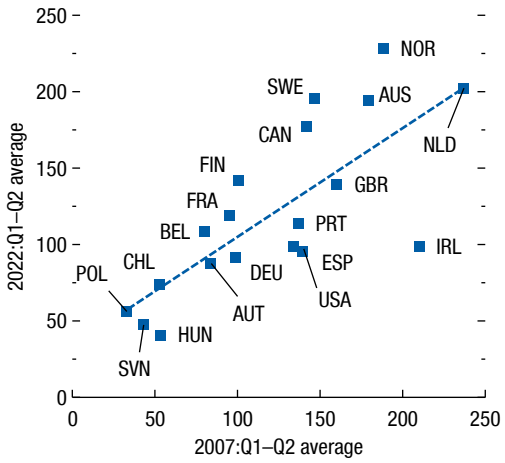
Figure 1.1.2. Indicators of Housing Market Risk



Sources: Bank for International Settlements; European Central Bank; Hypostat, European Mortgage Federation; Organisation for Economic Co-operation and Development; and IMF staff calculations.
Note: C1 = households' outstanding debt as a percentage of gross disposable income, 2022:Q2; C2 = share of debt outstanding at variable interest rate (fixed rate up to one year), 2022:Q3; C3 = share of households owning home with a mortgage, 2020; C4 = cumulative real house price growth, 2020:Q1–22:Q1; C5 = cumulative policy rate changes, 2022:Q1–22:Q3. For each of the five criteria, countries obtain a score between 0 and 4 reflecting their position in the cross-country distribution. The total score is the sum of the individual criteria scores. Economy list uses International Organization for Standardization (ISO) country codes.

Box 1.1 *(continued)*

Figure 1.1.3. Household Indebtedness Rates in Selected Economies
(Percent)



Sources: Organisation for Economic Co-operation and Development; and IMF staff calculations.
Note: Data labels in the figure use International Organization for Standardization (ISO) country codes.

remained moderate up to the recent onset of monetary tightening, a more gradual price decline is expected, which could improve affordability.

How Is This Housing Episode Different from the 2007–08 Global Financial Crisis Episode?

In most cases, it is unlikely that an ongoing fall in house prices will lead to a financial crisis, but a sharp drop in house prices could adversely affect the economic outlook. The buildup of medium-term vulnerabilities warrants close monitoring and, potentially, policy intervention.[1] Data from 2021 show that banks are better capitalized than before the global financial crisis, with the regulatory ratio of Tier 1 capital to risk-weighted assets standing at 17.5 percent on average across countries (IMF 2021), compared with 13.4 percent in 2007. Moreover, banks' underwriting standards in many advanced economies are tighter today than before the global financial crisis. However, the average household debt-to-income ratio across countries in 2022 was on par with that in 2007, driven mainly by households in economies that managed to escape the brunt of the global financial crisis and have since run up substantial borrowing (Figure 1.1.3).

At the same time, in China, the real estate sector has experienced a protracted contraction, with early signs of stabilization in 2023. Share prices of property developers rebounded partially following the wave of support measures announced in November 2022, but a correction in house prices could intensify financial stress for property developers. The Chinese economy is vulnerable to a correction in real estate prices, as the real estate and construction sectors account for about one-fifth of final demand absorption and a significant fraction of lending (IMF 2022b). Although the Chinese authorities have recently stepped up their support to the sector, the share of property developers in need of restructuring remains large (IMF 2023), and the loosening of lending standards could exacerbate financial stability risks.

[1]See the April 2023 *Global Financial Stability Report* for analysis of the risks to the global economic outlook from a sharp decline in house prices.

Box 1.2. Monetary Policy: Speed of Transmission, Heterogeneity, and Asymmetries

Understanding how long monetary policy takes to affect output and inflation is central to policy deliberations. The literature has not yet reached consensus, but several factors are known to shape the effects. Central bank credibility and mortgage rate flexibility increase transmission speed. Other factors, such as financial development and offsetting (uncoordinated) fiscal policies, reduce it. With the ongoing synchronous tightening, a faster and stronger response of economic output and prices could occur.

Transmission Speed

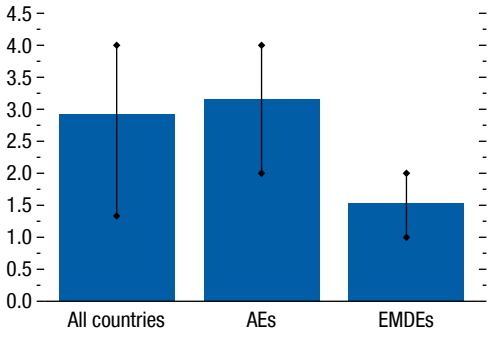
A review of studies[1] on the United States and the euro area reveals that estimates of the timing of monetary policy transmission to output vary between near-immediate effects and a lag of about three quarters. Later, output usually reverts to its initial level within two to three years, although more persistent effects may occur. Estimates of the lag in transmission of monetary policy to prices vary as well. At the upper end, estimates indicate a delay of about 1.5 to 2.5 years. This lag might be driven by firms' staggered price adjustment, or it might be due to informational frictions that make it difficult to disentangle pure monetary policy shocks from outlook information that central banks convey during policy announcements. At the lower end of the range of estimates, studies accounting for the information component find that prices decline immediately following monetary shocks. The immediate response is driven by exchange rate appreciation and changes in inflation expectations. In addition, macroeconomic variables are found to react faster to forward guidance, since it may signal a more persistent change in financial market conditions.

Country Heterogeneity

A meta-analysis of 67 published studies covering 30 different economies (Havranek and Rusnak 2013) finds that the effect of a tightening on prices takes an average of about three years to reach its trough, with a wide range (Figure 1.2.1). Prices in advanced economies take about twice the time needed in emerging market and developing economies. Multiple country-specific factors may affect the transmission channels of monetary policy, consequently shaping the speed and strength of the transmission.

- *Financial development affects the credit channel.* Developed financial systems provide more opportunities to hedge against monetary surprises in advanced economies, delaying the impact of a policy adjustment (Havranek and Rusnak 2013). At the same time, more competitive financial sectors exhibit faster and more complete interest rate pass-through (Georgiadis 2014).
- *Financial frictions affect the investment channel and capital reallocation.* Firms' investment sensitivity to monetary policy is higher for low-liquidity firms, since it increases their fixed-debt issuance costs (Jeenas 2019); for younger non-dividend-paying firms, since their external finances are more exposed to asset value fluctuations (Cloyne and others, forthcoming); for low-risk firms, since their marginal cost of investment finance is flatter than

Figure 1.2.1. Years-to-Trough Responses of Prices to Monetary Tightening
(Number of years)



Sources: Havranek and Rusnak (2013); and IMF staff calculations.
Note: The figure shows the average number of years to the maximum decrease in prices. The whisker indicates the interquartile range. AEs comprise Australia, Canada, Czech Republic, Denmark, Estonia, euro area, Finland, France, Germany, Greece, Ireland, Italy, Japan, Korea, Latvia, New Zealand, Slovak Republic, Slovenia, Spain, United Kingdom, and United States. EMDEs comprise Brazil, Bulgaria, Hungary, Lithuania, Malaysia, Philippines, Poland, Romania, Thailand, and Türkiye. AEs = advanced economies; EMDEs = emerging market and developing economies.

Prepared by Silvia Albrizio and Francesco Grigoli. Yang Liu provided research support.

[1]The review considers the following studies, among others: Bernanke, Boivin, and Eliasz (2005); Choi and others (2022); Christiano, Trabandt, and Walentin (2010); Gertler and Karadi (2015); Jarociński and Karadi (2020); Miranda-Agrippino and Ricco (2021); and Romer and Romer (2004). These estimates refer to the time it takes for macroeconomic variables to start responding to monetary policy shocks in a statistically significant way.

Box 1.2 *(continued)*

that of high-risk firms (Ottonello and Winberry 2020); and for firms with a high marginal product of capital, since they are financially constrained (González and others 2022; Albrizio, González, and Khametshin 2023). Overall, following a monetary tightening, investment declines more in countries with higher levels of financial frictions, capital misallocation increases, and productivity declines.

- *Central bank credibility and effective communication strongly affect the expectation and exchange rate channels.* When inflation expectations are well anchored and central bank independence is high, monetary policy is more effective at restoring price stability with a lower output cost (Chapter 3 of the October 2018 *World Economic Outlook;* Bems and others 2020). Conversely, if expectations are more backward looking, as in many emerging market and developing economies, a stronger monetary policy reaction to reanchor expectations is warranted (Chapter 2 of the October 2022 *World Economic Outlook;* Alvarez and Dizioli 2023), and the exchange rate pass-through to consumer prices will be stronger (Carrière-Swallow and others 2021).
- *The household wealth and income distribution shapes the consumption and saving channels.* Households with a mortgage are the most responsive to monetary policy tightening, as they reduce spending on durables (Cloyne, Ferreira, and Surico 2020). Moreover, households adjust their decisions depending on the liquidity of their asset holdings: Households at the bottom of the liquid asset distribution decrease their consumption, households at the midpoint reduce saving or increase borrowing, and households at the top increase consumption substantially on account of a rise in interest income (Holm, Paul, and Tischbirek 2021). Finally, high-income consumers cut spending more than low-income consumers, possibly because of less binding borrowing constraints and stronger intertemporal substitution effects triggered by higher interest rates (Grigoli and Sandri 2022).

Nominal rigidities shape the output effect of monetary policy in multiple ways. Greater wage rigidities amplify the output effect (Olivei and Tenreyro 2010). Conversely, mortgage rate rigidities dampen this effect, by decreasing the responsiveness of residential investment (Calza, Monacelli, and Stracca 2013) and the sensitivity of defaults, house prices, car purchases, and employment (Di Maggio and others 2017) to interest rate changes. Therefore, a large share of adjustable-rate mortgages, more common in emerging market and developing economies (Cerutti and others 2016), amplifies the contractionary output effect of monetary tightening.

Asymmetric Effects

Monetary policy shocks may have asymmetric and cyclically dependent output and inflation effects. There is evidence that policy easing has large effects on prices but small effects on real activity, whereas policy tightening has large output effects, especially during booms, but small effects on prices (Barnichon and Matthes 2018; Angrist, Jordà, and Kuersteiner 2018; Forni and others 2020; Tenreyro and Thwaites 2016). These asymmetric effects might be driven by the presence of downward nominal rigidities (Forni and others 2020); by the interaction with fiscal policy, which dampens monetary policy in recessions but reinforces it in expansions (Tenreyro and Thwaites 2016); or by changes in firms' price-setting behavior when inflation increases (Alvarez, Lippi, and Paciello 2011; Nakamura and Steinsson 2008; Albagli, Grigoli, and Luttini 2023). Finally, cross-country synchronized tightening can counteract global shocks, such as global surges in commodity prices. Synchronization among energy importers effectively lowers energy world demand, hence reducing inflation faster (Auclert and others 2022).

Overall, with today's exceptionally synchronous global monetary tightening, accompanied by widespread withdrawal of fiscal support, sharply increasing residential mortgage rates, and global financial conditions highly sensitive to policy news, a shorter transmission lag than in the past could occur in several countries. Clear and effective communication by major central banks regarding their resolve to keep inflation expectations anchored and reduce inflation is expected to further accelerate policy transmission.

Box 1.3. Risk Assessment Surrounding the *World Economic Outlook* Baseline Projections

This box uses the IMF's Group of Twenty (G20) Model to derive confidence bands around the *World Economic Outlook* (WEO) growth and inflation forecasts and to quantify a severe downside scenario. As in the October 2022 WEO, the risk of global growth falling below 2 percent in 2023—a low-growth outcome that has happened only five other times (in 1973, 1981, 1982, 2009, and 2020) since 1970—remains elevated at about 25 percent, with the balance of risks clearly tilted to the downside. This box introduces inflation confidence bands for the first time. The chance that core inflation will be higher in 2023 than in 2022 is close to 30 percent. The downside scenario illustrates how shocks to credit supply, stemming from banking sector fragility in the face of tightening monetary policy and amplified through risk-off behavior and a decline in confidence, could reduce global growth to about 1 percent.

Confidence Bands

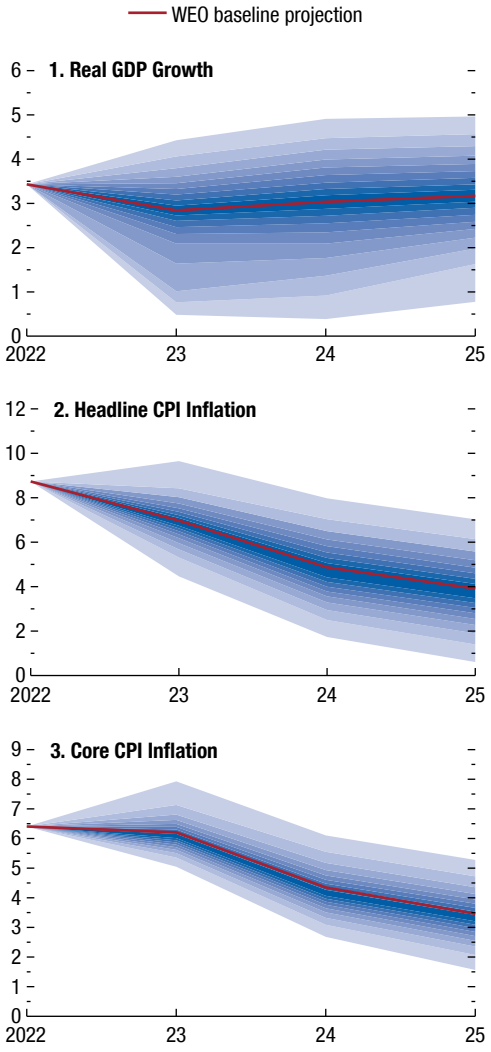
The methodology for producing confidence bands is based on Andrle and Hunt (2020). The G20 Model, presented in Andrle and others (2015), is used to interpret historical data on output growth, inflation, and international commodity prices and to recover the implied economic shocks to aggregate demand and supply. The recovered shocks are sampled through nonparametric methods and fed back into the model to generate predictive distributions around the WEO projections. The resulting confidence bands thus depend on the joint distribution of the estimated shocks, the structure of the model, and the initial conditions for the projections. Distributions for global variables are obtained by aggregating country-level estimates.

In the October 2022 WEO, two versions of the forecast distribution were presented: one that sampled all historical data uniformly, that is, without judgment, and one with judgment that sampled the year 1982 more heavily, to stress the risk of a more pronounced slowdown from contractionary monetary policy. The distribution is shown for the latter case (with judgment), as uncertainty about the impact of monetary policy tightening remains central to the assessment of risk. The judgment is applied to the first two years in the projection horizon (2023 and 2024).

Figure 1.3.1 shows the distributions for global growth and inflation projections. Each shade represents a 5 percentage point interval, and the entire band covers

Prepared by Michal Andrle, Jared Bebee, Allan Dizioli, Rafael Portillo, and Aneta Radzikowski.

Figure 1.3.1. Distribution of Forecast Uncertainty around World Growth and Inflation Projections
(Percent)



Source: IMF staff calculations.
Note: The chart shows the distribution of forecast uncertainty around the baseline projection as a fan. Each shade of blue represents a five percentage point probability interval.
CPI = consumer price index; WEO = *World Economic Outlook*.

Box 1.3 *(continued)*

90 percent of the distribution. Regarding global growth, the added judgment makes the distribution skewed to the downside, with lower growth outcomes more likely than higher growth outcomes. There is a 70 percent probability that 2023 global growth could be between 1.0 percent and 3.8 percent. Similarly, there is a 70 percent probability that growth will be between 1.4 percent and 4.3 percent in 2024.

Regarding global inflation, there is a 70 percent chance that 2023 headline inflation could be about 1.2 percentage points higher or lower than currently projected. The distribution for core inflation is narrower: The range associated with a 70 percent probability is 0.7 percentage point higher or lower than the baseline. Both distributions are skewed to the upside in the near term, but the skew is more notable for core inflation, with about a 30 percent probability that 2023 core inflation will exceed the 2022 level. The upside skew for core in the near term reflects in part the inflation surge seen during the COVID-19 period. Big positive shocks to inflation are now seen as more likely than before the pandemic.

Risk Scenarios

Recent events have revealed greater-than-expected fragility in parts of the global banking system, with potential losses from the speed and magnitude of the monetary policy tightening and the risk of deposit withdrawals weighing on valuations and access to funding. The IMF's G20 Model is used to quantify a severe downside scenario in which the overall supply of credit is reduced and other channels add to the impact on global activity. Each channel is presented as a separate layer in the following discussion.

Layers

The first layer includes the impact from lower global credit supply. Due to the stress on some banks' balance sheets, bank lending in the United States decreases by 4 percent in 2023 relative to current baseline projections, equivalent to about one-fifth of the contraction in credit experienced during the global financial crisis (relative to the precrisis trend). Corporate spreads increase by 250 basis points in 2023. Other countries also experience a shock to the supply of credit. For euro area countries and Japan, the impact is similar in magnitude to that for the United States; for other countries, the size of the shock varies depending on how their financial conditions correlate with those in the United States. The assumed impact on China's domestic financial conditions is small. The tightening in financial conditions is persistent and extends into 2024 and (to a lesser extent) beyond.

The macroeconomic effects are amplified through three additional channels:

- Equity prices: Global equity prices fall by 10 percent on impact and by about 6 percent on average in 2023.
- Flight to safety and dollar appreciation: In emerging markets excluding Asia, sovereign premiums increase considerably and the US dollar appreciates by close to 10 percent. The shock for emerging market economies in Asia is about half as large, and China is not directly affected. Sovereign spreads in some euro area countries increase by a modest amount.
- Fall in confidence: It is assumed that greater precautionary saving (about 75 percent of the estimated increase in precautionary saving during the global financial crisis) leads to a decrease in consumption, while a decline in business sentiment leads to a decrease in investment. For reference, in this layer, US consumption and investment decrease by 0.3 and 1 percent, respectively, relative to the baseline.

The Policy Response

Monetary policy responds endogenously to the resulting decrease in activity and inflationary pressures. In terms of fiscal policy, it is assumed that automatic stabilizers operate in advanced economies but not in emerging markets. Balance sheet policies and other interventions by central banks and regulators, to preserve the stability of the financial system, are not explicitly modeled but should be thought of as helping avert a crisis, with larger effects on activity than what is shown here. The potential cost of these interventions and their impact on countries' fiscal stance are not considered in this scenario. Should fiscal policy, especially in countries with limited fiscal space, tighten due to the strains on debt sustainability, the macroeconomic impact would be larger.

Impact on World Output and Inflation

Figure 1.3.2 shows the effects of the scenario on the level of GDP (in panel 1) and core inflation (panel 2) for 2023 and 2024. Results are presented as percent deviations from the baseline, for the case of GDP, and percentage point deviations from the baseline, for the case of core inflation. The contribution from each layer (credit conditions, equity prices, dollar appreciation and flight to safety, confidence) is shown in stacked form in the figures. Country results are grouped into

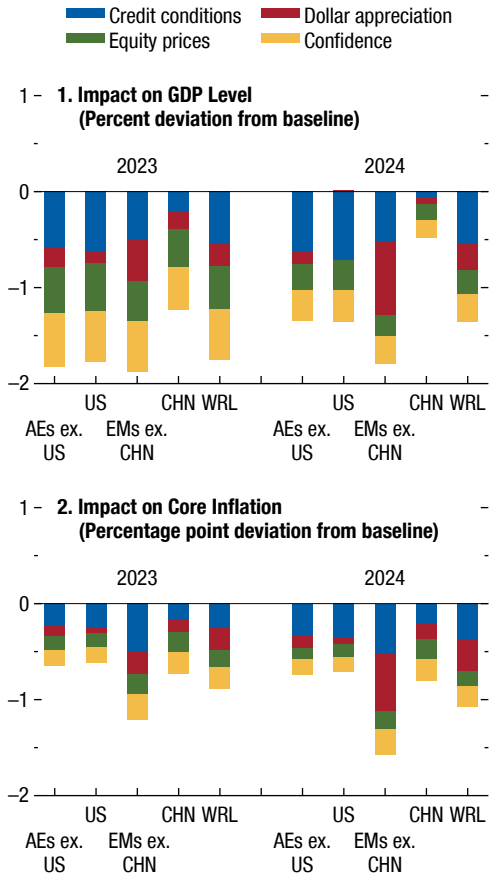
Box 1.3 *(continued)*

four regions: the United States, advanced economies excluding the United States, emerging markets excluding China, and China.

Results can be summarized as follows:

- The credit conditions layer subtracts 0.5 percent from global output in 2023. The impact of this layer is larger in the United States and in other advanced economies than in emerging markets. The impact on China is small.
- The appreciation of the US dollar vis-à-vis emerging market economies' currencies and tightening in emerging market (and some advanced) economies' sovereign premiums subtract another 0.2 percent globally in 2022. The effect is larger in emerging market economies, at –0.4 percent in 2023. Advanced economies as a group are also affected by the currency depreciation in emerging market economies and lower global demand.
- The decline in equity prices subtracts another 0.5 percent from global output in 2023, with a somewhat larger impact in advanced economies than in emerging markets.
- The confidence layer subtracts 0.5 percent from global activity in 2023, with advanced economies again seeing a larger hit to activity than emerging markets.
- The combined effect from all layers implies a decrease in the level of global output of 1.8 percent in 2023 and 1.4 percent in 2024, relative to the baseline. The overall effect on global output is about one-fourth the size of the impact of the global financial crisis during 2008–09. The United States and other advanced economies see a broadly similar hit to activity (1.8 percent in 2023). Emerging market economies excluding China see an even larger effect (–1.9 percent) due mainly to the dollar appreciation layer, while China experiences a smaller impact overall (–1.2 percent).
- Oil prices fall by close to 15 percent in 2023 relative to the baseline, due to the decrease in global demand, before gradually returning to the baseline over the projection horizon.
- The disinflationary impulse, shown in panel 2, is pronounced. Global core inflation declines by 0.9 percentage point in 2023 and by 1.1 percentage points in 2024, relative to the baseline. Disinflation is more pronounced in emerging markets excluding China, due to the assumption that Phillips curves are steeper, but the decline in inflation is also sizable in advanced economies.
- Policy rates (not shown) are also considerably lower in this scenario. US policy rates decline by 1.6 percentage points in 2023 and 1.8 percentage points in 2024, relative to the baseline; the global average of policy rates declines by 2.1 and 2.3 percentage points over the same period.

Figure 1.3.2. Impact of Downside Scenario on GDP and Core Inflation



Source: IMF staff calculations.
Note: AEs = advanced economies; CHN = China; AEs ex. US = advanced economies excluding United States; EMs ex. CHN = emerging markets excluding China; US = United States; WRL = World.

Commodity Special Feature: Market Developments and the Macroeconomic Impact of Declines in Fossil Fuel Extraction

Primary commodity prices declined 28.2 percent between August 2022 and February 2023. The decrease was led by energy commodities, down 46.4 percent. European natural gas prices declined by 76.1 percent amid lower consumption and high storage levels. Base and precious metal prices rebounded by 19.7 and 3.3 percent, respectively, whereas food prices increased slightly, by 1.9 percent. This Special Feature analyzes the impact of declines in the extraction of fossil fuel and other minerals on the macroeconomic activity of commodity exporters.

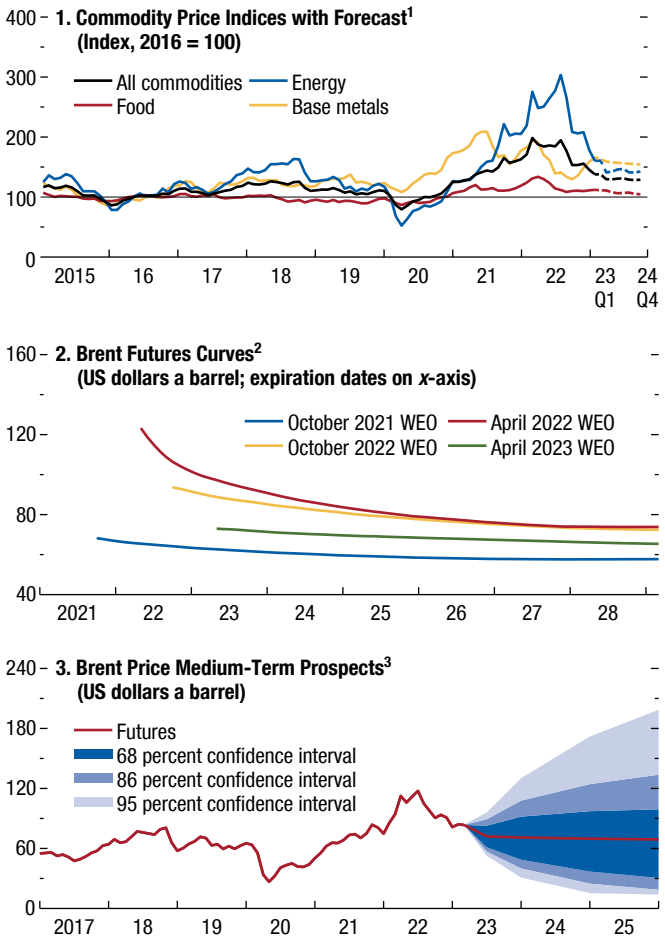
Commodity Market Developments

Energy prices waver. Crude oil prices retreated by 15.7 percent between August 2022 and February 2023 as the slowing global economy weakened demand (Figure 1.SF.1, panels 1 and 3). China experienced its first annual decline in oil consumption this century amid repeated shutdowns in response to COVID-19 outbreaks and a faltering real estate market. Recession fears due to higher-than-expected inflation and tighter monetary policy in many major economies and banking woes sparked concerns about flagging demand.

On the supply side, uncertainty over the effects of Western sanctions on Russian crude oil exports whipsawed expectations about global market balances. As of March, Russian crude oil exports had held steady since implementation of the Group of Seven (G7) price cap and ban on crude oil imports on December 5. Russia rerouted its oil, reportedly sold at a major discount to Brent oil prices, to nonsanctioning countries, primarily India and China. Downside supply risks did not materialize until Russia's recent announcement of a modest production reduction. A sizable release of strategic petroleum reserves by Organisation for Economic Co-operation and Development member countries also helped keep oil markets well supplied, in part offsetting underproduction and reduced targets by OPEC+ (Organization of the Petroleum Exporting Countries plus selected nonmember countries).

The contributors to this Special Feature are Mehdi Benatiya Andaloussi, Lukas Boehnert, Christian Bogmans, Rachel Brasier, Andrea Pescatori (team leader), Ervin Prifti, and Martin Stuermer, with research assistance from Wenchuan Dong and Tianchu Qi.

Figure 1.SF.1. Commodity Market Developments



Sources: Bloomberg Finance L.P.; IMF, Primary Commodity Price System; Kpler; Refinitiv Datastream; and IMF staff calculations.
Note: WEO = *World Economic Outlook*.
[1]Adjusted for inflation using the US consumer price index (CPI). Last actual value is applied to the forecast period. Dashed lines are the forecasts from 2023:Q1 to 2024:Q4.
[2]WEO futures prices are baseline assumptions for each WEO and derived from futures prices. Prices in the April 2023 WEO are based on the March 17, 2023 closing.
[3]Derived from prices of futures options on March 17, 2023.

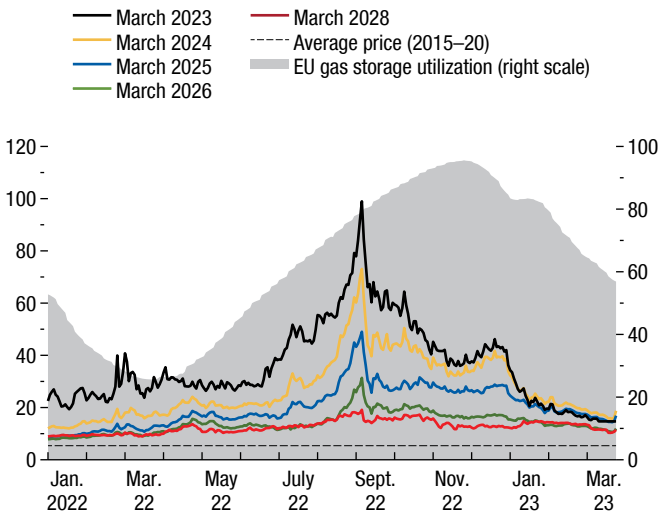
Futures markets suggest that crude oil prices will slide by 24.1 percent, to average $73.1 a barrel, in 2023 (from $96.4 in 2022) and continue to fall in the coming years, to $65.4 in 2026 (Figure 1.SF.1, panel 2). Uncertainty around this price outlook is elevated in part due to the uncertain rebound in China's

growth, as well as the energy transition (Figure 1.SF.1, panel 3). Upside price risks stem from potential supply disruptions, including those from Russian retaliation to a binding price cap, and insufficient investment in fossil fuel extraction. Following the financial market turmoil that emerged in mid-March, downside price risks of a widespread global economic relapse have increased significantly.

Natural gas prices at the European Title Transfer Facility trading hub receded 76.1 percent from record highs in August 2022 to $16.7 a million British thermal units (MMBtus) in February 2023 as concerns about supply shortages faded. Prices reached nearly $100 a MMBtu in late August when EU countries raced to refill their gas storage facilities amid fears of supply shortages during the winter. This followed Russia's progressive shutdown of roughly 80 percent of pipeline gas supplies to European countries. Prices in the global liquefied natural gas market followed in lockstep. For the winter of 2022–23, a crisis was averted, with ample storage at European facilities owing to higher liquefied natural gas imports and lower gas demand amid high prices as well as an atypically mild winter. Lower demand due to an economic slowdown in China and substitution of other fuel sources, such as coal, also helped ease pressures on the global liquefied natural gas market. A price decline to historical averages is expected by 2028 (Figure 1.SF.2). Risks of price spikes remain somewhat elevated, however, for next winter. Spillovers from gas markets caused a 50.9 percent slide in coal prices over the reference period.

Metal prices recover after steep drop. The base metal price index dropped below levels preceding Russia's invasion of Ukraine. It surged after the invasion but experienced a broad-based retreat amid slowing Chinese metal demand (accounting for roughly half of global consumption of major metals) and monetary policy tightening. With China's reopening and increased infrastructure spending, as well as an expected slower pace of interest rate hikes from the Federal Reserve, base metal prices partially rebounded, increasing by 19.7 percent from August 2022 to February 2023. Recent banking distress presents significant downside risks to prices. The IMF's energy transition metal index increased 14.3 percent. Gold prices rose by 5.1 percent, and central banks' net purchases broke a 55-year record. The base metal price index is projected to increase 3.5 percent in 2023 and then decrease 2.6 percent in 2024. Traders seem to price in a potential rebound in demand from China.

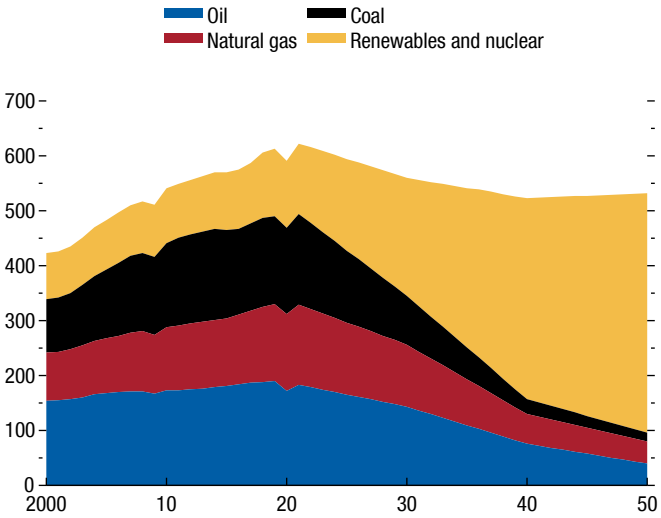
Figure 1.SF.2. EU Gas Storage and Futures Contract Prices
(US dollars per million British thermal units; percent)



Sources: Argus Direct; Bloomberg L.P.; Gas Infrastructure Europe (GIE); and IMF staff calculations.
Note: European Union country coverage by the GIE definition. Dates in legend are Dutch Title Transfer Facility (TTF) futures contracts expiration date.

Agricultural prices continue on a downward trend. Drawdowns of stocks of staple foods in major exporting countries, due to major shocks in the past two years from the pandemic and the war in Ukraine, have stopped as supply and demand have reacted to higher prices. Food and beverage prices peaked in May 2022 and are up 1.3 percent from last August. They remain 22.3 percent above the past-five-year average and 39.1 percent above pre-pandemic levels. The supply outlook improved as Ukrainian wheat and other products entered the global market after the Black Sea corridor initiative was renewed last November. High prices also provided incentives to other regions, such as the European Union and India, to step up wheat production. However, some of the correction has likely come from demand destruction of price-elastic components such as meat and biofuels. Risks remain balanced as spillovers from gas to fertilizer prices and a possible abrupt ending of the Black Sea corridor deal offset possibly reduced consumption and a potentially stronger supply reaction. Prices of raw agricultural materials declined by 9.1 percent from last August amid slowing global demand but, like base metal prices, have partly rebounded in recent months.

Figure 1.SF.3. Global Fossil Fuel Production Declines 60 Percent in a Net Zero Emissions Scenario
(Exajoule)



Sources: International Energy Agency; and IMF staff calculations.
Note: Renewables include solar, wind, hydro, bioenergy, and traditional use of biomass. Fossil fuel production includes fossil fuels for non-energy use (for example, petrochemicals) as well as carbon capture and storage abatement.

The Macroeconomic Impact of Declines in Fossil Fuel Extraction

Reaching net zero emissions by 2050 will require an 80 percent reduction in global fossil fuel extraction compared with 2021 levels, according to the International Energy Agency (2022) (Figure 1.SF.3). Though the situation is highly uncertain, it is worth asking what economic repercussions a contraction in fossil fuel extraction could have for fossil fuel exporters. A large amount of literature emphasizes the negative impact a sizable extraction industry has on a country's economic growth (the *resource curse*) because it weighs on the performance of the manufacturing sector (Krugman 1987; Frankel 2012) and on the quality of institutions (Mauro 1995; Lane and Tornell 1996).[1] There is, however, a dearth of analysis on the macroeconomic effects of a reversal, to the extent that there is still debate over whether a *decline* in fossil fuel production is detrimental or beneficial to countries' economic growth.[2]

This Special Feature contributes to filling this gap by estimating the macroeconomic impact of persistent declines in extraction activity.[3] It focuses on production declines, given that the effects of climate policies on fossil fuel prices are uncertain, depending on whether policies curbing demand for fossil fuels will prevail over those curbing their supply (see the April 2022 *World Economic Outlook*). Even though production declines will likely vary substantially and are hard to anticipate, these estimates can help inform fossil-fuel-exporting countries' medium- to long-term planning and policies.

Countries depending on fossil fuel output: Between 2010 and 2019, average oil and gas production-to-GDP ratios were large in countries such as Angola, Azerbaijan, the Republic of Congo, Kuwait, and Saudi Arabia (Figure 1.SF.4 panel 1). Gas production is particularly relevant in Qatar and Trinidad and Tobago. Coal production, on the other hand, is less relevant to GDP at the country level, except in the case of Mongolia. Most extracted fossil fuels are exported and so are a fundamental source of cash inflows in economies' external balance. Indeed, ratios of net exports of oil and gas to GDP surpassed 25 percent on average over 2010–2019 in more than ten countries (Figure 1.SF.4 panel 2). The oil and gas sector is also a substantial contributor to tax revenues and, to a lesser extent, to employment (see Online Annex Figures 1.SF.1 to 1.SF.4).[4]

A new data set on declines in extraction: The empirical exercise conducted for this Special Feature relies on a new data set on the extraction of oil, coal, gas, and metals for countries worldwide from 1950 to 2020. To deal with endogeneity, the analysis identifies 35 episodes involving persistent declines in extractive activity out of a total of 154 observed episodes. It verifies that these episodes are driven by factors exogenous to economic conditions such as depletion or sector-specific policy changes. For example, included are episodes such as the sudden tax increase on bauxite mining in Suriname in 1974, which led to a persistent

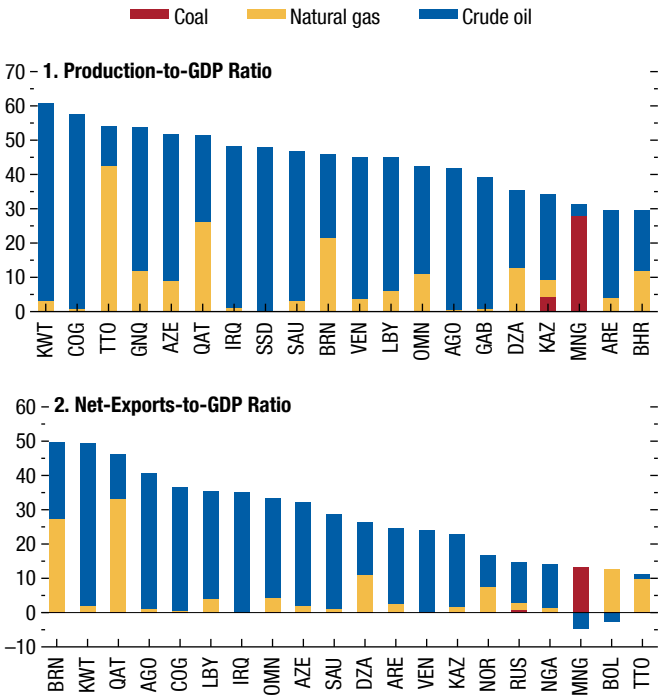
[1]"Dutch disease" is a version of the resource curse in which an increase in commodity prices leads to a real exchange rate appreciation that crowds out a commodity exporter's domestic manufacturing sector. Total output can still expand, and the country can become richer. See Brunnschweiler and Bulte (2008) and van der Ploeg and Venables (2012).

[2]A small body of literature examines the local effects of mining booms and busts. See Black, McKinnish, and Sanders (2005); Jacobsen and Parker (2016); Cavalcanti, Da Mata, and Toscani (2019); Watson, Lange, and Linn (2023); and Hanson (2023).

[3]This Special Feature is based on Bems and others (forthcoming).

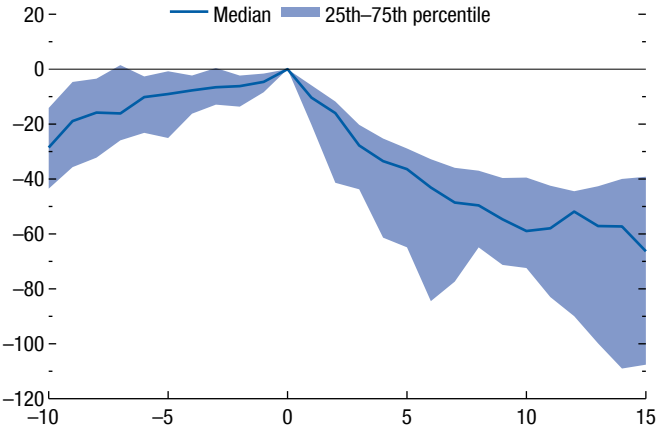
[4]All online annexes are available at www.imf.org/en/Publications/WEO.

Figure 1.SF.4. Top Twenty Countries by Share of Fossil Fuel Production and Net Exports in GDP
(Percent)



Sources: International Energy Agency; United Nations Comtrade database; World Bank; and IMF staff calculations.
Note: Ratios are computed annually and averaged over 2010–2019. Prices are taken at the regional level in US dollars. Iran is excluded due to data limitation. Country list uses International Organization for Standardization (ISO) country codes.

Figure 1.SF.5. Episodes of Extraction Declines
(Percent)



Sources: Bems and others (forthcoming); and IMF staff calculations.
Note: *X*-axis unit is years before and after peak extraction year.

contraction in bauxite output (other examples feature in Bems and others, forthcoming). Extraction declines driven by global recessions, policy decisions directly affecting other sectors of an economy, and structural transitions such as the breakup of the Soviet Union and civil wars are excluded. Across those identified, the *typical* episode is a 10 percent contraction in extraction activity in the episode's first year that cumulates to a 40 percent reduction over 10 years (Figure 1.SF.5).

Estimating the macroeconomic effects of declines in extractive activity: Following Jordà (2005), local projections are used to estimate the effects of episodes of persistent exogenous extraction declines on real GDP and the external and domestic sectors using the following:

$$y_{t+h,i} - y_{t-1,i} = \alpha + \beta^h \Delta q_{t,i} + \sum_{j=1}^{p} \Gamma_j^h y_{t-j,i} + \sum_{j=1}^{p} \Pi_j^h \Delta q_{t-j,i} + \psi_n + \phi_t + u_{t+h,i} y_{t+h,i} - y_{t-1,i}.$$

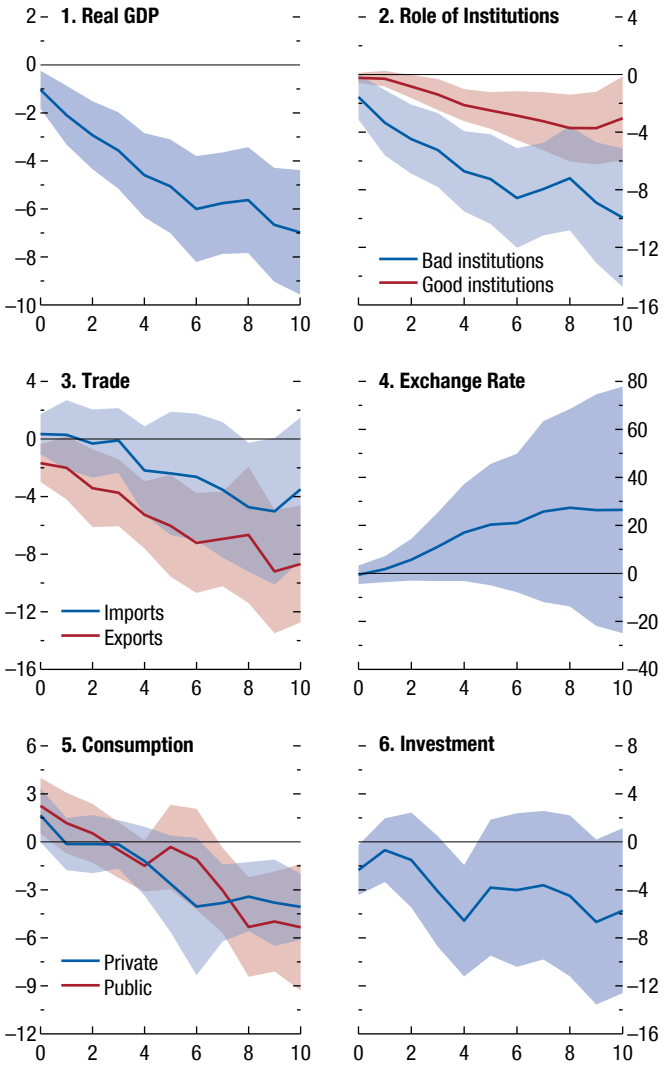
The equation's left side represents the log deviation of the variable of interest from its initial value over the horizon h, up to 10 years. Results may thus be interpreted as cumulative percentage changes from the baseline to a shock in year t. The term $\Delta q_{t,i}$ captures the percentage change in extraction output for episode i at year t. The baseline includes country fixed effects ψ_n to account for structural differences across countries, time fixed effects ϕ_t to control for global price movements and other common global factors, as well as three lags of the dependent variable, and a shock series to deal with autocorrelation, following Montiel Olea and Plagborg-Møller (2021).

Negative macroeconomic effects: A typical episode leads to a 1 percent initial decline from the baseline in real GDP, cumulating to 5 percent after five years. The decline is persistent, with no rebound until the end of the horizon (Figure 1.SF.6, panel 1).

The real exchange rate depreciates slowly by 20 percent. This does not stimulate enough reallocation of production factors such as labor and capital toward tradables sectors, which could offset the decline in exports that depend on extractive industries. Instead, the trade balance worsens, driven by a decline in exports of about 6 percent (Figure 1.SF.6, panel 3). Imports and investment also decline, though the estimates for these effects are less precise. Aggregate consumption responds only with a lag of more than five years.

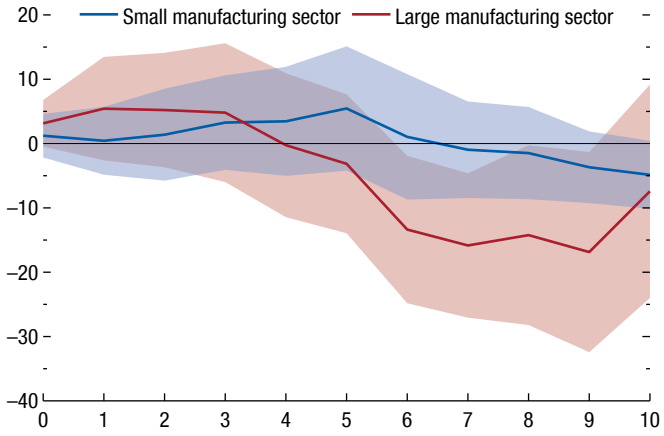
The role of manufacturing: Spillover effects on the manufacturing and services sectors are significant and negative. Their value added falls significantly by about 5 percent (Bems and others, forthcoming).

Figure 1.SF.6. Responses of Macroeconomic Variables to an Extraction Decline Shock
(Percent)



Sources: Bems and others (forthcoming); and IMF staff calculations.
Note: The unit of the *x*-axis is years after the shock. Shaded areas represent 90 percent confidence intervals.

Figure 1.SF.7. Response of Institutional Quality Interacted with Manufacturing Sector Size to an Extraction Decline Shock
(Percent)



Sources: Bems and others (forthcoming); and IMF staff calculations.
Note: The unit of the *x*-axis is years after the shock. Shaded areas represent 90 percent confidence intervals.

These sectors provide mining sector inputs and process outputs. The negative impact more than offsets the potential benefits of the depreciation in the real exchange rate. The initial share of the manufacturing sector in value added matters. Economies with bigger initial manufacturing shares fare better, suggesting the presence of sunk costs in the tradables sector that favor existing exporting manufacturing firms over new ones. The negative impact on employment is, on the other hand, small, likely owing to the high capital intensity of the extraction sector.

The role of institutions: The estimated GDP impact is significantly larger for middle- and low-income countries than for those with high incomes. One plausible explanation for this is that high-income countries tend to have stronger institutions. Five years after the shock, the GDP difference between countries with high and low institutional quality is about 5 percentage points (Figure 1.SF.6, panel 2). This could indicate that strong institutions help buffer the negative economic effects of a persistent decline in extraction activity. While explaining what determines the quality of institutions is beyond the scope of this analysis, the economic literature on the resource curse emphasizes that resource booms can lead to a deterioration in the quality of institutions. What happens, however, in the reverse, a resource extraction bust? The exercise shows that a decline in extraction activity does *not* restore the quality of institutions, not even a decade after the shock. This suggests a hysteresis effect and an asymmetric response of institutions to shocks: once institutions are damaged, improving them is hard (see Figure 1.SF.7).

Anticipation: It could bias the results toward a smaller estimated impact if the regression does not capture earlier adjustment. To explore anticipation, projections of commodity production in IMF Article IV reports are reviewed and compared with actual production. Out of 26 decline episodes with Article IV coverage,

only 4 were anticipated. In the other 22, extraction was expected either to increase or to remain stable (or in a few cases, it was not mentioned). The lack of anticipation, in turn, suggests that uncertainty about the size and persistence of the ensuing contraction may have delayed the economic adjustment needed, surprising the country's policymakers and private sector alike. In fact, both private and public consumption initially increase, declining only with a delay to a 4 percent lower level. This suggests that the shock was typically not fully anticipated, or income-side policies are implemented to buffer the initial impact, or both. Accordingly, the exchange rate moves in only a modest and statistically nonsignificant way.

A More Challenging Energy Transition: Countries at risk of declining fossil fuel output need to address the possibility of a challenging structural adjustment. To do so, they can improve public finances and the quality of their institutions (for example, by enhancing the management of public sector institutions and the regulatory business environment), diversify their economies (Cherif and others 2022), set up sovereign wealth funds, and facilitate the reallocation of production factors. Possible policies for accomplishing these goals include ameliorating the business environment to attract investment in new, productive, higher-value-added sectors; modernizing infrastructure and attracting foreign direct investment in research and development; and improving the human capital stock of the labor force by investing in education.

The pace and direction of the clean energy transition as well as the price outlook depend on the policy mix. This creates great uncertainty in countries that produce fossil fuels. If fossil fuel prices decline because of a climate policy mix that works mostly through the demand side, high-cost producers will need to shut down production. If those prices instead rise based on a climate policy mix that relies on supply cuts, local production declines will depend on domestic policy decisions (see the Special Feature in the April 2022 *World Economic Outlook*). Climate policy certainty, at the country and global levels, could make adjustments more predictable and less costly.

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	
	2022	2023	2024	2022	2023	2024	2022	2023	2024	2022	2023	2024
Europe	**2.7**	**0.8**	**1.7**	**15.4**	**10.5**	**6.5**	**1.7**	**1.3**	**1.5**	. . .	. . .	. . .
Advanced Europe	**3.6**	**0.6**	**1.4**	**8.5**	**5.6**	**3.0**	**1.6**	**1.7**	**2.0**	**6.0**	**6.2**	**6.2**
Euro Area[4,5]	3.5	0.8	1.4	8.4	5.3	2.9	–0.7	0.6	0.9	6.8	6.8	6.8
Germany	1.8	–0.1	1.1	8.7	6.2	3.1	4.2	4.7	5.1	3.1	3.3	3.3
France	2.6	0.7	1.3	5.9	5.0	2.5	–1.7	–1.2	–0.7	7.3	7.4	7.3
Italy	3.7	0.7	0.8	8.7	4.5	2.6	–0.7	0.7	1.0	8.1	8.3	8.4
Spain	5.5	1.5	2.0	8.3	4.3	3.2	1.1	0.9	0.8	12.9	12.6	12.4
The Netherlands	4.5	1.0	1.2	11.6	3.9	4.2	5.5	6.3	6.3	3.5	3.9	4.2
Belgium	3.1	0.7	1.1	10.3	4.7	2.1	–3.4	–2.7	–1.4	5.5	6.0	6.0
Ireland	12.0	5.6	4.0	8.1	5.0	3.2	8.8	8.2	7.5	4.5	4.5	4.5
Austria	5.0	0.4	1.1	8.6	8.2	3.0	0.3	1.2	0.6	4.8	5.3	5.6
Portugal	6.7	1.0	1.7	8.1	5.7	3.1	–1.3	–0.8	–0.7	6.0	6.6	6.5
Greece	5.9	2.6	1.5	9.3	4.0	2.9	–9.7	–8.0	–6.0	12.2	11.2	10.4
Finland	2.1	0.0	1.3	7.2	5.3	2.5	–4.2	–3.4	–2.2	6.8	7.5	7.5
Slovak Republic	1.7	1.3	2.7	12.1	9.5	4.3	–4.3	–3.5	–2.6	6.1	6.0	5.9
Croatia	6.3	1.7	2.3	10.7	7.4	3.6	–1.2	–1.8	–1.8	6.8	6.4	6.0
Lithuania	1.9	–0.3	2.7	18.9	10.5	5.8	–4.5	–3.0	–2.0	5.9	7.0	6.5
Slovenia	5.4	1.6	2.1	8.8	6.4	4.5	–0.4	0.3	0.8	4.0	3.9	4.0
Luxembourg	1.5	1.1	1.7	8.1	2.6	3.1	4.0	4.3	4.3	4.8	5.1	5.4
Latvia	2.0	0.4	2.9	17.2	9.7	3.5	–6.3	–3.1	–2.2	6.9	7.0	6.8
Estonia	–1.3	–1.2	3.2	19.4	9.7	4.1	–2.2	–1.2	–0.9	5.6	6.1	5.7
Cyprus	5.6	2.5	2.8	8.1	3.9	2.5	–8.8	–7.8	–7.2	6.7	6.5	6.2
Malta	6.9	3.5	3.5	6.1	5.8	3.4	0.7	1.8	1.7	2.9	3.1	3.2
United Kingdom	4.0	–0.3	1.0	9.1	6.8	3.0	–5.6	–5.2	–4.4	3.7	4.2	4.7
Switzerland	2.1	0.8	1.8	2.8	2.4	1.6	9.8	7.8	8.0	2.2	2.3	2.4
Sweden	2.6	–0.5	1.0	8.1	6.8	2.3	4.3	3.9	3.9	7.5	7.8	8.0
Czech Republic	2.4	–0.5	2.0	15.1	11.8	5.8	–2.2	0.3	2.4	2.3	3.5	2.5
Norway	3.3	2.1	2.5	5.8	4.9	2.8	30.4	25.4	23.2	3.3	3.5	3.7
Denmark	3.6	0.0	1.0	8.5	4.8	2.8	12.8	9.5	7.7	4.5	5.1	5.1
Iceland	6.4	2.3	2.1	8.3	8.1	4.2	–1.5	–1.7	–1.5	3.8	3.4	3.8
Andorra	8.7	1.3	1.5	6.2	5.6	2.9	17.1	17.6	18.1	2.0	2.1	1.7
San Marino	4.6	1.2	1.0	7.1	4.6	2.7	4.3	2.4	2.0	5.5	5.1	5.1
Emerging and Developing Europe[6]	**0.8**	**1.2**	**2.5**	**27.9**	**19.7**	**13.2**	**2.4**	**–0.8**	**–0.7**	. . .	. . .	. . .
Russia	–2.1	0.7	1.3	13.8	7.0	4.6	10.3	3.6	3.2	3.9	3.6	4.3
Türkiye	5.6	2.7	3.6	72.3	50.6	35.2	–5.4	–4.0	–3.2	10.5	11.0	10.5
Poland	4.9	0.3	2.4	14.4	11.9	6.1	–3.2	–2.4	–2.1	2.9	3.2	3.5
Romania	4.8	2.4	3.7	13.8	10.5	5.8	–9.3	–7.9	–7.7	5.6	5.6	5.4
Ukraine[7]	–30.3	–3.0	. . .	20.2	21.1	. . .	5.7	–4.4	. . .	24.5	20.9	. . .
Hungary	4.9	0.5	3.2	14.5	17.7	5.4	–8.1	–4.6	–1.9	3.6	4.1	3.8
Belarus	–4.7	0.7	1.2	14.8	7.5	10.1	4.2	1.3	1.6	4.5	4.3	3.9
Bulgaria[5]	3.4	1.4	3.5	13.0	7.5	2.2	–0.7	–0.5	–1.0	4.3	4.6	4.4
Serbia	2.3	2.0	3.0	12.0	12.2	5.3	–6.9	–6.1	–5.7	9.4	9.2	9.1

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 A6 and A7 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 the 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	
	2022	2023	2024	2022	2023	2024	2022	2023	2024	2022	2023	2024
Asia	**3.8**	**4.6**	**4.4**	**3.8**	**3.4**	**2.9**	**1.8**	**1.5**	**1.4**	**. . .**	**. . .**	**. . .**
Advanced Asia	**1.8**	**1.8**	**1.8**	**3.8**	**3.3**	**2.4**	**3.6**	**3.9**	**4.2**	**2.9**	**3.0**	**3.0**
Japan	1.1	1.3	1.0	2.5	2.7	2.2	2.1	3.0	4.0	2.6	2.3	2.3
Korea	2.6	1.5	2.4	5.1	3.5	2.3	1.8	2.2	2.8	2.9	3.7	3.7
Taiwan Province of China	2.5	2.1	2.6	2.9	1.9	1.7	13.4	11.9	11.3	3.7	3.7	3.7
Australia	3.7	1.6	1.7	6.6	5.3	3.2	1.2	1.4	0.2	3.7	4.0	4.1
Singapore	3.6	1.5	2.1	6.1	5.8	3.5	19.3	15.5	15.0	2.1	2.1	2.1
Hong Kong SAR	–3.5	3.5	3.1	1.9	2.3	2.4	10.7	8.0	6.5	4.2	3.4	3.3
New Zealand	2.4	1.1	0.8	7.2	5.5	2.6	–8.9	–8.6	–7.2	3.3	4.3	5.3
Macao SAR	–26.8	58.9	20.6	1.0	2.5	2.3	–23.5	13.1	23.1	3.0	2.7	2.5
Emerging and Developing Asia	**4.4**	**5.3**	**5.1**	**3.8**	**3.4**	**3.0**	**1.1**	**0.7**	**0.5**	**. . .**	**. . .**	**. . .**
China	3.0	5.2	4.5	1.9	2.0	2.2	2.3	1.4	1.1	4.2	4.1	3.9
India[4]	6.8	5.9	6.3	6.7	4.9	4.4	–2.6	–2.2	–2.2	. . .	. . .	. . .
Indonesia	5.3	5.0	5.1	4.2	4.4	3.0	1.0	–0.3	–0.7	5.9	5.3	5.2
Thailand	2.6	3.4	3.6	6.1	2.8	2.0	–3.3	1.2	3.0	1.0	1.0	1.0
Vietnam	8.0	5.8	6.9	3.2	5.0	4.3	–0.9	0.2	0.6	2.3	2.4	2.4
Philippines	7.6	6.0	5.8	5.8	6.3	3.2	–4.4	–2.5	–2.4	5.4	5.3	5.1
Malaysia	8.7	4.5	4.5	3.4	2.9	3.1	2.6	2.6	2.7	3.8	3.6	3.5
Other Emerging and Developing Asia[5]	**3.4**	**4.2**	**5.6**	**12.5**	**11.3**	**6.6**	**–3.3**	**–1.7**	**–3.0**	**. . .**	**. . .**	**. . .**
Memorandum												
ASEAN-5[6]	**5.5**	**4.5**	**4.6**	**4.8**	**4.3**	**2.9**	**2.5**	**2.5**	**2.5**	**. . .**	**. . .**	**. . .**
Emerging Asia[7]	**4.4**	**5.3**	**5.0**	**3.4**	**3.1**	**2.9**	**1.3**	**0.7**	**0.5**	**. . .**	**. . .**	**. . .**

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 A6 and A7 in the Statistical Appendix.

[2]Percent of GDP.

[3]Percent. National definitions of unemployment may differ.

[4]See the 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]Indonesia, Malaysia, Philippines, Singapore, Thailand.

[7]Emerging Asia comprises China, India, Indonesia, Malaysia, Philippines, Thailand, and Vietnam.

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	
	2022	2023	2024	2022	2023	2024	2022	2023	2024	2022	2023	2024
North America	**2.3**	**1.6**	**1.1**	**7.9**	**4.6**	**2.5**	**–3.3**	**–2.5**	**–2.3**	**. . .**	**. . .**	**. . .**
United States	2.1	1.6	1.1	8.0	4.5	2.3	–3.6	–2.7	–2.5	3.6	3.8	4.9
Mexico	3.1	1.8	1.6	7.9	6.3	3.9	–0.9	–1.0	–1.0	3.3	3.3	3.5
Canada	3.4	1.5	1.5	6.8	3.9	2.4	–0.4	–1.1	–1.1	5.3	5.8	6.2
Puerto Rico[4]	4.8	0.4	–1.6	4.3	3.3	2.2	. . .	. . .	. . .	6.0	7.9	8.8
South America[5]	**3.9**	**1.0**	**1.9**	**17.4**	**17.2**	**11.8**	**–3.1**	**–2.1**	**–2.0**	**. . .**	**. . .**	**. . .**
Brazil	2.9	0.9	1.5	9.3	5.0	4.8	–2.9	–2.7	–2.7	7.9	8.2	8.1
Argentina	5.2	0.2	2.0	72.4	98.6	60.1	–0.7	1.0	0.8	7.0	7.6	7.4
Colombia	7.5	1.0	1.9	10.2	10.9	5.4	–6.2	–5.1	–4.6	11.2	11.3	10.9
Chile	2.4	–1.0	1.9	11.6	7.9	4.0	–9.0	–4.2	–3.8	7.9	8.3	7.9
Peru	2.7	2.4	3.0	7.9	5.7	2.4	–4.5	–2.1	–2.3	7.8	7.6	7.4
Ecuador	3.0	2.9	2.8	3.5	2.5	1.5	2.2	2.0	2.0	3.8	3.6	3.6
Venezuela	8.0	5.0	4.5	200.9	400.0	200.0	3.5	5.0	5.5	. . .	. . .	. . .
Bolivia	3.2	1.8	1.9	1.7	4.0	3.7	–1.5	–2.5	–2.6	4.7	4.9	5.0
Paraguay	0.2	4.5	3.5	9.8	5.2	4.1	–5.2	–2.5	–3.1	7.2	6.4	6.1
Uruguay	4.9	2.0	2.9	9.1	7.6	6.1	–2.5	–2.5	–2.2	7.9	8.3	8.0
Central America[6]	**5.3**	**3.8**	**3.8**	**7.3**	**5.5**	**4.0**	**–3.5**	**–2.8**	**–2.7**	**. . .**	**. . .**	**. . .**
Caribbean[7]	**13.4**	**9.9**	**14.1**	**12.6**	**13.5**	**6.8**	**4.2**	**2.6**	**3.6**	**. . .**	**. . .**	**. . .**
Memorandum												
Latin America and the Caribbean[8]	4.0	1.6	2.2	14.0	13.3	9.0	–2.5	–1.8	–1.7	. . .	. . .	. . .
Eastern Caribbean Currency Union[9]	9.1	4.5	4.0	5.6	4.3	2.4	–14.2	–11.9	–10.7	. . .	. . .	. . .

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 A6 and A7 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 the 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 the 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	
	2022	2023	2024	2022	2023	2024	2022	2023	2024	2022	2023	2024
Middle East and Central Asia	**5.3**	**2.9**	**3.5**	**14.3**	**15.9**	**12.0**	**7.5**	**3.6**	**2.1**	**. . .**	**. . .**	**. . .**
Oil Exporters[4]	**5.1**	**3.1**	**3.2**	**14.4**	**12.6**	**9.3**	**12.4**	**6.5**	**4.8**	**. . .**	**. . .**	**. . .**
Saudi Arabia	8.7	3.1	3.1	2.5	2.8	2.3	13.8	6.2	3.6	. . .	. . .	. . .
Iran	2.5	2.0	2.0	49.0	42.5	30.0	4.7	1.8	1.9	9.5	9.8	10.1
United Arab Emirates	7.4	3.5	3.9	4.8	3.4	2.0	11.7	7.1	7.0	. . .	. . .	. . .
Kazakhstan	3.2	4.3	4.9	15.0	14.8	8.5	2.8	–1.9	–2.0	4.9	4.8	4.8
Algeria	2.9	2.6	2.6	9.3	8.1	7.7	7.2	0.8	–2.7	. . .	. . .	. . .
Iraq	8.1	3.7	3.1	5.0	6.6	1.6	11.6	4.4	–2.5	. . .	. . .	. . .
Qatar	4.2	2.4	1.8	5.0	3.0	2.7	26.0	19.2	14.9	. . .	. . .	. . .
Kuwait	8.2	0.9	2.7	3.9	3.3	2.6	28.5	19.7	16.8	. . .	. . .	. . .
Azerbaijan	4.6	3.0	2.6	13.8	11.3	8.0	30.5	19.2	17.4	5.9	5.8	5.8
Oman	4.3	1.7	5.2	2.8	1.9	2.4	3.2	2.1	1.4	. . .	. . .	. . .
Turkmenistan	1.8	2.3	2.1	11.5	6.7	10.7	5.7	4.6	2.8	. . .	. . .	. . .
Oil Importers[5,6]	**5.5**	**2.7**	**4.0**	**14.1**	**20.5**	**15.8**	**–2.0**	**–2.4**	**–3.6**	**. . .**	**. . .**	**. . .**
Egypt	6.6	3.7	5.0	8.5	21.6	18.0	–3.5	–2.8	–3.1	7.3	7.6	7.7
Pakistan	6.0	0.5	3.5	12.1	27.1	21.9	–4.6	–2.3	–2.4	6.2	7.0	6.8
Morocco	1.1	3.0	3.1	6.6	4.6	2.8	–4.3	–3.7	–3.5	12.9	11.0	10.5
Uzbekistan	5.7	5.3	5.5	11.4	11.8	9.9	1.4	–3.5	–3.7	8.9	8.4	7.9
Sudan	–2.5	1.2	2.7	138.8	71.6	51.9	–6.2	–7.2	–8.3	32.1	33.1	33.0
Tunisia	2.5	1.3	1.9	8.3	10.9	9.5	–8.5	–7.1	–5.7	. . .	. . .	. . .
Jordan	2.7	2.7	2.7	4.2	3.8	2.9	–7.4	–6.0	–5.2	22.8	. . .	. . .
Georgia	10.1	4.0	5.0	11.9	5.9	3.2	–3.1	–4.1	–4.2	18.7	19.5	20.2
Armenia	12.6	5.5	5.0	8.7	7.1	5.0	0.1	–1.7	–3.3	12.5	12.5	13.0
Tajikistan	8.0	5.0	4.5	6.6	5.4	6.5	6.2	–1.9	–2.4	. . .	. . .	. . .
Kyrgyz Republic	7.0	3.5	3.8	13.9	11.3	7.8	–26.8	–9.7	–9.0	9.0	9.0	9.0
West Bank and Gaza	4.0	3.5	2.7	3.7	3.2	2.7	–12.4	–11.8	–11.5	24.4	24.2	24.0
Mauritania	5.0	4.4	5.1	9.6	9.5	7.0	–14.3	–7.2	–8.6	. . .	. . .	. . .
Memorandum												
Caucasus and Central Asia	4.8	4.2	4.5	13.0	11.8	8.5	5.8	1.1	0.5	. . .	. . .	. . .
Middle East, North Africa, Afghanistan, and Pakistan[6]	5.4	2.7	3.4	14.4	16.4	12.5	7.8	3.9	2.3	. . .	. . .	. . .
Middle East and North Africa	5.3	3.1	3.4	14.8	14.8	11.1	9.0	4.5	2.7	. . .	. . .	. . .
Israel[7]	6.4	2.9	3.1	4.4	4.3	3.1	3.7	3.5	3.3	3.8	3.8	3.7
Maghreb[8]	0.7	4.4	3.4	7.9	6.9	5.9	0.9	–0.5	–1.7	. . .	. . .	. . .
Mashreq[9]	6.0	3.7	4.8	12.3	22.8	17.8	–5.0	–3.9	–4.1	. . .	. . .	. . .

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 A6 and A7 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, Lebanon, and Somalia. See the country-specific note for Lebanon in the "Country Notes" section of the Statistical Appendix.

[6]Excludes Afghanistan and Syria because of the uncertain political situation. See the country-specific notes in the "Country Notes" section of the Statistical Appendix.

[7]Israel, which is not a member of the economic region, is shown 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	
	2022	2023	2024	2022	2023	2024	2022	2023	2024	2022	2023	2024
Sub-Saharan Africa	**3.9**	**3.6**	**4.2**	**14.5**	**14.0**	**10.5**	**–2.0**	**–2.6**	**–2.7**	**. . .**	**. . .**	**. . .**
Oil Exporters[4]	**3.1**	**3.2**	**3.0**	**18.1**	**17.6**	**14.1**	**2.0**	**0.7**	**0.0**	**. . .**	**. . .**	**. . .**
Nigeria	3.3	3.2	3.0	18.8	20.1	15.8	–0.7	–0.6	–0.5	. . .	. . .	. . .
Angola	2.8	3.5	3.7	21.4	11.7	10.8	11.0	6.2	3.1	. . .	. . .	. . .
Gabon	2.8	3.0	3.1	4.3	3.4	2.6	1.2	–0.1	–1.1	. . .	. . .	. . .
Chad	2.5	3.5	3.7	5.3	3.4	3.0	2.8	–1.4	–4.9	. . .	. . .	. . .
Equatorial Guinea	1.6	–1.8	–8.2	5.0	5.7	5.2	0.0	–2.1	–5.8	. . .	. . .	. . .
Middle-Income Countries[5]	**3.6**	**2.7**	**3.7**	**9.3**	**9.4**	**6.2**	**–2.7**	**–3.3**	**–3.0**	**. . .**	**. . .**	**. . .**
South Africa	2.0	0.1	1.8	6.9	5.8	4.8	–0.5	–2.3	–2.6	33.5	34.7	34.7
Kenya	5.4	5.3	5.4	7.6	7.8	5.6	–4.7	–5.3	–5.3	. . .	. . .	. . .
Ghana	3.2	1.6	2.9	31.9	45.4	22.2	–2.3	–2.9	–2.0	. . .	. . .	. . .
Côte d'Ivoire	6.7	6.2	6.6	5.2	3.7	1.8	–6.5	–5.7	–5.3	. . .	. . .	. . .
Cameroon	3.4	4.3	4.4	5.3	5.9	4.7	–1.6	–2.8	–3.0	. . .	. . .	. . .
Zambia	3.4	4.0	4.1	11.0	8.9	7.7	2.4	3.8	4.5	. . .	. . .	. . .
Senegal	4.7	8.3	10.6	9.7	5.0	2.0	–16.0	–10.4	–4.6	. . .	. . .	. . .
Low-Income Countries[6]	**5.2**	**5.4**	**6.2**	**18.5**	**16.9**	**13.1**	**–6.2**	**–5.5**	**–5.6**	**. . .**	**. . .**	**. . .**
Ethiopia	6.4	6.1	6.4	33.9	31.4	23.5	–4.3	–3.4	–2.6	. . .	. . .	. . .
Tanzania	4.7	5.2	6.2	4.4	4.9	4.3	–4.6	–4.0	–3.3	. . .	. . .	. . .
Democratic Republic of the Congo	6.6	6.3	6.5	9.0	10.8	7.2	–2.2	–3.9	–3.0	. . .	. . .	. . .
Uganda	4.9	5.7	5.7	6.8	7.6	6.4	–8.1	–10.9	–11.9	. . .	. . .	. . .
Burkina Faso	2.5	4.9	5.9	14.1	1.5	2.3	–5.2	–3.6	–2.7	. . .	. . .	. . .
Mali	3.7	5.0	5.1	10.1	5.0	2.8	–6.9	–6.2	–5.5	. . .	. . .	. . .

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 Table A6 and A7 in the Statistical Appendix.

[2]Percent of GDP.

[3]Percent. National definitions of unemployment may differ.

[4]Includes Republic of Congo and South Sudan.

[5]Includes Benin, Botswana, Cabo Verde, Comoros, Eswatini, Lesotho, Mauritius, Namibia, São Tomé and Príncipe, and Seychelles.

[6]Includes Burundi, Central African Republic, Eritrea, The Gambia, Guinea, Guinea-Bissau, Liberia, Madagascar, Malawi, Mozambique, Niger, Rwanda, 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	
	2005–14	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
World	**2.3**	**2.1**	**1.9**	**2.4**	**2.4**	**1.6**	**–4.0**	**5.7**	**2.4**	**1.8**	**2.0**
Advanced Economies	**0.9**	**1.7**	**1.3**	**2.1**	**1.9**	**1.3**	**–4.7**	**5.3**	**2.3**	**0.9**	**1.0**
United States	0.8	2.0	0.9	1.6	2.4	1.8	–3.6	5.6	1.7	1.0	0.4
Euro Area[1]	0.4	1.7	1.6	2.5	1.6	1.3	–6.5	5.5	3.2	0.6	1.2
Germany	1.4	0.6	1.4	2.3	0.7	0.8	–3.8	2.6	1.1	–0.2	1.1
France	0.4	0.6	0.7	2.2	1.5	1.5	–8.1	6.5	2.3	0.4	1.0
Italy	–0.9	0.9	1.5	1.8	1.1	0.7	–8.7	8.1	3.8	0.7	0.8
Spain	–0.4	3.9	2.9	2.8	1.9	1.2	–11.8	5.4	5.0	1.1	1.6
Japan	0.6	1.7	0.8	1.8	0.8	–0.2	–4.0	2.4	1.3	1.7	1.5
United Kingdom	0.5	1.6	1.3	1.8	1.1	1.1	–11.4	7.3	3.3	–0.7	0.5
Canada	0.9	–0.1	0.0	1.8	1.4	0.4	–6.2	4.4	1.7	–0.6	0.1
Other Advanced Economies[2]	2.3	1.5	1.8	2.5	2.0	1.3	–2.2	5.4	2.3	1.2	1.8
Emerging Market and Developing Economies	**4.4**	**2.8**	**2.9**	**3.3**	**3.3**	**2.3**	**–3.1**	**6.1**	**2.8**	**2.8**	**3.0**
Emerging and Developing Asia	7.1	5.8	5.8	5.7	5.6	4.4	–1.3	6.8	3.7	4.7	4.5
China	9.4	6.5	6.2	6.4	6.3	5.6	2.1	8.4	3.0	5.3	4.6
India[3]	6.2	6.7	7.0	5.6	5.3	2.8	–6.7	8.0	5.8	4.9	5.4
Emerging and Developing Europe	3.5	0.5	1.5	4.0	3.4	2.3	–1.5	7.4	2.4	1.9	2.2
Russia	3.4	–2.2	0.0	1.8	2.9	2.2	–2.3	6.1	–0.6	0.9	1.5
Latin America and the Caribbean	2.2	–0.8	–1.9	0.2	0.2	–1.1	–8.0	6.1	3.1	0.7	1.3
Brazil	2.5	–4.4	–4.1	0.5	1.0	0.4	–4.0	4.6	2.3	0.3	0.9
Mexico	0.7	2.1	1.5	1.0	1.1	–1.2	–8.9	3.8	2.2	1.0	0.7
Middle East and Central Asia	1.9	0.8	2.1	–0.4	0.5	–0.4	–4.7	6.2	3.3	1.1	1.7
Saudi Arabia	1.3	1.7	–0.5	–2.6	0.3	–1.5	–6.5	6.7	6.6	1.0	1.1
Sub-Saharan Africa	2.5	0.4	–1.3	0.1	0.5	0.5	–4.3	2.1	1.2	0.9	1.5
Nigeria	4.1	0.0	–4.2	–1.8	–0.7	–0.4	–4.3	1.1	0.7	0.7	0.5
South Africa	1.6	–0.2	–0.8	–0.3	0.0	–1.1	–7.7	4.0	1.3	–1.4	0.3
Memorandum											
European Union	0.8	2.1	1.8	2.9	2.1	1.8	–5.8	5.7	3.5	0.6	1.5
ASEAN-5[4]	3.7	3.3	3.6	4.1	3.9	3.2	–5.4	3.2	4.4	3.6	3.7
Middle East and North Africa	1.3	0.5	2.4	–1.1	0.1	–1.0	–5.0	2.8	3.3	1.3	1.6
Emerging Market and Middle-Income Economies	4.6	3.0	3.2	3.5	3.6	2.5	–3.0	6.4	3.1	3.1	3.3
Low-Income Developing Countries	3.5	2.2	1.5	2.5	2.7	2.6	–1.2	2.6	2.7	2.5	3.2

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 the country-specific note for India in the "Country Notes" section of the Statistical Appendix.

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

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