

**EXECUTIVE
BOARD
MEETING**

EBS/22/21

**STRICTLY CONFIDENTIAL
RECLASSIFIED FOR OFFICIAL USE ONLY FROM 4/19/22**

April 1, 2022

To: Members of the Executive Board
From: The Secretary
Subject: **April 2022 World Economic Outlook—Executive Summary and Chapter 1**

Board Action: Executive Directors' **consideration** (Formal)

Tentative Board Date: **Monday, April 11, 2022**

Publication: Yes, it is intended that the full set of the World Economic Outlook documents will be released to the public at the time of the World Economic Outlook press conference, tentatively scheduled for **Tuesday, April 19, 2022.**

Questions: Ms. Koeva Brooks, RES (ext. 39809)
Mr. Nabar, RES (ext. 39024)

Additional Information: Please note that, as usual, the WEO forecast remains under review. Final projections will feature in the WEMD presentation to the Board. The paper will be revised for publication in light of the Executive Board discussion. If Executive Directors have additional comments, they should notify Ms. Koeva Brooks and Mr. Nabar by **5:30 p.m. on Friday, April 8, 2022.**

TABLE OF CONTENTS

EXECUTIVE SUMMARY	1
GLOBAL PROSPECTS AND POLICIES	4
War Slows the Recovery	4
Fragmentation and Fragility Set to Slow Growth during 2022–23	5
Forecast Revisions	8
International Implications of the War in Ukraine	12
Elevated Inflation Expected to Persist for Longer	15
Rising Interest Rates: Implications for Emerging Market and Developing Economies	18
Economic Slack to Narrow in the Medium Term; Significant Scarring Expected	21
Risks Are Large and to the Downside	22
Policies to Sustain the Recovery and Improve Medium-Term Prospects	26
BOXES	
Scenario Box	32
1.1. The Puzzle of Tight Labor Markets: US and UK Examples	35
1.2. Determinants of Neutral Interest Rates and Uncertain Prospects	37
COMMODITIES SPECIAL FEATURE: MARKET DEVELOPMENTS AND THE PACE OF FOSSIL FUEL DIVESTMENT	39
Oil and Gas Prices Up amid Ukraine War	39
Pace of Fossil Fuel Divestment and Effect on Prices	41
Conclusions	44
FIGURES	
1.1. Global Activity Indicators	5
1.2. Inflation Trends	5
1.3. Monetary and Financial Conditions	6
1.4. Fiscal Stance, 2020–23	7
1.5. New Confirmed COVID-19 Deaths	7
1.6. International Cereal Prices	12
1.7. Global Oil Intensity and Oil Revenue Share	12
1.8. Trade Exposures to Russia and Ukraine, 2020	13
1.9. Global Value Chain Participation, 2018	14
1.10. Ratio of Banks' Exposure to Russia to Total Assets	14
1.11. Change in Inflation Drivers	16
1.12. Core Inflation versus Private Domestic Demand	17
1.13. Goods and Services Inflation	17
1.14. Changes in Inflation Expectations: January 21–January 22	18
1.15. Sovereign Spreads at Tipping Points	19
1.16. Emerging Market and Developing Economy Vulnerabilities	19
1.17. Medium-Term Prospects: Output and Employment	20

1.18. Potential GDP	21
1.19. Correlates of Project Output Revisions to Vaccinations	22
1.20. Current Account and International Investment Positions	23
1.21. Fraction of Countries with a Major Unrest Event	24
1.22. Real Policy Rates	27
1.23. Public External Debt	30
1.24. Changes in Emissions in 2030 versus 2021 under NDCs and Warming Scenarios	31
Scenario 1. Downside Scenario	33
1.1.1. Employment Rate and Labor Market Tightness	35
1.1.2. Inactivity Rates	36
1.1.3. United States Wage Growth and Tightness across Sectors	36
1.2.1. Estimated Neutral Rate Since 1980	37
1.2.2. Neutral Rate Factors	38
SF.1. Commodity Market Development	39
SF.2. European Gas Inventory and Gas Prices	40
SF.3. Oil and Gas Investment as Share of World GDP	41
SF.4. Price Elasticity of Global Oil and Gas Capital Expenditure	42
SF.5. Climate Policy and Energy Transition Indicators	42
SF.6. Counterfactuals of Oil and Gas Capital Expenditure	43
SF.7. Oil Prices Rise in a Net-Zero Emissions Scenario Driven by Supply Policies, Decline when Driven by Demand Policy	43
SF.8. Production in High-Cost Regions Would Be Under Pressure in Demand-Side Scenario, Uncertain in Supply-Side Scenario	44

TABLES

1.1. Overview of the World Economic Outlook Projections	10
1.2. Overview of the <i>World Economic Outlook</i> Projections at Market Exchange Rate Weights	12

REFERENCES	45
-------------------	-----------

EXECUTIVE SUMMARY

The war in Ukraine has triggered a costly humanitarian crisis that demands a peaceful resolution. Economic damage from the conflict will contribute to a significant slowdown in global growth in 2022. Double-digit drops in GDP for Ukraine and Russia are more than likely, along with worldwide spillovers through commodity markets, trade, and financial channels. Even as the war reduces growth, it will add to inflation. Fuel and food prices have increased rapidly, with vulnerable populations—particularly in low-income countries—most affected. Elevated inflation will complicate the trade-offs central banks face between containing price pressures and safeguarding growth. Interest rates are expected to rise as central banks tighten policy, exerting pressure on emerging market and developing economies. Moreover, many countries have limited fiscal policy space to cushion the impact of the war on their economies. The invasion has contributed to economic fragmentation as countries sever commercial ties with Russia and risks derailing the post-pandemic recovery. It also threatens the rules-based frameworks that have facilitated greater global economic integration and helped lift millions out of poverty. In addition, the conflict adds to the economic strains wrought by the pandemic. Although many parts of the world appear to be moving past the acute phase of the COVID-19 crisis, deaths remain high, especially among the unvaccinated. Moreover, recent lockdowns in key manufacturing hubs in China will likely compound supply disruptions elsewhere.

Global growth is projected to slow from an estimated 6.1 percent in 2021 to 3.5 percent in 2022 and 2023. This is 0.9 and 0.3 percentage points lower for 2022 and 2023 than in the January *World Economic Outlook Update*. Beyond 2023, global growth is forecast to decline to about 3.3 percent over the medium term. Crucially, this forecast assumes that the conflict remains confined to Ukraine, further sanctions on Russia exempt the energy sector (although the impact of Germany's decision to wean itself off Russian energy by 2024 and embargoes announced through March 31, 2022, are factored into the baseline), and the pandemic's health and economic impacts abate over the course of 2022. With a few exceptions, employment and output will typically remain below pre-pandemic trends through 2026. Scarring effects are expected to be much larger in emerging market and developing economies than in advanced economies—reflecting more limited policy support and generally slower vaccination—with output expected to remain below the pre-pandemic trend throughout the forecast horizon. Unusually high uncertainty surrounds this forecast, and downside risks to the global outlook dominate—including from a possible worsening of the war, escalation of sanctions on Russia, a sharper-than-anticipated deceleration in China as a strict zero-COVID strategy is tested by Omicron, and a renewed flare-up of the pandemic should a new, more virulent virus strain emerge. Moreover, the war in Ukraine has increased the probability of wider social tensions because of higher food and energy prices, which would further weigh on the outlook.

Inflation is expected to remain elevated for longer than in the previous forecast, driven by war-induced commodity price increases and broadening price pressures. For 2022, inflation is projected at 5.7 percent in advanced economies and 8.6 percent in emerging market and developing economies—1.8 and 2.7 percentage points higher than projected in January. Although a gradual resolution of demand-supply imbalances and a modest pickup in labor

supply are expected in the baseline, easing price inflation eventually, uncertainty again surrounds the forecast. Conditions could significantly deteriorate. Worsening supply-demand imbalances—including those stemming from the war—and further increases in commodity prices could lead to persistently high inflation, rising inflation expectations, and stronger wage growth. If signs emerge that inflation will be high over the medium term, central banks will be forced to react faster than currently anticipated—raising interest rates and exposing debt vulnerabilities, particularly in emerging markets.

The Ukraine war has exacerbated two difficult policy trade-offs: between tackling inflation and safeguarding the recovery; and between supporting the vulnerable and rebuilding fiscal buffers.

- *Tackling inflation:* Although the drivers of inflation are in many cases beyond the control of policymakers (the Ukraine war, sanctions, the pandemic, supply chain disruptions), price pressures are increasingly broad-based. The transmission of the war shock will vary across countries, depending on trade and financial linkages, exposure to commodity price increases, and the strength of the preexisting inflation surge. The appropriate monetary policy response will therefore differ across economies. In countries with larger harmful effects from the war, the trade-off between safeguarding growth and containing inflation will be more challenging. Central banks should remain vigilant to the impact of price pressures on inflation expectations and continue to communicate clearly on the outlook for inflation and monetary policy. A well-telegraphed, data-dependent approach to adjusting forward guidance on the monetary stance—including the unwinding of record-high central bank balance sheets and the path for policy rates—is the key to maintaining the credibility of policy frameworks.
- *Fiscal policy amid rising interest rates and a cost-of-living squeeze:* Fiscal policies should depend on exposure to the war, the state of the pandemic, and the strength of the recovery. Following a huge and necessary fiscal expansion in many countries during the pandemic, debt levels are at all-time highs and governments are more exposed than ever to higher interest rates. The need for consolidation should not prevent governments from prioritizing spending with well-targeted support for the vulnerable—including refugees, those struggling because of commodity price spikes, and those affected by the pandemic. Where fiscal space permits, broader support may be warranted, depending on the severity of the decline in aggregate demand. But this support should be deployed in ways that avoid exacerbating ongoing demand-supply imbalances and price pressures. Where fiscal space is more limited, governments will need to tread a difficult path between fiscal consolidation and prioritizing essential expenditures. Moreover, authorities should be vigilant regarding private sector vulnerabilities to rising interest rates, a topic explored in Chapter 2.
- *Preparing for tomorrow's economy:* Beyond the immediate challenges of the war and the pandemic, policymakers should not lose sight of longer-term goals. Pandemic disruptions have highlighted the productivity of novel ways of working. Governments should look to harness positive structural change wherever possible, embracing the digital transformation and retooling and reskilling workers to meet its challenges. Carbon pricing and fossil fuel subsidy reform can also help with the transition to a cleaner mode of production, less exposed to fossil fuel prices—more important than ever in light of the fallout of the war on the global energy market. The green energy transition will also entail labor market reallocation across

occupations and sectors. Chapter 3 examines policies that can facilitate this labor market transformation.

Multilateral efforts to respond to the humanitarian crisis, prevent further economic fragmentation, maintain global liquidity, manage debt distress, tackle climate change, and end the pandemic remain essential. The adverse consequences from the current geopolitical conflict are a reminder of the importance of global cooperation. This extends from addressing the immediate needs of war refugees to the eventual great effort of reconstruction in Ukraine. As countries contend with higher volatility, spending pressures from humanitarian response needs, and tighter financial market conditions, the likelihood that some countries will become financially constrained increases. Multilateral institutions offer a critical safety net, providing emergency liquidity and preventing crises from spreading. Where liquidity support alone is insufficient, progress toward orderly debt restructuring is essential. On climate, advanced economies must make real progress toward their COP26 climate summit pledges. Emerging market and developing economies must extend their ambition to reduce emissions. And as the pandemic is not yet over, governments must use all tools at their disposal to combat the virus, both by meeting vaccination targets and ensuring equitable access to tests and treatment.

GLOBAL PROSPECTS AND POLICIES

War Slows the Recovery

The war in Ukraine has triggered a costly humanitarian crisis that, without a swift and peaceful resolution, could become overwhelming. Global growth is expected to slow significantly in 2022, largely as a consequence of the war. Double-digit drops in GDP are expected in Ukraine due to fighting and in Russia due to sanctions and Germany's decision to scale back energy imports. The economic costs of war are expected to spread farther afield through commodity markets, trade, and—to a lesser extent—financial interlinkages. Fuel and food price rises are already having a global impact, with vulnerable populations—particularly in low-income countries—most affected.

The war in Ukraine will amplify economic forces already shaping the global recovery from the pandemic. The war has further increased commodity prices and intensified supply disruptions, adding to inflation. Even before Russia invaded Ukraine, broad price pressures had led central banks to tighten monetary policy and indicate increasingly hawkish future stances. As a result, interest rates had risen sharply and asset price volatility had increased since the start of 2022—hitting household and corporate balance sheets, consumption, and investment. The prospect of higher borrowing costs has also increased the cost of extended fiscal support. These changes are occurring faster than previously expected even as many parts of the global economy—particularly countries with low vaccination rates—must contend with continued strain on health care systems because of the pandemic.

The war has also added to already high uncertainty about the global outlook. Although many countries appear to be moving past the acute phase of the pandemic, new variants could again lead to waves of infection and further disruption. Inflation pressure could strengthen more than anticipated and demand more aggressive policy responses. Tighter financial conditions will shine a harsh spotlight on debt vulnerabilities among sovereign and corporate borrowers, risking widespread debt distress. Moreover, with continued tight policies toward the real estate sector and the possibility of more widespread lockdowns as part of the strict zero-COVID strategy, China's economy could slow more than currently projected—with consequences for Asia and beyond. This could further set back the recovery, particularly in emerging market and developing economies. More limited policy space could compound scarring effects, particularly in emerging market and developing economies, where medium-term baseline output is expected to be 5 ½ percent below pre-pandemic projections.

More fundamentally, geopolitical tensions threaten the rules-based frameworks that have governed international economic relations since World War II. Current sanctions imposed with the aim of pressing Russia to end the war are already cutting financial and trade linkages between Russia and other countries, with far-reaching repercussions. Increased global polarization also impedes the cooperation essential for long-term prosperity. This could include derailing the urgent climate change agenda and undermining multilateral efforts to improve debt resolution frameworks, trade integration, and initiatives to avoid future pandemics.

This chapter first discusses the global growth outlook before outlining spillover channels from the war in Ukraine, inflation prospects, and the implications of rising interest rates for emerging market and developing economies. The discussion then turns to the risks to the outlook and policies for improving global prospects.

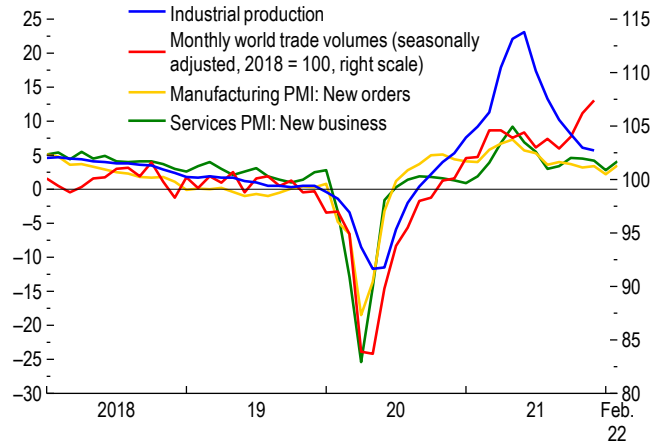
Fragmentation and Fragility Set to Slow Growth during 2022–23

The war in Ukraine has led to extensive loss of life, triggered the biggest refugee crisis in Europe since World War II, and severely set back the global recovery. After a strong recovery in 2021, short-term indicators suggest that global activity has slowed (see Figure 1.1). Global growth is projected to decline from an estimated 6.1 percent in 2021 to 3.5 percent in 2022–23—0.9 and 0.3 percentage points lower for 2022 and 2023 than in the January 2022 *World Economic Outlook*. The ongoing war in Ukraine and sanctions on Russia are expected to reduce global growth in 2022 through direct impacts on the two countries and global spillovers. This shock comes just as the threat from the Omicron variant appeared to be fading, with many parts of world moving past the acute phase of the pandemic.

Five principal forces shape the near-term global outlook:

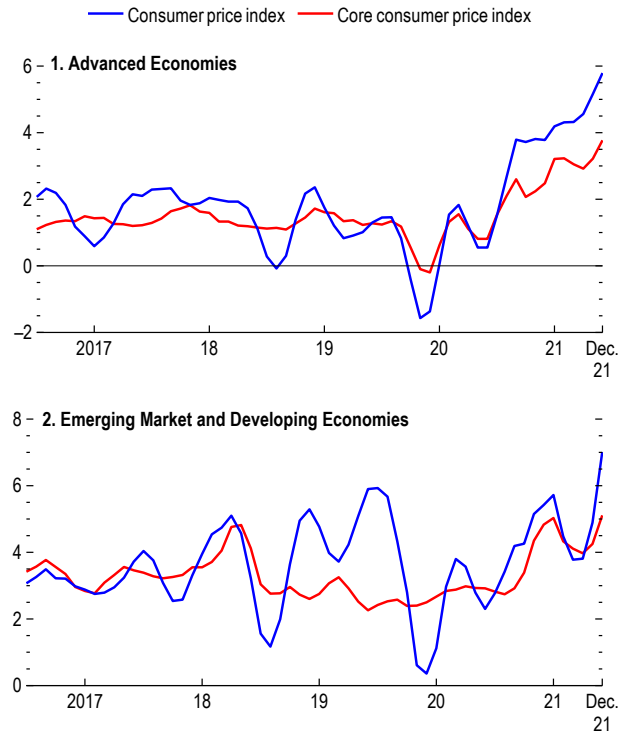
- **War in Ukraine**—The invasion and resulting sanctions on Russia will have important consequences for the global economy. The baseline forecast assumes that the theater of conflict remains limited to Ukraine and that sanctions on Russia (along with Europe’s plans to become independent of Russian energy) do not tighten beyond those announced by March 31 and remain in place over the forecast horizon. The effects of conflict and sanctions will hit Ukraine, Russia, and Belarus directly. But international spillovers via global commodity prices, trade and financial linkages, labor supply, and humanitarian impacts will spread the

Figure 1.1. Global Activity Indicators
(Three-month moving average)



Sources: CPB Netherlands Bureau for Economic Policy Analysis; Haver Analytics; Markit Economics; and IMF staff calculations.
Note: Units for industrial production are annualized percent change. For PMIs, units are deviation from 50. PMI above 50 indicates expansion, below 50 indicates contraction. PMI = purchasing managers’ index.

Figure 1.2. Inflation Trends
(Three-month moving average; annualized percent change)



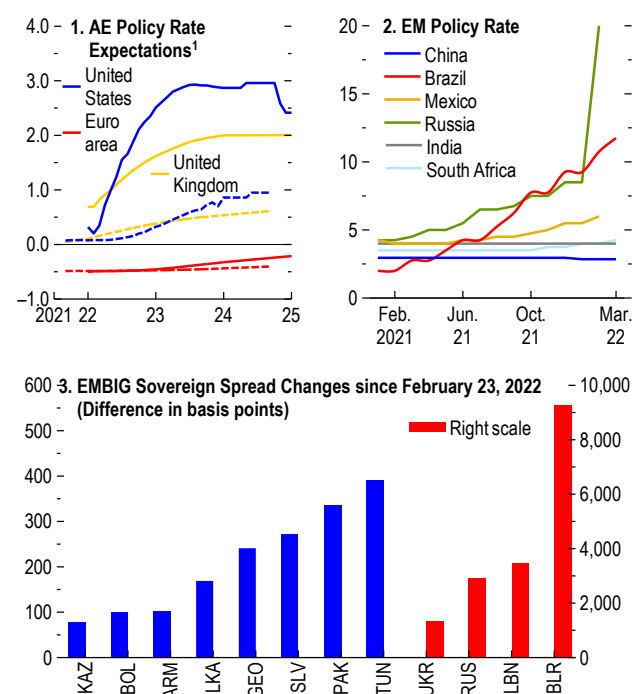
Sources: Haver Analytics; and IMF staff calculations.
Note: Average inflation rates by economy group are purchasing-power-parity GDP-weighted averages. In terms of International Organization for Standardization (ISO) country codes, advanced economies comprise AUT, BEL, CAN, CHE, CZE, DEU, DNK, ESP, EST, FIN, FRA, GBR, GRC, HKG, IRL, ISR, ITA, JPN, KOR, LTU, LUX, LVA, NLD, NOR, PRT, SGP, SVK, SVN, SWE, TWN, USA; emerging market and developing economies comprise BGR, BRA, CHL, CHN, COL, HUN, IDN, IND, MEX, MYS, PER, PHL, POL, ROU, RUS, THA, TUR, ZAF.

effects more widely—notably in Europe.

- Monetary tightening and financial market volatility*—Even before the war, inflation had risen significantly (Figure 1.2), and many central banks tightened monetary policy. This contributed to a rapid increase in nominal interest rates across advanced economy sovereign borrowers. In the months ahead, policy rates are generally expected to rise further and record-high central bank balance sheets will begin to unwind, most notably in advanced economies (for more discussion, see the April 2022 *Global Financial Stability Report*). In emerging market and developing economies, several central banks also tightened policy, adding to those that had already done so in 2021. One exception is China, where inflation remains low and the central bank cut policy rates in January 2022 to support the recovery. Expectations of tighter policy and worries about the war have contributed to financial market volatility and risk repricing (see the April 2022 *Global Financial Stability Report*). In particular, the war and related sanctions have tightened global financial conditions, lowered risk appetite, and induced flight-to-quality flows. In Russia, the sanctions and the impairment of domestic financial intermediation have led to large increases in its sovereign and credit default swap spreads. Emerging market economies in the region, as well as Caucasus, Central Asia, and North Africa, have also seen their sovereign spreads widen (Figure 1.3). Capital outflows from emerging markets have been similar to what was witnessed early in the pandemic (March 2020), though so far they appear to be concentrated among a few economies. Overall, markets have so far differentiated across emerging market securities based on geographic proximity, trade linkages, and commodity exposures to Russia and Ukraine.

- Fiscal withdrawal*—Policy space in many countries has been eroded by necessary higher COVID-related spending and lower tax revenue in 2020–21. Faced with rising borrowing costs, governments are increasingly challenged by the imperative to rebuild buffers. Fiscal support is set to generally decline in 2022 and 2023—particularly in advanced economies—as emergency measures to cushion the impact of the pandemic are wound down (Figure 1.4; also see the April 2022

Figure 1.3. Monetary and Financial Conditions
(Percent, unless noted otherwise)



Sources: Bloomberg Finance L.P.; EPFR Global; Refinitiv Datastream; and IMF staff calculations.

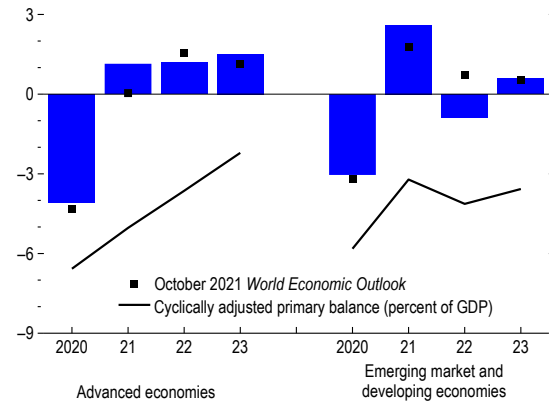
Note: Dashed lines in panel 1 are from the October 2021 *World Economic Outlook*. AE = advanced economy; EM = emerging market; EMBIG = emerging markets bond index global. Panel 3 data as of March 31, 2022. Data labels use International Organization for Standardization (ISO) country codes.

¹Expectations are based on the federal funds rate futures for the United States, the sterling overnight interbank average rate for the United Kingdom, and the euro interbank offered forward rate for the euro area; updated March 31, 2022.

Fiscal Monitor for more discussion on the evolution of fiscal measures over the acute phase of the pandemic and subsequent recovery).

- *China’s slowdown*—Slowing growth in China’s economy has wider ramifications for Asia and for commodity exporters. The combination of more transmissible variants and a zero-COVID strategy entail the prospect of more frequent lockdowns, with attendant effects on private consumption in China. Moreover, the continued tight stance toward highly leveraged property developers means that real estate investment remains subdued.

Figure 1.4. Fiscal Stance, 2020–23
(Change in structural primary fiscal balance, percent of potential GDP)

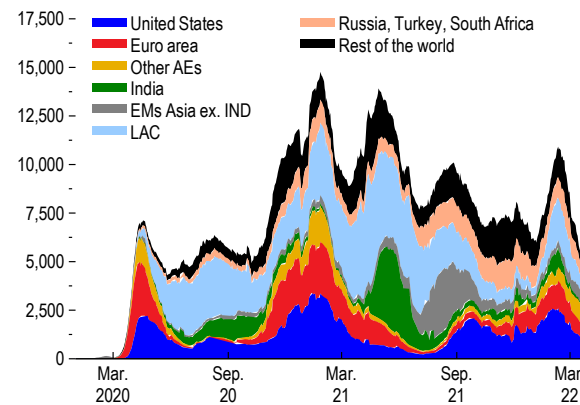


Source: IMF staff estimates.
Note: Cyclically adjusted balance is the general government balance adjusted for the economic cycle. Structural balance is the cyclically adjusted balance corrected for a broader range of noncyclical factors, such as asset and commodity prices. Primary balances shown are obtained by subtracting interest income and adding interest expense to the two series.

- *Pandemic and vaccine access*—Worker shortages and mobility restrictions compounded supply disruptions and bottlenecks early in 2022, constraining activity and adding to inflation. Restrictions have begun to ease as the peak of the Omicron wave passes and global weekly COVID deaths decline (Figure 1.5). The risk of infection leading to severe illness or death appears lower for the dominant Omicron strain than for others—especially for the vaccinated and boosted. The baseline assumes that the health and economic impacts of the virus start to fade in the second quarter of 2022 and that hospitalizations and deaths are brought to low levels in most countries by the end of the year. A key assumption in the baseline is that the virus does not mutate into new strains requiring further restrictions (see “Risks Are to the Downside” in this chapter). The baseline assumes that most countries will not attain the target of 70 percent full vaccination in 2022. Given vaccination shortfalls in low-income countries, the possibility of renewed outbreaks is factored into the baseline. Yet their impact on activity is assumed to be less than in earlier waves. Adaptation has improved, effective therapeutics are more readily available, and immunity due to previous infection or vaccination has increased. The forecasts are based on information up to 31 March 2022.

COVID deaths decline (Figure 1.5). The risk of

Figure 1.5. New Confirmed COVID-19 Deaths
(Persons, seven-day moving average)



Sources: Our World in Data; and IMF staff calculations.
Note: Data as of March 31, 2022. India’s June 10–16, 2021 and United States’ March 14–20, 2022 values are missing. Interpolated values are used in the chart for those periods. Economy group and regional classifications are those in the *World Economic Outlook*. Other advanced economies in terms of International Organization for Standardization (ISO) country codes are AUS, CAN, CHE, CZE, DNK, GBR, HKG, ISL, ISR, JPN, KOR, MAC, NOR, NZL, SGP, SMR, SWE, TWN. AEs = advanced economies; EMs Asia ex. IND = emerging Asia excluding India; LAC = Latin American and the Caribbean economies.

Forecast Revisions

Ukraine: Although precise measures of the damage to the Ukrainian economy are impossible to obtain, the war will cause a very severe contraction. For 2022, the Ukrainian economy is expected to contract by 35 percent.¹ And even if the war were to end soon, the loss of life, destruction of physical capital, and flight of potentially over 8 million citizens will severely impede economic activity for many years to come.

Russia: The tight trade and financial sanctions—including loss of correspondent banking privileges, access of some banks to the SWIFT payments system, and the interdiction of central bank assets—and the oil and gas embargo by some large economies will have a severe impact on the Russian economy. Announced plans by large consumers, such as Germany, to wean themselves off Russian energy will also hit in the medium-term. To stave off capital flight, the central bank of Russia has doubled the interest rate to 20 percent, and broad capital controls have been introduced. Yet financial markets have been turbulent, with the ruble falling close to 60 percent, before returning near pre-invasion levels in recent weeks, sovereign spreads widening more than 2,500 basis points, and stock markets temporarily shuttering. The withdrawal of foreign firms has hobbled many industries, including aviation, finance, software, and agriculture. As a result, the outlook remains bleak, with significantly diminished sources of foreign currency. Moreover, financial disintermediation and a loss of investor confidence will lead to a significant drop in private investment and consumption, only partly offset by fiscal spending. The baseline forecast is for a sharp contraction in 2022, with GDP falling by about 11 percent, and a further decline of about 2 ½ percent in 2023.

Emerging and Developing Europe, including Russia and Ukraine, will see GDP contract by approximately 3.8 percent in 2022, before expanding by 1.2 percent in 2023. The main drivers of the contraction are the impact of higher energy prices on domestic demand and the disruption of trade, especially for Baltic states, whose external demand will decline along with the contraction in Russia's economy. The influx of refugees is expected to place significant immediate pressure on social services, but eventually the increase in the labor force could help medium-term growth and the revenue base.

Advanced Europe: The main channel through which the war in Ukraine and sanctions on Russia affect the euro area economy is rising global energy prices and energy security. Because they are net energy importers, higher global prices represent a negative terms-of-trade shock for most European countries, translating to lower output and higher inflation. Supply chain disruptions have also hurt some industries—including the automobile sector—with the war and sanctions further hindering production of key inputs. As a consequence, euro area GDP growth in 2022 is revised down to 2.7 percent (1.2 percentage points lower than in January), with the biggest downgrades in economies such as Germany and Italy with relatively large manufacturing sectors and greater dependence on energy imports from Russia. Across the euro area, the hit to activity is partially offset by increased fiscal support. In the United Kingdom, GDP growth for 2022 is revised down 1.2 percentage points—energy supply constraints are expected to limit investment, and consumption is projected to be weaker than expected as inflation erodes real disposable income.

¹ This is broadly in line with the evidence presented by Novta and Pugacheva (2021) on the most severe conflicts.

Middle East and North Africa, Caucasus and Central Asia: Countries in the Middle East, North Africa, Caucasus, and Central Asia regions are highly exposed to global food prices, particularly the price of wheat, which is expected to remain high throughout the year and into 2023. In the Middle East and North Africa, spillovers from tighter global financial conditions, reduced tourism, and secondary demand spillovers (for example, from Europe) will also hold back growth, especially for oil importers. For oil exporters, higher fossil fuel prices may provide some offsetting gains. For example, the 2022 forecast for Saudi Arabia is revised up 2.5 percentage points, reflecting higher oil production in line with the OPEC+ (Organization of the Petroleum Exporting Countries, plus Russia and other non-OPEC oil exporters) agreement, reinforced by stronger-than-anticipated growth in the non-oil sector. Countries in the Caucasus and Central Asia region have close trade, remittance, and financial linkages to Russia and high exposure to commodity prices, so they will see GDP growth significantly downgraded. Unresolved social tensions (for example, in Kazakhstan and Sudan) also act as a drag on investment and growth. Overall, GDP in the Middle East and Central Asia is expected to grow by 4.6 percent in 2022.

Sub-Saharan Africa: In sub-Saharan Africa, food prices are also the most important channel of transmission, although in slightly different ways. Wheat is a less important part of the diet, but food in general is a larger share of consumption. Higher food prices will hurt consumers' purchasing power—particularly among low-income households—and weigh on domestic demand. Social and political turmoil, most notably in West Africa, also weigh on the outlook. The increase in oil prices has however lifted growth prospects for the region's oil exporters, such as Nigeria. Overall, growth in sub-Saharan Africa is projected at 3.8 percent in 2022.

Asia: Developments in China continue to dominate the outlook for Asia, especially for emerging Asia. As noted, the combination of more transmissible variants and the strict zero-COVID strategy in China has led to repeated mobility restrictions and localized lockdowns that, together with an anemic recovery in urban employment, have weighed on private consumption. Recent lockdowns in key manufacturing hubs such as Shenzhen will likely compound supply disruptions elsewhere in the region and beyond. Moreover, real estate investment growth has slowed significantly. External demand is also expected to be weaker in light of the war in Ukraine. While partially offset by more supportive monetary and fiscal policy, these factors contribute to a 0.4 percentage point forecast downgrade for 2022. For the region more broadly, limited direct trade links to Russia and Ukraine mean that spillover effects will be limited to the commodity price channel and to indirect impacts via weaker demand from key trading partners, such as the euro area. As such, external positions are generally expected to deteriorate—particularly for net oil importers. Notable downgrades to the 2022 forecast include Japan (0.9 percentage point) and India (0.8 percentage point), reflecting weaker domestic demand—as higher oil prices are expected to weigh on private consumption and investment—and a drag from lower net exports.

United States and Canada: Economic links between Russia and the United States and Canada are limited, and other factors also have a significant impact on the outlook there. The forecast for the United States was already downgraded in January, largely reflecting the failure of the Build Back Better fiscal policy package and continued supply chain disruptions. The additional 0.3 percentage point forecast markdown for 2022 in the current round reflects faster withdrawal of monetary support than in the previous projection—as policy tightens to rein in inflation—and the impact of lower growth in trading partners because of disruptions resulting from the war. The forecast for Canada is marked down 0.6 percentage point, reflecting the withdrawal of

policy support and weaker external demand from the United States, which outweigh the lift from favorable terms of trade effects.

Latin America and the Caribbean: With fewer direct connections to Europe, the region is also expected to be more affected by inflation and policy tightening. Brazil has responded to higher inflation by increasing interest rates 975 basis points over the past year, which will weigh on domestic demand. To a lesser extent, this is also the case in Mexico. The downgrades to the forecasts for the United States and China also weigh on the outlook for trading partners in the region. Overall growth for the region is expected to moderate to 2.5 percent during 2022–23.

The fluid international situation means that quantitative forecasts are even more uncertain than usual. Yet some channels through which the war and associated sanctions will affect the global economy seem relatively clear, even if their magnitudes are difficult to assess. The following sections explore these channels in some detail.

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

	2021	Projections		Difference from January 2022 WEO Update 1/		Difference from October 2021 WEO 1/	
		2022	2023	2022	2023	2022	2023
World Output	6.1	3.5	3.5	-0.9	-0.3	-1.4	-0.1
Advanced Economies	5.2	3.2	2.3	-0.7	-0.3	-1.3	0.1
United States	5.7	3.7	2.3	-0.3	-0.3	-1.5	0.1
Euro Area	5.3	2.7	2.2	-1.2	-0.3	-1.6	0.2
Germany	2.8	2.1	2.7	-1.7	0.2	-2.5	1.1
France	7.0	2.9	1.4	-0.6	-0.4	-1.0	-0.4
Italy	6.6	1.8	1.1	-2.0	-1.1	-2.4	-0.5
Spain	5.1	4.8	3.3	-1.0	-0.5	-1.6	0.7
Japan	1.6	2.4	2.3	-0.9	0.5	-0.8	0.9
United Kingdom	7.5	3.5	1.3	-1.2	-1.0	-1.5	-0.6
Canada	4.6	3.5	2.7	-0.6	-0.1	-1.4	0.1
Other Advanced Economies 2/	5.0	3.1	3.0	-0.5	0.1	-0.6	0.1
Emerging Market and Developing Economies	6.8	3.7	4.4	-1.1	-0.3	-1.4	-0.2
Emerging and Developing Asia	7.3	5.4	5.6	-0.5	-0.2	-0.9	-0.1
China	8.1	4.4	5.1	-0.4	-0.1	-1.2	-0.2
India 3/	8.9	8.2	6.9	-0.8	-0.2	-0.3	0.3
ASEAN-5 4/	3.4	5.3	5.9	-0.3	-0.1	-0.5	-0.1
Emerging and Developing Europe	6.7	-3.8	1.2	-7.3	-1.7	-7.4	-1.7
Russia	4.7	-11.2	-2.6	-14.0	-4.7	-14.1	-4.6
Latin America and the Caribbean	6.8	2.6	2.5	0.2	-0.1	-0.4	0.0
Brazil	4.6	0.8	1.4	0.5	-0.2	-0.7	-0.6
Mexico	4.8	2.0	2.5	-0.8	-0.2	-2.0	0.3
Middle East and Central Asia	5.7	4.6	3.7	0.3	0.1	0.5	-0.1
Saudi Arabia	3.2	7.6	3.6	2.8	0.8	2.8	0.8
Sub-Saharan Africa	4.5	3.8	4.0	0.1	0.0	0.0	-0.1
Nigeria	3.6	3.4	3.1	0.7	0.4	0.7	0.5
South Africa	4.9	1.9	1.4	0.0	0.0	-0.3	0.0
<i>Memorandum</i>							
World Growth Based on Market Exchange Rates	5.8	3.4	3.1	-0.8	-0.3	-1.3	0.0
European Union	5.4	2.8	2.4	-1.2	-0.4	-1.6	0.1
Middle East and North Africa	5.8	5.0	3.5	0.6	0.1	0.9	0.0
Emerging Market and Middle-Income Economies	7.0	3.6	4.3	-1.2	-0.3	-1.5	-0.3
Low-Income Developing Countries	4.0	4.6	5.4	-0.7	-0.1	-0.7	-0.1
World Trade Volume (goods and services)	10.1	5.1	4.5	-0.9	-0.4	-1.6	0.0
Imports							
Advanced Economies	9.4	6.5	4.6	0.2	0.1	-0.8	0.5
Emerging Market and Developing Economies	11.7	3.7	4.8	-1.9	-0.9	-3.4	-0.9
Exports							
Advanced Economies	8.6	5.1	4.8	-1.0	0.1	-1.5	0.8
Emerging Market and Developing Economies	12.4	4.1	3.6	-1.7	-1.5	-1.7	-1.4
Commodity Prices (US dollars)							
Oil 5/	67.3	54.7	-13.3	56.5	-8.3	61.0	-9.1
Nonfuel (average based on world commodity import weights)	26.8	11.4	-2.5	12.3	-1.0	13.3	-2.3
Consumer Prices							
Advanced Economies	3.1	5.7	2.5	1.8	0.4	3.4	0.6
Emerging Market and Developing Economies 6/	5.9	8.6	6.5	2.7	1.8	3.7	2.2

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

(Percent change, unless noted otherwise)

	Year over Year				Q4 over Q4 8/			
	2020.0	2021	Projections		2020	2021	Projections	
			2022	2023			2022	2023
World Output	-3.1	6.1	3.5	3.5	-0.3	4.5	2.4	3.5
Advanced Economies	-4.5	5.2	3.2	2.3	-2.7	4.7	2.5	2.0
United States	-3.4	5.7	3.7	2.3	-2.3	5.6	2.8	1.7
Euro Area	-6.4	5.3	2.7	2.2	-4.3	4.6	1.7	2.3
Germany	-4.6	2.8	2.1	2.7	-2.9	1.8	2.4	2.5
France	-8.0	7.0	2.9	1.4	-4.3	5.4	0.9	1.5
Italy	-9.0	6.6	1.8	1.1	-6.1	6.2	-0.5	2.2
Spain	-10.8	5.1	4.8	3.3	-8.8	5.5	2.3	4.0
Japan	-4.5	1.6	2.4	2.3	-0.8	0.4	3.5	0.8
United Kingdom	-9.4	7.5	3.5	1.3	-6.4	6.5	1.4	1.4
Canada	-5.2	4.6	3.5	2.7	-3.1	3.3	3.4	1.8
Other Advanced Economies 2/	-1.8	5.0	3.1	3.0	-0.4	4.5	2.5	2.8
Emerging Market and Developing Economies	-2.0	6.8	3.7	4.4	1.7	4.4	2.4	4.8
Emerging and Developing Asia	-0.8	7.3	5.4	5.6	3.7	4.2	4.4	5.8
China	2.2	8.1	4.4	5.1	6.4	3.5	4.8	4.7
India 3/	-6.6	8.9	8.2	6.9	1.5	5.6	2.7	9.0
ASEAN-5 4/	-3.4	3.4	5.3	5.9	-2.5	4.5	5.1	5.3
Emerging and Developing Europe	-1.8	6.7	-3.8	1.2	0.0	6.3	-6.6	2.6
Russia	-2.7	4.7	-11.2	-2.6	-1.7	5.0	-16.0	1.5
Latin America and the Caribbean	-7.0	6.8	2.6	2.5	-3.2	3.8	1.7	2.5
Brazil	-3.9	4.6	0.8	1.4	-1.0	1.6	0.8	1.9
Mexico	-8.2	4.8	2.0	2.5	-4.4	1.1	3.3	1.9
Middle East and Central Asia	-2.9	5.7	4.6	3.7	...	...	...	...
Saudi Arabia	-4.1	3.2	7.6	3.6	-3.8	6.7	6.9	3.6
Sub-Saharan Africa	-1.7	4.5	3.8	4.0	...	...	...	...
Nigeria	-1.8	3.6	3.4	3.1	-0.2	2.4	2.1	2.3
South Africa	-6.4	4.9	1.9	1.4	-3.4	1.8	2.3	1.1
<i>Memorandum</i>								
World Growth Based on Market Exchange Rates	-3.5	5.8	3.4	3.1	-1.0	4.5	2.5	2.9
European Union	-5.9	5.4	2.8	2.4	-4.1	5.0	1.7	2.7
Middle East and North Africa	-3.3	5.8	5.0	3.5	...	...	...	...
Emerging Market and Middle-Income Economies	-2.2	7.0	3.6	4.3	1.8	4.5	2.3	4.8
Low-Income Developing Countries	0.2	4.0	4.6	5.4	...	...	...	...
World Trade Volume (goods and services)	-8.0	10.1	5.1	4.5	...	...	...	...
Imports								
Advanced Economies	-8.7	9.4	6.5	4.6	...	...	...	...
Emerging Market and Developing Economies	-7.9	11.7	3.7	4.8	...	...	...	...
Exports								
Advanced Economies	-9.1	8.6	5.1	4.8	...	...	...	...
Emerging Market and Developing Economies	-4.8	12.4	4.1	3.6	...	...	...	...
Commodity Prices (US dollars)								
Oil 5/	-32.7	67.3	54.7	-13.3	-27.6	79.2	28.6	-11.6
Nonfuel (average based on world commodity import weights)	6.8	26.8	11.4	-2.5	15.4	17.3	9.4	-2.5
Consumer Prices								
Advanced Economies 6/	0.7	3.1	5.7	2.5	0.4	4.9	4.8	2.2
Emerging Market and Developing Economies 7/	5.2	5.9	8.6	6.5	3.3	6.0	8.7	5.3

Source: IMF staff estimates.

Note: Real effective exchange rates are assumed to remain constant at the levels prevailing during February 7, 2022 –March 7, 2022. 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 2022 WEO Update, and October 2021 WEO forecasts.

2/ Excludes the Group of Seven (Canada, France, Germany, Italy, Japan, United Kingdom, United States) and euro area countries.

3/ For India, data and forecasts are presented on a fiscal year basis, and GDP from 2011 onward is based on GDP at market prices with fiscal year 2011/12 as a base year.

4/ Indonesia, Malaysia, Philippines, Thailand, Vietnam.

5/ Simple average of prices of UK Brent, Dubai Fateh, and West Texas Intermediate crude oil. The average price of oil in US dollars a barrel was \$69.07 in 2021; the assumed price, based on futures markets, is \$106.83 in 2022 and \$92.63 in 2023.

6/ The inflation rates for 2022 and 2023, respectively, are as follows: 5.2 percent and 2.3 percent for the euro area, 1.0 percent and 0.8 percent for Japan, and 7.7 percent and 2.8 percent for the United States.

7/ Excludes Venezuela. See the country-specific note for Venezuela in the "Country Notes" section of the Statistical Appendix.

8/ For world output, the quarterly estimates and projections account for approximately 90 percent of annual world output at purchasing-power-parity weights. For Emerging Market and Developing Economies, the quarterly estimates and projections account for approximately 80 percent of annual emerging market and developing economies' output at purchasing-power-parity weights.

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

	2021	Projections		Difference from January 2022 WEO Update 1/		Difference from October 2021 WEO 1/	
		2022	2023	2022	2023	2022	2023
World Output	5.8	3.4	3.1	-0.8	-0.3	-1.3	0.0
Advanced Economies	5.1	3.2	2.3	-0.7	-0.2	-1.3	0.2
Emerging Market and Developing Economies	6.8	3.7	4.2	-0.9	-0.3	-1.3	-0.3
Emerging and Developing Asia	7.4	5.0	5.4	-0.5	-0.2	-1.0	-0.1
Emerging and Developing Europe	6.4	-3.3	0.7	-6.8	-2.2	-7.0	-2.2
Latin America and the Caribbean	6.6	2.4	2.4	0.2	-0.1	-0.6	-0.1
Middle East and Central Asia	5.1	4.6	3.3	0.5	0.1	0.7	-0.1
Sub-Saharan Africa	4.4	3.7	3.8	0.1	0.0	0.0	-0.1
<i>Memorandum</i>							
European Union	5.3	2.8	2.4	-1.1	-0.2	-1.5	0.2
Middle East and North Africa	5.0	4.9	3.2	0.8	0.2	1.0	0.1
Emerging Market and Middle-Income Economies	7.0	3.6	4.2	-0.9	-0.3	-1.4	-0.3
Low-Income Developing Countries	4.0	4.7	5.3	-0.5	-0.1	-0.5	-0.1

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.

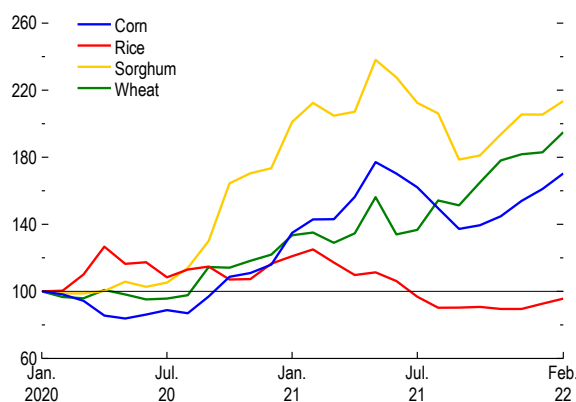
1/ Difference based on rounded figures for the current, January 2022 WEO Update, and October 2021 WEO forecasts.

International Implications of the War in Ukraine

The ongoing war in Ukraine and sanctions on Russia are expected to generate substantial economic spillovers, principally through five channels.

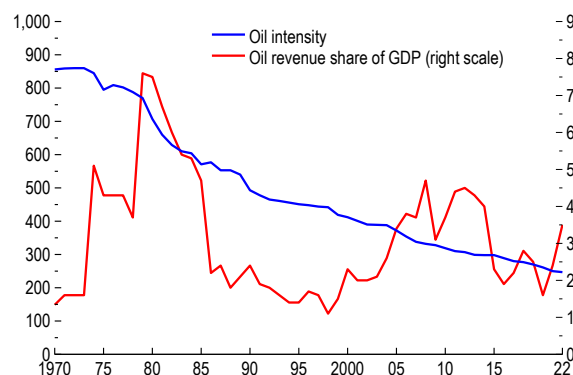
Global commodity markets: War-related interruptions to production, sanctions, and strongly impaired access to cross-border payment systems will disrupt trade flows, notably for energy and food. The magnitude of these changes depends not only on the decline in exports as a result of the conflict and sanctions, but also on the elasticity of global supply and demand. Although the price of oil has risen sharply, spare capacity in other countries and the release of petroleum reserves will likely mean that these increases will be contained over the medium term. In contrast, the relatively inflexible infrastructure needed to transport gas (pipelines are more important for gas than for oil, for example) means that global supply can adjust less easily, raising the prospect of higher prices for longer. Prices of agricultural commodities are likely to rise further—particularly wheat (together, Russia and Ukraine account for about one-quarter of global wheat exports) and, to a lesser extent, corn. These changes will add to already soaring

Figure 1.6. International Cereal Prices (US dollars, index, January 2020=100)



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

Figure 1.7. Global Oil Intensity and Oil Revenue Share (Barrels, percent on right scale)



Source: IMF staff calculations.

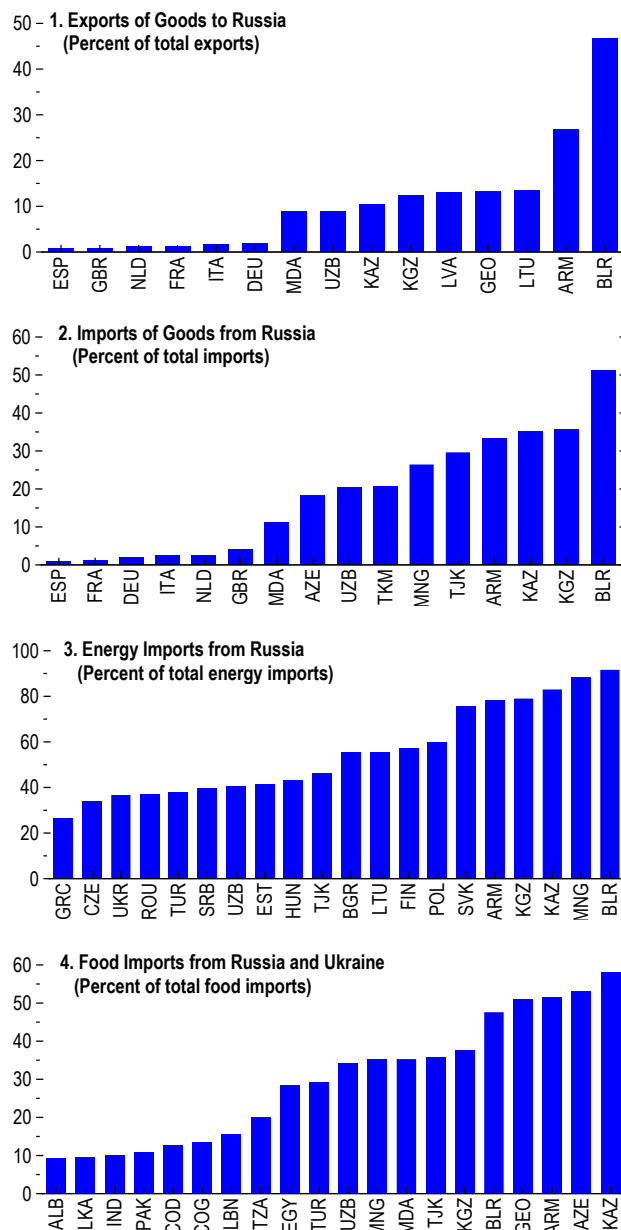
Note: Oil intensity is defined as barrels of oil needed to produce \$1 million in real GDP. Real GDP is based on constant 2017 purchasing-power-parity international dollars.

prices of staple foods (Figure 1.6) and mean that disruptions to Russian exports may be windfalls for other commodity exporters.

The sharp increases in commodity prices echo those in the 1970s, when a regional conflict also prompted a spike in fossil fuel prices. At that time, several years of high inflation and low growth followed. The experience of that period has raised the specter of “stagflation” in the current situation—a period of low growth (stagnation) and high inflation. Now, however, circumstances differ in important ways (Figure 1.7). The size of the oil price shock is smaller so far, and today’s economy is less reliant on oil (between August 1973 and January 1974, the oil price almost tripled, from about \$20 to \$60, in 2021 dollars, and remained high; moreover, the global economy’s oil intensity was about 3.5 times greater than today). Wage setting mechanisms are different as well, with generally lower prevalence of indexation mechanisms. Despite the significant downward revision to global growth, the baseline forecast is for output to expand close to its pre-pandemic average of 3.5 percent. Nonetheless, as discussed in the risks section below, growth could slow further than forecast in the baseline, and inflation could turn out higher than expected. This may be particularly salient for parts of Europe, given their relatively higher reliance on Russian gas imports.

Direct trade and remittances linkages with Russia and Ukraine: Although the broadest global spillovers are likely through commodity prices, direct trade linkages add a further layer of disruptions. These will depend on countries’ trade balances with Russia and Ukraine. Countries that send a large share of exports to Russia, such as Belarus, some Baltic states and Caucasus countries, will suffer reduced external demand for their products (Figure 1.8). Importers will face higher import prices and possible shortages. The effects are likely to be concentrated in specific markets, such as metals and minerals, noble gases, and agricultural exports, especially wheat. Some countries,

Figure 1.8. Trade Exposures to Russia and Ukraine, 2020



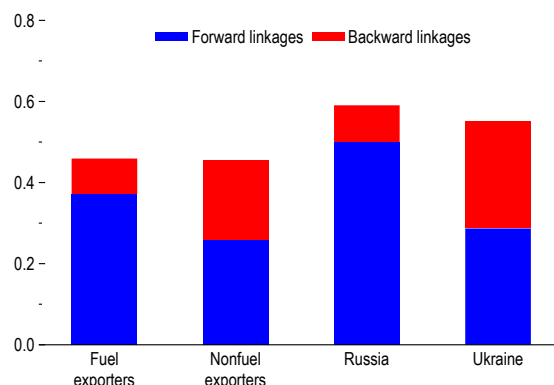
Sources: Direction of Trade Statistics; United Nations, Comtrade database; and IMF staff calculations.
 Note: Energy includes crude petroleum, refined petroleum, petroleum gas, and coal. Data labels use International Organization for Standardization (ISO) country codes.

particularly in the Caucasus and Central Asia region, will also see remittances from Russia decline.

Propagation through cross-border production networks: The integration of Russia and Ukraine into global value chains extends beyond typical commodity linkages (Figure 1.9). Disruptions in upstream sectors can therefore cascade beyond bilateral trading partners. For instance, production of neon gas—an input in the manufacture of silicon chips—is concentrated in Russia and Ukraine. This will be interrupted, compounding silicon chip shortages, which have already caused production bottlenecks further downstream in automobiles and electronics. Global car production is also affected by the war in other ways: disruptions to Ukraine’s production of electronic wiring systems have already contributed to automobile plant shutdowns in Germany. Protracted shortages of metals exported from Russia, such as palladium and nickel, will increase the cost of items including catalytic converters and batteries. And disruptions of exports of potash fertilizers from Belarus will affect food production elsewhere and exacerbate food price increases. In the near term, there is limited scope for downstream producers to substitute alternative inputs. The initial shock in Ukraine, Russia, and Belarus can therefore quickly amplify across sectors and borders, magnifying the impact of the war on global activity. In particular, supply disruptions can have a wider impact by reducing demand in other sectors if affected firms reduce orders for complementary inputs from other suppliers. Finally, reputational risks and investor and customer disapproval may cause firms to avoid commercial transactions with Russian counterparts, even in sectors not directly affected by sanctions—further severing cross-border production ties.

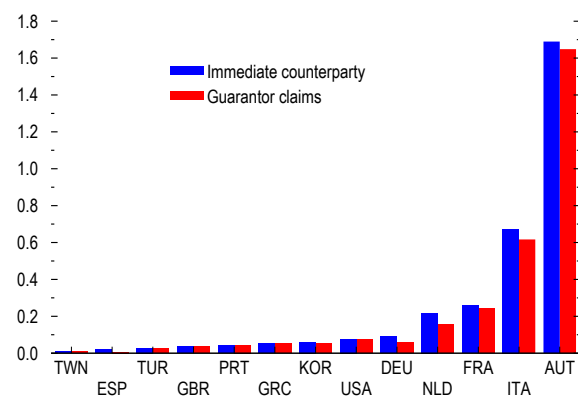
Financial markets: Sanctions have induced direct financial stress on firms with outstanding payments for recent shipments or financial assets abroad. Beyond this, sanctions have also added operational challenges to market functioning and increased volatility. Counterparty risk and the risk of sovereign default have increased. However, direct financial connections between Russia

Figure 1.9. Global Value Chain Participation, 2018
(Share of exports)



Sources: Eora Global Value Chain Database; and IMF staff calculations.
Note: Global value chain participation is the sum of backward and forward linkages. The former measure imported intermediate inputs that are used to generate output for exports. The latter measure exports of intermediate goods that are used as inputs for the production of exports of other countries. See Casella and others (2019) for methodological details.

Figure 1.10. Ratio of Banks' Exposure to Russia to Total Assets
(Percent)



Sources: Bank for International Settlements; and IMF staff calculations.
Note: Data labels use International Organization for Standardization (ISO) country codes. Countries with exposure ratio below 0.0085 percent have been omitted from the sample.

and other major economies appear relatively small and concentrated in just a few countries, mostly in Europe. Of these, Austrian and Italian banks are most exposed to Russian counterparties (see Figure 1.10). European bank exposures to Russia appear manageable also because a large share of European banks' direct exposure is through their locally funded Russian subsidiaries. More generally, the collapse of the ruble and a wider increase in geopolitical uncertainty could prompt a more severe repricing of risk by investors. This would likely affect emerging market and developing economies, especially those with large external debt. Additional complications, such as the removal of Russian assets from global equity and bond indices, and—critically—high volatility and disruptions in commodity markets point to longer-term challenges for financial markets, including increased fragmentation.

Humanitarian impact: A very large number of refugees have fled the war already, and many more may follow. The UNHCR, the UN Refugee Agency, reports that over 3.5 million refugees have left Ukraine since February 24: half have arrived in Poland, and more than 8 million are expected to flee. In the short term, refugee arrivals will strain local services, including for shelter and health care. In the longer term, the dispersion of a large number of refugees across the European Union will have important social and economic effects, increasing labor supply but potentially exacerbating anti-immigrant sentiment.

Policy responses: The international economic transmission of the war and sanctions will also depend on policies in countries not directly involved. Decisions to increase oil and gas supply or release energy reserves could alleviate price pressures. Expanded fiscal support in Europe could help compensate for shrinking demand (see Box 1.2 in the April 2022 *Fiscal Monitor*). Moreover, the response of central banks, particularly those in large advanced economies, will also shape the economic impact of the war. Many will have to weigh rising inflation (due to higher international commodity prices and supply disruptions) against weakening activity (due to lower trade and heightened uncertainty).

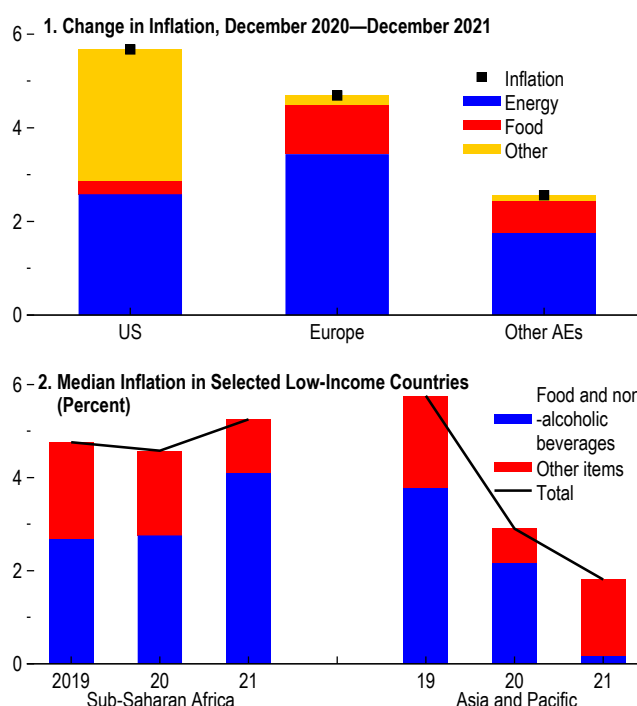
Elevated Inflation Expected to Persist for Longer

Inflation forecast: With the impact of the Ukraine war and broadening of price pressures, inflation is expected to remain elevated for longer than in the previous forecast. The conflict is likely to have a protracted impact on commodity prices, affecting oil and gas prices more severely in 2022 and food prices well into 2023 (because of the lagged impact from the harvest in 2022). For 2022, inflation is projected at 5.7 percent in advanced economies and 8.6 percent in emerging market and developing economies—1.8 and 2.7 percentage points higher than in the January *World Economic Outlook*. Inflation in 2023 is projected at 2.5 percent for the advanced economy group and 6.5 percent for emerging market and developing economies (0.4 and 1.8 percentage points higher than in the January forecast). However, as with the growth outlook, considerable uncertainty surrounds these inflation projections.

The main factors shaping the baseline inflation outlook are the following.

The war in Ukraine has aggravated spikes in commodity prices. Energy and food prices were a major contributing factor to headline inflation in 2021, to varying degrees across regions (Figure 1.11). The sharp spike in oil and gas prices—reflecting tight fossil fuel supply after years of subdued investment (see the Commodities Special Feature in this chapter) and geopolitical uncertainty—led to a significant increase in energy costs. These increases were the main driver of headline inflation in Europe and the United States. In most emerging market and developing economies rising food prices also played a significant role, as poor weather hit harvests and rising oil and gas prices drove up the cost of fertilizer. Higher prices for international food commodities impact countries differently depending on the food share of households’ consumption baskets and the types of foods consumed. Households in low-income countries are particularly exposed to changes in the price of staple cereals, with diets often concentrated in just one type of grain. Low-income countries where wheat, corn, and sorghum are a large part of the diet (especially in sub-Saharan Africa) have seen inflation almost wholly driven by rising food prices. Some emerging market economies, including in the Middle East and Central Asia, have also been similarly affected by higher global food prices. The war in Ukraine and sanctions on Russia and Belarus will reinforce this effect, disrupting both the supply of food and agricultural inputs such as potash fertilizer. But in Asia, the falling price of rice mitigated cost-of-living increases for consumers in low-income countries. Looking ahead, commodity price increases are expected to persist through 2022 before easing somewhat in 2023. Futures markets indicate oil and gas prices will grow quickly in 2022 (55 and 147 percent, respectively) and then decline in 2023 as supply adjusts. Similarly, food inflation is expected to grow at a robust pace (about 14 percent) in 2022, before declining modestly in 2023. The war has added to the uncertainty around these forecasts, and commodity prices are likely to be volatile over 2022–23.

Figure 1.11. Changes in Inflation Drivers
(Percentage points, unless noted otherwise)



Sources: Haver Analytics; and IMF staff calculations.
Note: "Change in inflation" refers to the difference in year-over-year growth of the consumer price index between December 2020 and December 2021. Stacked bars show the contribution of each component to that change. Sample includes countries for which all components are available. This covers 26 European countries and 2 other AEs. Purchasing-power-parity weights are used for aggregation. Panel 2 shows median inflation and contributions from food and other items in 17 low-income countries, 13 in sub-Saharan Africa and 4 in Asia and the Pacific. Inflation is a 12-month comparison, measured at year-end. AEs = advanced economies.

Aggregate demand-supply imbalances: Demand grew rapidly in 2021, due in part to policy support. Meanwhile, a host of bottlenecks held back supply, including outbreak-induced factory closures; restrictions at ports; congested shipping lanes; container shortfalls; and worker shortages because of quarantines, possible shifts in preference, and dependent care responsibilities (see

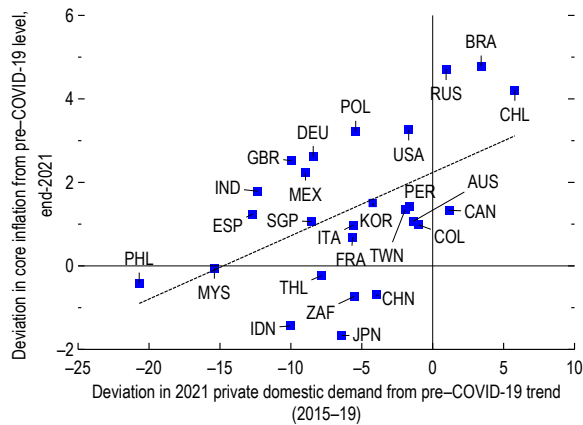
Box 1.1). As a result, core inflation, which excludes food and energy prices, has surpassed pre-pandemic rates across most economies, rising most where recoveries have been strongest (Figure 1.12). During 2022, demand is expected to soften in line with the moderating recovery and the withdrawal of broad-based extraordinary policy support. Although supply bottlenecks are generally anticipated to ease as production responds to higher prices, recurrent lockdowns in China as a result of the zero-COVID strategy, the war in Ukraine, and sanctions on Russia are likely to prolong disruptions in some sectors into 2023. This is expected to add to shortages not just of energy supply but also of key manufacturing inputs such as rare metals and gases.

Rebalancing of demand from goods toward services:

As in-person services were more disrupted by pandemic restrictions, spending shifted toward goods. Coinciding with supply bottlenecks, this rotation put pressure on goods prices (Figure 1.13). Although service inflation started to recover in 2021, pre-pandemic spending patterns have not fully reset, and goods inflation has remained prominent in most countries. Provided the pandemic eases, services demand will pick up, and the overall consumption basket should return to pre-pandemic configurations.

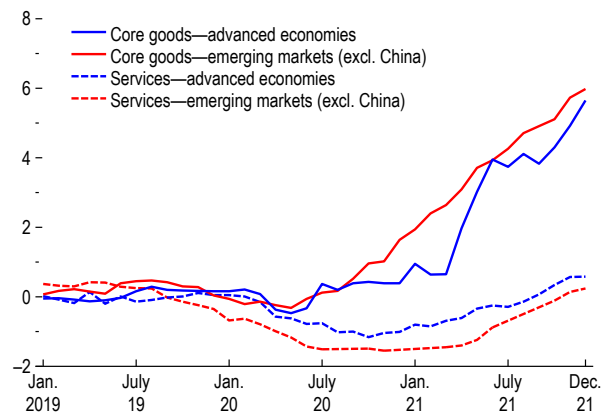
Labor supply upsides remain limited. Labor markets have tightened significantly in some advanced economies, particularly the United States and (to a lesser extent) the United Kingdom (see Box 1.1). Labor supply shortfalls—particularly in contact-intensive sectors—mean that nominal wage growth has picked up rapidly. Real wages have however fallen in general because consumer price inflation has risen faster than nominal wages. Meanwhile, labor force participation rates in advanced economies generally remain below pre-pandemic levels. In part, these developments appear related to a reluctance (or inability) of workers to return to work while the pandemic continues and earlier-than-planned retirements. Moreover, in some cases, even as workers are returning to employment they are working fewer hours. The baseline assumes that labor

Figure 1.12. Core Inflation versus Private Domestic Demand (Percent)



Sources: Haver Analytics; and IMF staff calculations.
 Note: Core inflation is headline consumer price inflation excluding food and energy. Private domestic demand is private consumption plus private gross fixed capital formation (GFCF) (or total GFCF if private unavailable). Average over 2021 data available. Data labels use International Organization for Standardization (ISO) country codes.

Figure 1.13. Goods and Services Inflation (Deviation from pre-COVID-19 averages, percent)



Sources: Haver Analytics; and IMF staff calculations.
 Note: Lines show the difference between the year-over-year percentage change in price indices each month and the average observed during 2018 and 2019 for each sector. Core goods exclude energy and food. Countries are aggregated using purchasing-power-parity weights. Advanced economies include United States, Euro Area, Japan, Korea, Canada, and Australia. Emerging markets include Indonesia, Malaysia, Brazil, Mexico, Colombia, Chile, Russia, and South Africa.

supply will gradually improve over 2022 as the health crisis abates, constraints on dependent care ease, and savings run down. The overall effect on labor supply, however, is expected to be moderate, and this is therefore unlikely to soften nominal wage increases significantly.

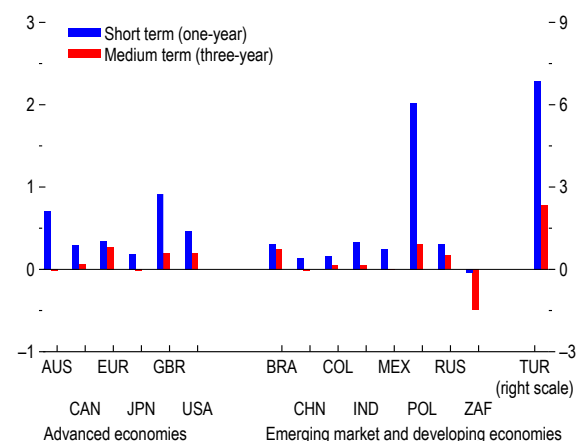
Inflation expectations remain reasonably well anchored at longer horizons, even as they have increased in the near term. In advanced economies, near-term inflation expectations have risen significantly, while pressures over longer horizons have generally been more contained (albeit with some increase in recent weeks). A similar pattern was seen in emerging markets before the war in Ukraine started, although with more variation across countries (Figure 1.14). The data suggest that the tightening stance and shift in central bank communications in recent months were viewed as enough to tame inflation over the medium term. Provided medium-term expectations continue to remain well anchored during the unfolding of the current conflict, price- and wage-setting should adjust to the developments in commodity prices, supply-demand imbalances, and labor supply described in this chapter. This would help ease inflationary pressure, even as elevated inflation is expected to persist longer than had been anticipated.

A combination of these factors could drive inflation higher than in the baseline forecast. The inflation forecast is subject to high uncertainty, principally related to the war, the pandemic, and the attendant implications for prices of commodities and inputs to production. Prolonged supply disruptions because of continued fighting or renewed flare-ups of the pandemic would further drive up costs of intermediate inputs. Against a backdrop of high inflation, sustained further increases in commodity prices could cause medium-term inflation expectations to rise—in particular in emerging market and developing economies. In a context of tight labor markets, nominal wage growth could accelerate to catch up with consumer price inflation as workers seek (and get) higher wages to account for increased living costs. This would further intensify and broaden inflation pressures.

Rising Interest Rates: Implications for Emerging Market and Developing Economies

An increase in core sovereign interest rates before the war in Ukraine had already placed pressure on borrowers in some emerging market and developing economies. Markets have so far differentiated between countries directly and indirectly implicated in the conflict. Sovereign and credit default swap spreads have widened the most for Belarus, Russia, and Ukraine. Smaller extensions in spreads have occurred in other regional economies, such as Hungary and Poland. A generalized flight to safety as the war continues could put other economies under stress too.

Figure 1.14. Changes in Inflation Expectations: January 21–January 22
(Percentage points)



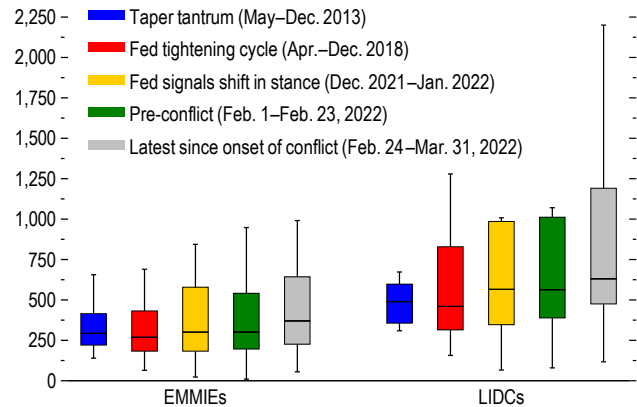
Sources: Consensus Economics; and IMF staff calculations.
Note: Data labels use International Organization for Standardization (ISO) country codes.

More broadly, average spreads had—prior to the war—looked similar to previous tightening cycles, in 2018 and in the 2013 taper tantrum. Since then, spreads have generally increased moderately (Figure 1.15). And compared with previous episodes, there is also more differentiation across borrowers, with greater dispersion of spreads now than in 2013 or 2018. This reflects heterogeneity in country circumstances, including in the buildup of private debt and contingent liabilities (see Chapter 2; the sovereign-bank nexus in emerging market and developing economies is studied in Chapter 2 of the April 2022 *Global Financial Stability Report*).

Past episodes suggest that rapid interest rate increases in advanced economies can tighten external financial conditions for emerging market and developing economies. Surprise tightening, particularly in the United States, has been associated with capital flow reversals from emerging market and developing economies, widening spreads, currency depreciations, and tighter external financial conditions (see Chapter 4 of the April 2021 *World Economic Outlook*). The effects have varied across countries depending on their debt exposures and trade linkages to advanced economies. Countries with higher debt levels and larger gross financing needs have usually been vulnerable to more extreme stress in such episodes. In these countries, increases in domestic long-term yields largely reflect increases in risk premia, over and above the effects of increases in domestic policy rates. To the extent that higher core rates may reflect more robust nominal demand in advanced economy trading partners, countries with stronger trade ties to advanced economies are less exposed.

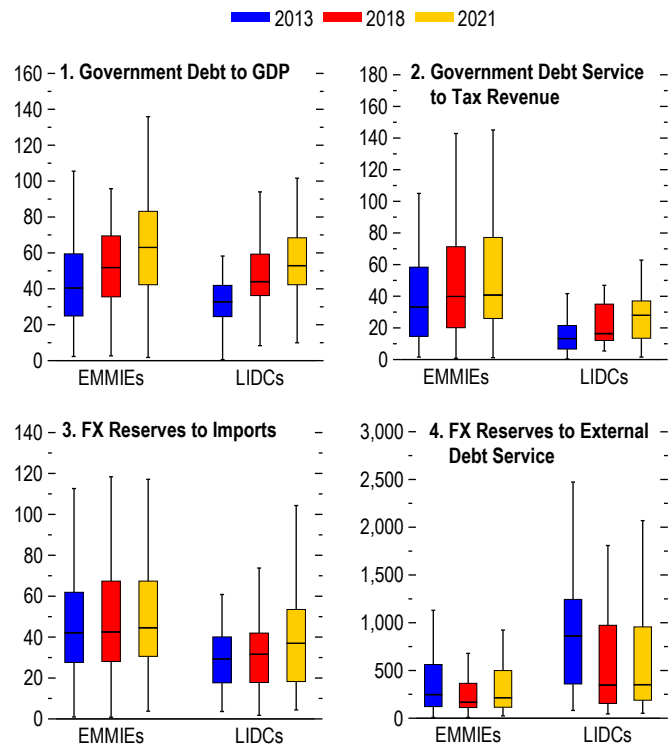
Record debt levels induced by the pandemic leave emerging market and developing economies more vulnerable to interest rate hikes this time around.

Figure 1.15. Sovereign Spreads at Tipping Points
(Basis points)



Sources: Bloomberg Finance L.P.; and IMF staff calculations.
Note: Box denotes upper quartile, median, and lower quartile. Whiskers show maximum and minimum values within the boundary of 1.5 times interquartile range from upper and lower quartiles respectively. Fed = Federal Reserve; EMMIEs = emerging market and middle-income economies; LIDCs = low-income developing countries.

Figure 1.16. Emerging Market and Developing Economy Vulnerabilities
(Percent)



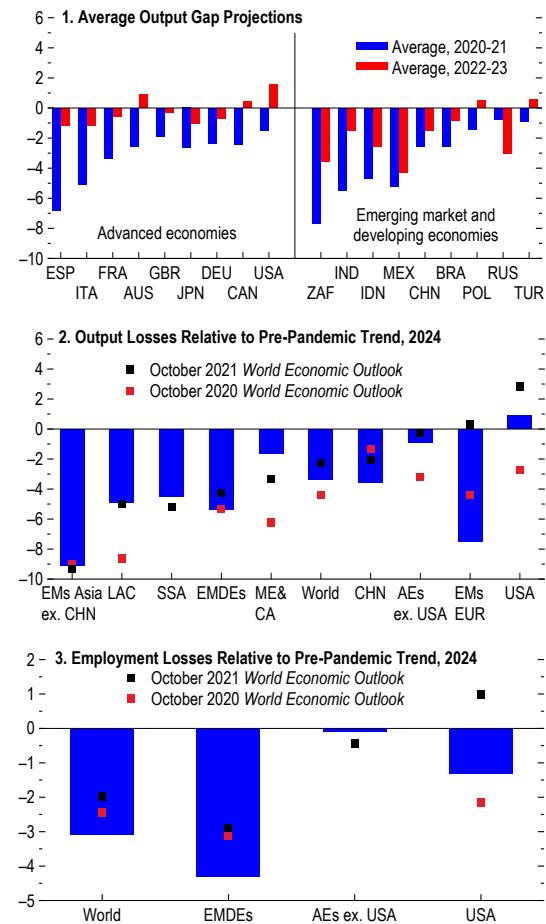
Source: IMF staff calculations.
Note: Box denotes upper quartile, median, and lower quartile. Whiskers show maximum and minimum values within the boundary of 1.5 times interquartile range from upper and lower quartiles respectively. Import and external debt service are for the following year. EMMIEs = emerging market and middle-income economies; FX = foreign exchange; LIDCs = low-income developing countries.

As discussed in Chapter 2, the April 2022 *Fiscal Monitor*, and Gaspar, Medas, and Perrelli (2021), the pandemic has led to unprecedented increases in sovereign debt. Figure 1.16 shows that in the median emerging market middle-income economy, the debt-to-GDP ratio reached 60 percent in 2021, up from about 40 percent at the time of the 2013 taper tantrum. For low-income countries, which often have less debt-carrying capacity, the median debt is now nearly double that of 2013. With borrowing costs set to increase, interest expenses could rise significantly, placing pressure on national budgets and making it increasingly difficult to service debt.

External buffers generally remain healthy, but with variation across measures. Compared with a standard benchmark—as a ratio of imports—emerging market foreign exchange reserves look relatively healthy, exceeding their levels in either the 2013 taper tantrum and the 2018 tightening cycle. This difference is particularly pronounced for low-income developing countries, where the reserves-to-imports ratio has risen the most in relative terms—in part reflecting the 2021 allocation of Special Drawing Rights. However, when compared with external debt service, reserves have improved little for middle-income emerging market economies over the past decade and have deteriorated for low-income developing countries.

Key differences relative to past episodes further amplify current emerging market vulnerabilities. Emerging market and developing economies enter this tightening cycle with a larger fraction already under considerable stress. Some 60 percent of low-income developing countries are already in debt distress or at high risk of distress. Moreover, past episodes generally occurred at a time when large emerging markets—notably China—were expected to maintain high growth rates over the medium term, with favorable spillovers. In contrast, the current tightening episode is unfolding amid a more tentative medium-term outlook and slower potential growth than in previous episodes, especially for key emerging markets, such as China. Geopolitical tensions mean that the overall external backdrop is also considerably more difficult now. And rising food and energy prices increase the risk of domestic social unrest (see paragraph on increased social tensions below). All these elements potentially increase the sensitivity of these economies’ assets to souring investor sentiment.

Figure 1.17. Medium-Term Prospects: Output and Employment
(Percent, unless noted otherwise)



Source: IMF staff calculations.
Note: Output gap in panel 1 is the difference between real and potential GDP as a percent of potential GDP. Output in panel 2 is real GDP. Medium-term losses in panels 2 and 3 are the difference between forecasts of the indicated variable (for 2024) relative to the January 2020 WEO Update vintage. The sample of countries in panel 3 comprises those that have comparable employment projections in both vintages. The EMDE employment aggregate excludes China and India due to changes in employment definitions across vintages. Data labels use International Organization for Standardization (ISO) country codes. AEs (ex. USA) = advanced economies (excluding the United States); EMs = emerging market economies; EMs (Asia ex. CHN/EUR) = emerging market economies (in Asia excluding China, in Europe); EMDEs = emerging market and developing economies; LAC = Latin American and Caribbean economies; LICs = low-income countries; ME&CA = Middle Eastern and Central Asian economies; SSA = sub-Saharan African economies. WEO = World Economic Outlook.

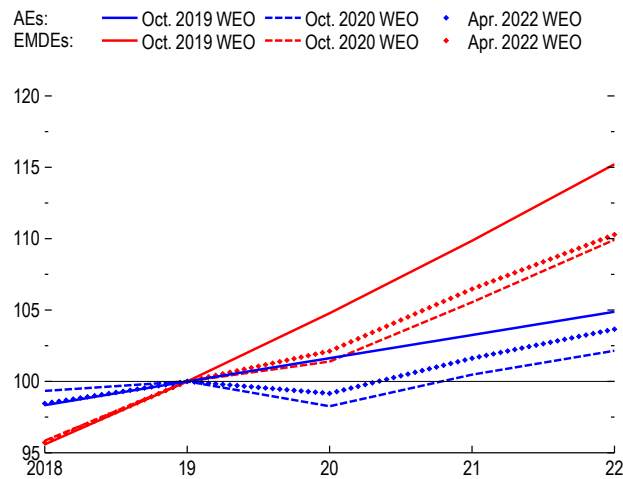
Economic Slack to Narrow in the Medium Term; Significant Scarring Expected

Beyond short-term output losses, the pandemic and geopolitical conflict are likely to leave longer-lasting footprints. First and foremost, the displacement of people and destruction of physical capital will mean that activity in Ukraine will remain well below prewar projections for some time. Elsewhere, sanctions can induce permanent dismantling of trade and supply chain linkages, entailing productivity and efficiency losses along the way. This is most prominent in Russia, where output is expected to remain below pre-war projections in the medium term. And scarring effects from the pandemic are likely to materialize through several other channels—including corporate bankruptcies, productivity losses, lower capital accumulation due to a drag on investment, slower labor force growth, and human capital losses from school closures (Chapter 2 of the April 2021 *World Economic Outlook*).

The drag on output is expected to be more salient in emerging market and developing economies. The United States is expected to reach its pre-pandemic trend output path by 2022. In other advanced economies, the shortfall relative to the pre-pandemic trend will narrow (Figure 1.17)—although the war can slow this process in Europe. Scarring effects from the pandemic are expected to be much larger in emerging market and developing economies because of relatively larger human capital and investment losses along with more limited telework adaptability, more limited policy support, and generally slower vaccination (Figure 1.18). In those economies, economic activity and employment are expected to remain below the pre-pandemic trend throughout the forecast horizon. Overall, the pattern of forecast revisions indicates that the pandemic shock to advanced economies has been relatively more transitory; while in emerging market and developing economies it has been relatively more permanent. Both groups are more aligned in their cyclical position, comparing the evolution of output gaps (which, in part, helps account for rising inflation pressure in both sets of economies, as discussed earlier).

Limiting scarring will depend on public investment and health and education policy responses, as well as on the path of the war in Ukraine. For advanced economies, recent upward revisions to potential output stem not only from a reassessment of the long-lasting impacts of the pandemic, but also from the expected impact of public infrastructure investment programs in the United States and of the European Union's Next Generation EU funds. These initiatives are expected to raise medium-term productivity through infrastructure upgrades and technological adaptation—including that associated with the green energy transition. This assumes that the war will not significantly derail those plans and that scarring effects from the conflict remain largely contained to the countries directly involved. More limited public investment responses and relatively bigger challenges to remedy learning losses mean that upward potential output revisions are not as large in emerging

Figure 1.18. Potential GDP
(Index, 2019 = 100)



Source: IMF staff calculations.

Note: Potential real GDP projections indexed to 2019 values. Each line reflects a different vintage of *World Economic Outlook* (WEO) projections. AEs = advanced economies; EMDEs = emerging market and developing economies.

market and developing economies. Importantly, improvements in vaccination rates have also been associated with upward revisions to output projections across the forecast horizon (Figure 1.19). This pattern reinforces the importance of continuing pandemic mitigation policies.

Trade Growth to Moderate, External Imbalances to Narrow over Medium Term

Global trade: Reflecting the significant slowdown in overall activity, global trade growth is expected to decline notably in 2022. Global goods demand is expected to moderate because of the war as extraordinary policy support is withdrawn and as demand rebalances back toward services. Cross-border services trade—especially tourism—is however expected to remain subdued because of the war and lingering effects of the pandemic. Overall, global trade growth is projected to slow from an estimated 10.1 percent in 2021 to 5.1 percent in 2022 and further to 4.5 percent in 2023 (0.9 and 0.4 percentage points lower than in the January forecast). Over the medium term, trade growth is expected to decline to about 3.5 percent.

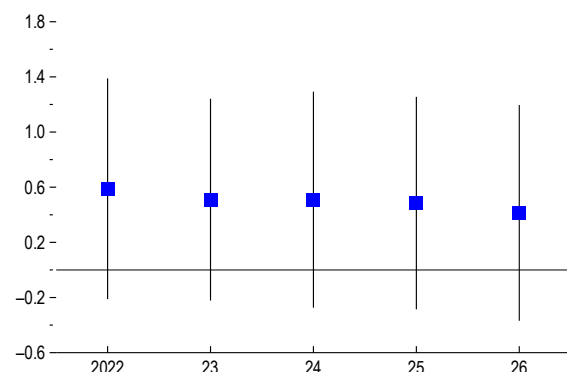
Global current account balances—the sum of country surpluses and absolute levels of deficits—widened for a second successive year in 2021 largely because of pandemic-related factors. These include a continued high export volume of medical equipment and work-from-home electronics as the pandemic maintained its grip and remote work prevailed for the most part. Across regions, the widening reflected a bigger deficit in the United States—in part related to continued large fiscal support—and higher surpluses among its main trading partners, notably China and the euro area. The strong oil price rebound in 2021 also contributed to a widening of external surpluses for exporters and deficits for importers. Current account balances are expected to remain elevated in the near term. Although projected to narrow subsequently (Figure 1.20, panel 1), the future path is uncertain because of the effects of the war, the path of the pandemic, and the related effects on commodity prices and trade patterns.

Global creditor and debtor positions: External assets and liabilities narrowed slightly in 2021 as a share of global GDP, returning close to 2019 levels (Figure 1.20, panel 2). This reflects the recovery in global activity—which strengthened the denominator of the ratio—and valuation changes. External assets and liabilities are however projected to remain close to all-time highs, posing risks to both debtor and creditor economies (see the 2021 *External Sector Report*).

Risks Are Large and to the Downside

The risks to the outlook are to the downside. Although a fast resolution of the war in Ukraine would lift confidence, ease pressure on commodity markets, and reduce supply bottlenecks, it is more likely that growth could slow further and inflation turn out higher than expected. Overall,

Figure 1.19. Correlates of Projected Output Revisions to Vaccinations
(Percentage points)

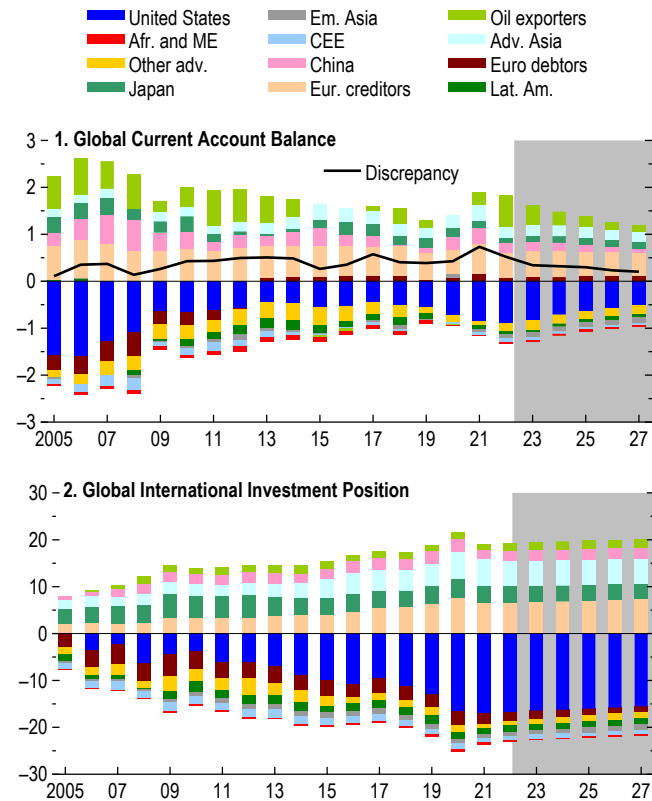


Sources: IMF, Database of Country Fiscal Measures in Response to the COVID-19 Pandemic; Our World In Data; and IMF staff calculations.
Note: Figure shows point estimates and 90 percent confidence intervals (with heteroscedasticity-consistent standard errors) for coefficients of a cross-sectional, cross-country regression (unweighted) of forecast revisions at different horizons since the October 2021 *World Economic Outlook* on the set of explanatory variables (fiscal support, vaccinations, and cases) and region fixed effects. Fiscal support refers to additional above-the-line spending and forgone revenues and liquidity support in response to COVID-19 between June 5, 2021, and September 27, 2021, as a share of GDP. Vaccinations and cases are the difference in the cumulative share of population either fully vaccinated or diagnosed with COVID-19 between September 30, 2021, and March 31, 2022. Explanatory variables are standardized to have zero mean and unit standard deviation.

risks are elevated and broadly comparable to the situation at the start of the pandemic—an unprecedented combination of factors shapes the outlook, with individual elements interacting in ways that are inherently difficult to predict. Many of the risks described below are essentially an intensification of forces already present in the baseline. Moreover, the realization of near-term risks can precipitate medium-term risks and make it harder to address longer-term challenges. The most prominent negative risks include the following.

- A worsening of the war* would exacerbate the direct and indirect effects factored in the baseline forecast. Principally, these include further amplifications of the humanitarian crisis in Ukraine and the influx of refugees into neighboring countries. In addition, tighter sanctions could lead to additional ruptures of trade connections—including crucial energy links between Russia and Europe—with detrimental effects on cross-border investment. This would lead to more supply disruptions, global price rises, and volatility in commodity markets, with further declines in regional and global output (see Scenario Box). Although direct foreign claims on Russian institutions appear limited, a default on obligations would impact balance sheets abroad and possibly reveal indirect exposures elsewhere in the financial system, with adverse effects beyond immediate partners. This includes a potential further sharp repricing of emerging market risk (see discussion in the next section). The risk of cybersecurity breaches has also increased, with the potential to cripple critical infrastructure and financial intermediation.

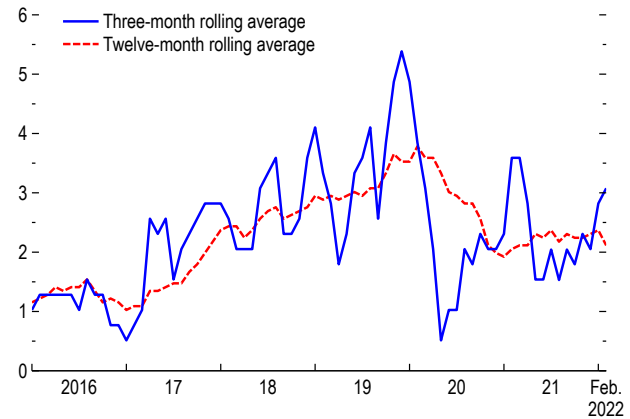
Figure 1.20. Current Account and International Investment Positions
(Percent of global GDP)



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

- Increased social tensions:* Following a dramatic decline during the pandemic, unrest has reemerged in recent years, although it has not yet reached its pre-pandemic peak (Figure 1.21). The war in Ukraine has increased the probability of wider social tensions in the near term through two main channels. The first is a further sharp rise in global fuel and food prices—a particular concern in emerging market and developing economies with limited fiscal space that are highly dependent on energy and food imports for basic consumption. This could intensify commodity hoarding, export controls, and domestic restrictions—with further knock-on effects on supply disruptions, prices, and social unrest. The second is the longer-term impact of the humanitarian crisis. Although host nations have responded with immense generosity, the sheer volume of refugees could overwhelm local support. And such pressures will be amplified should the conflict spread or persist. In the longer term, large refugee inflows may exacerbate preexisting social tensions and fuel unrest.

Figure 1.21. Fraction of Countries with a Major Unrest Event (Percent)



Source: Barrett and others (2020).
 Note: Social unrest events are inferred from exceptionally large increases in country media coverage of key terms related to protests, riots, and other forms of civil disorder. The figure shows the one-sided 3- and 12-month rolling averages of the fraction of countries with unrest events.

- A resurgence of the pandemic:* Although conditions are improving, the pandemic may yet take another turn for the worse—as seen, for example, with recent rising caseloads in China and elsewhere in the Asia-Pacific region. Although the original Omicron strain ended up being relatively mild in terms of severe illness for the vaccinated, it is too soon to assess the threat its subvariants pose. A more dangerous mutation, perhaps one that retains Omicron’s ability to dodge immunity but with enhanced lethality, would be a significant blow.
- A worsening slowdown in China:* A prolonged downturn in China is another immediate risk that could expose structural weaknesses such as high local government liabilities, property developer leverage, household debt, and a fragile banking system. Such a scenario would also result in reduced demand for exports from many middle- and low-income countries in the region and—in the case of more prolonged lockdowns—could disrupt goods supply for the rest of the world. In addition, the combination of more transmissible variants and the strict zero-COVID policy could continue to hamper economic activity and increase uncertainty. Larger disruptions could impact key commercial activities, including through port lockdowns.
- Rising medium-term inflation expectations:* Inflation expectations remained reasonably well anchored in most economies during the pandemic. Despite recent rises, markets expect inflation to moderate over the medium term as central banks around the world respond. Inflation expectations have so far risen substantially in only a few emerging market and developing economies. Yet with already high inflation and rising energy and food prices, higher inflation expectations could become more widespread and, in turn, lead to further

increases in prices. Moreover, with nominal wage growth still running behind price inflation in most countries, there is a risk that pent-up wage increases will materialize and add to overall price pressures. In such a scenario, monetary policy would need to respond more aggressively than currently expected, further weighing on the outlook.

- *Higher interest rates leading to widespread debt distress:* The pandemic led to record levels of public debt around the world. As interest rates rise, this will strain public budgets with tough choices around fiscal consolidation over the medium term, as pressures for social and, in some cases, defense spending may remain high. A successful transition will require credible fiscal frameworks. Should adjustment fail and the credibility of these frameworks be undermined, a confidence crisis might emerge leading to correlated capital outflows—particularly from emerging markets—and could create simultaneous debt crises. The probability of this outcome would increase significantly if monetary policy in advanced economies has to react even more strongly to inflation pressures than anticipated. More generally, higher interest rates could lead to a disorderly correction of currently stretched asset prices, including housing.
- *A wider deterioration of the geopolitical environment:* In the longer term, the war in Ukraine risks destabilizing the rules-based frameworks that have governed international relations in the post–World War II period. Increased international polarization, or a more widespread conflict, would worsen the humanitarian crisis and impede the global economic integration essential for long-term prosperity. Technological exchange may be limited, production networks and technology standards could coalesce into distinct blocks, and welfare gains from globalization could be reversed if countries adopt more protectionist policies. Reorganization is also possible in the international monetary system: a segmentation of global reserve assets and emergence of alternative cross-border payment systems could arise as a result of fragmented production blocks. Moreover, fracturing international relationships could also undermine the trust and cooperation vital to addressing long-term structural challenges, including climate change, debt resolution, and trade barriers. If this risk materializes, the global economy will likely suffer through an unpredictable transition to a new political reality, with financial volatility, commodity price fluctuations, and dislocation of production and trade along the way.
- *The ongoing climate emergency:* Despite some steps on the path toward a green transition, global emissions are—on current trends—very likely to overshoot the Paris Agreement temperature goals by the end of the century and lead to catastrophic climate change (with low-likelihood outcomes such as the ice sheet collapse, abrupt ocean circulation changes, and some compound extreme events and warming that cannot be ruled out). Indeed, the effects of warming are already starting to show: droughts, forest fires, floods, and major hurricanes have become more frequent and more severe. And it is often those least able to cushion the blows of such events who are also most exposed to them. Depending on their implementation, policies to speed the green transition could have near-term inflationary effects (see the Commodities Special Feature)—which could weaken support for the vital climate policy agenda. The overall effect on inflation will also depend on whether carbon pricing is accompanied by lower labor taxation (for example, as part of a budget-neutral shift

to fossil fuel taxation). Meanwhile, the war in Ukraine will likely have an important bearing on the energy transition. In the short term, war-induced energy supply shortfalls and higher prices could mean an increased reliance on dirtier fossil fuels, such as coal, as a stopgap. But in the longer term, the fallout from the conflict and strategic motives for energy independence could also speed investment in renewables. Current geopolitical tensions, however, risk derailing the global cooperation necessary for an orderly energy transition.

Interconnectedness of the risks to the outlook: Risks that most directly affect the short-term outlook (for example, inflation and interest rates) can still have cascading effects in the longer term (for example, undermining the climate agenda and harming fiscal solvency, respectively). Moreover, efforts to support vulnerable groups and mitigate the fallout from the war can limit the space available to insure against more medium-term risks, such as catastrophic climate change.

Policies to Sustain the Recovery and Improve Medium-Term Prospects

The Ukraine war has exacerbated difficult policy trade-offs: between fighting inflation and safeguarding the pandemic recovery; and between supporting those impacted by rising living costs and rebuilding fiscal buffers. Meanwhile, the pandemic remains stubbornly persistent, and structural issues, such as inequality and climate change, remain unresolved. And with high public debt, space to respond is severely constrained. The war in Ukraine also poses new multilateral policy challenges—most pressing, is the growing humanitarian crisis in the region. How should policymakers respond?

Fighting inflation: As noted, global inflation to an extent reflects supply-demand imbalances, which intensified during the recovery last year, partly as a result of policy support. However, some of the factors contributing to high inflation have been largely beyond the control of central banks, with prices of energy and food driven by global supply shocks—including the war in Ukraine. Monetary authorities should carefully monitor the pass-through of rising international prices to domestic inflation expectations in order to calibrate their responses. In some places, including the United States, inflationary pressure had strengthened considerably and become more broad-based even before the Russian invasion of Ukraine—buoyed by strong policy support. And in others, the prominence of fuel- and war-affected commodities in local consumption baskets will likely lead to wider price pressures in the following months. In such cases, tighter monetary policy is appropriate to check the cycle of higher prices driving up wages and inflation expectations, and wages and inflation expectations driving up prices.

Central banks should continue to clearly articulate the policy outlook and adjust the monetary stance in a data-dependent manner. The transmission of the shock of the Ukraine war will vary across countries, depending on trade and financial linkages, exposure to commodity price increases, and the strength of the preexisting inflation surge. The appropriate monetary policy response will therefore differ across economies. In the United States—where moderate direct war effects are expected, inflationary pressure has been broadening, labor markets continue to tighten, and nominal wage growth has been robust—the rate-hiking cycle should continue. The decision to tighten will be tougher in countries where adverse growth effects from the war are more prominent and yet inflation is rising—particularly in Europe. In those cases, the pace of policy tightening should be calibrated to the severity of the war's adverse impact on activity, and forward guidance should signal readiness to shift the monetary stance in a data-dependent way to maintain the credibility of inflation-targeting frameworks.

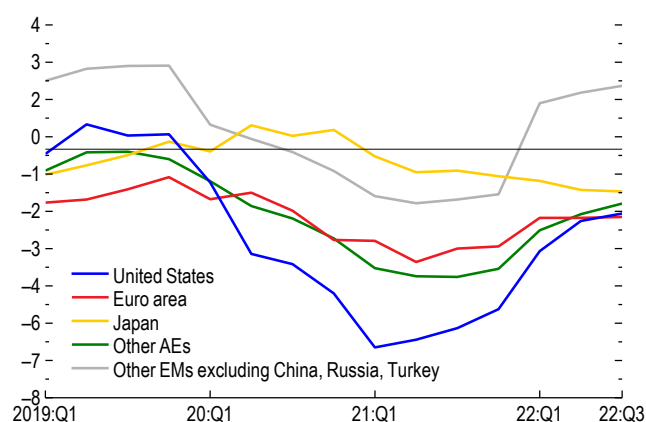
Inflation expectations will be an important signal of this credibility. As such, the recent upward drift in inflation expectations is of concern, even though they have generally been concentrated at relatively short horizons (Figure 1.14). Expectations must remain well anchored over longer horizons to ensure the credibility of policy frameworks. In countries where expectations have risen more sharply, central banks should clearly communicate the importance of inflation stabilization in their objectives, backing this with policy action where necessary. Some emerging market central banks have already taken aggressive action to get ahead of price pressures, while others are only just getting started. Nonetheless, as advanced economy central banks tighten policy, any resulting currency depreciations in emerging markets could cause higher inflation expectations and necessitate further increases in policy rates.

A key issue for the medium term is where interest rates will settle after the pandemic.

Even with the anticipated increases in policy rates, given the outlook for inflation, short-term real interest rates at the end of 2022 are likely to be negative (Figure 1.22). With inflation at multidecade highs in the United States, the United Kingdom, and the euro area, a crucial question is how high policy rates will have to rise in order to stabilize inflation. In past episodes, lengthy periods of tighter policy were needed to bring inflation under control. For example, during the 1980–82 disinflation in the United States, the federal funds rate exceeded headline consumer price inflation long after price pressures started to ease.² Currently it is not yet clear whether and for how long the real rate will need to be positive (that is, when the policy rate exceeds the rate of expected inflation). How far interest rates will ultimately rise depends to an important extent on the post-pandemic neutral rate. Since the global financial crisis of 2008, neutral interest rates have been thought to be very near zero, cramping (conventional) monetary policy space. Their future level depends on structural developments that influence saving and investment, which are currently in flux (Box 1.2). Given high uncertainty around the policy path beyond 2022–23, central banks should communicate clearly their perspective on the post-pandemic neutral rate and, if needed, their readiness to maintain policy rates above that benchmark for as long as needed to bring inflation down to target—giving markets some clarity on the likely endpoint for rate hikes.

Preparing for tighter financial conditions and spillovers from geopolitical volatility: Regulators should take early action and tighten selected macroprudential tools to target pockets of elevated vulnerabilities (see the April 2022 *Global Financial Stability Report*). This is particularly important with monetary policy on a tightening path and elevated geopolitical uncertainty, which raise the

Figure 1.22. Real Policy Rates (Percent)



Source: IMF staff calculations.

Note: Other AEs and other EMs comprise 12 and 13 economies, respectively. AEs = advanced economies; EMs = emerging markets.

² Annual US headline consumer price inflation peaked at 14 percent in the first half of 1980, but the federal funds rate reached its peak of 19 percent only in the first half of 1981. US inflation had declined to 3 percent by 1983, but the effective real federal funds rate remained positive long into the second half of the 1980s.

potential for sudden risk repricing that would bring those vulnerabilities to the fore. Insolvency frameworks may also need to be strengthened in some cases, including with more reliance on out-of-court mechanisms to expedite processes. Emerging market borrowers should reduce near-term rollover risks by extending debt maturities where possible and contain the buildup of currency mismatches. Exchange rate flexibility can in general help absorb shocks. But in economies with shallow foreign exchange markets, sudden capital flow reversals can jeopardize financial stability. In those economies, foreign exchange intervention may be needed to address disorderly conditions; in imminent crisis circumstances, temporary capital flow management measures may be warranted—but should not substitute for needed macroeconomic policy adjustment.

Supporting the vulnerable while maintaining fiscal soundness: Fiscal policies should depend on exposure to the war, the state of the pandemic, and the strength of the recovery. Following a huge and necessary fiscal expansion in many countries during the pandemic, debt levels are at all-time highs. The need for consolidation should not prevent governments from prioritizing spending to protect and help vulnerable populations affected by the Ukraine war and the pandemic.

In countries facing large price increases, targeted income support can be used to alleviate stress on household budgets. But as with pandemic-induced transfers, this support should be designed to deliver maximum relief to the most vulnerable at lower cost (for example, through means testing and gradual phaseout above certain income thresholds). In countries facing refugee inflows, integration support should be adequately funded with strong multilateral support (see paragraph on providing a coordinated response to the humanitarian crisis, below). On the health side, funding for vaccine production and distribution, campaigns to encourage take-up, testing, and therapies should all remain protected. Pandemic-era transfers will need to be better targeted.

Where the pandemic is subsiding, previous support measures can be phased out to recover fiscal space. Firms affected by war-related disruptions (including shortages of inputs or diminished access to trade finance) may however require temporary, targeted support through credit guarantees or transfers. But it is essential that these measures be directed to affected firms with operations that are viable over the medium term; otherwise, such initiatives would hinder the reallocation of resources needed for the recovery. Indeed, the post-pandemic future will likely require cross-sectoral labor reallocation (see Chapter 3 for one aspect, the energy transition). Labor market and income support policies should be designed to provide a safety net for workers in transition without hindering future employment growth. Training programs, hiring subsidies, and programs that match workers and firms should remain a priority, along with limited and temporary public support for displaced workers.

The ability to fund these initiatives will be limited by available fiscal space. Revenue mobilization and expenditure measures can help alleviate these constraints—broadening the tax base and enhancing compliance, scaling back broad subsidies and recurrent expenditures, and strengthening public financial management. Many countries will thus need to develop credible plans to stabilize their finances over the medium term (see Chapter 2 of the October 2021 *Fiscal Monitor*). This would also create space for near-term priority spending—particularly in the case of emerging market and developing economies facing the prospect of higher borrowing costs as monetary policy tightens in advanced economies. Fiscal frameworks with simple rules that promote debt sustainability but are still flexible enough to manage shocks (including well-designed escape clauses) can help achieve such consolidations.

Where fiscal space permits, broader support may be warranted, depending on the severity of the decline in aggregate demand. But this support should be deployed in ways that avoid exacerbating ongoing demand-supply imbalances and price pressures.

Health policies and preparedness: The virus continues to evolve, and COVID-19 could be around for the long term. The best defense is to ensure that each country has equitable access to a comprehensive COVID-19 toolkit with vaccines, tests, and treatment. Yet the rollout of many COVID-19 tools continues to proceed at unequal speeds. Over 100 countries are not on track to reach the IMF pandemic proposal's mid-2022 vaccination target of 70 percent, and similar inequality persists in access to tests and treatments. Regarding vaccines, substantial supply increases in recent months mean that in-country absorptive capacity is emerging as the key barrier. Keeping a broad set of tools updated as the virus evolves will require ongoing investments in medical research, disease surveillance, and health systems that reach the last mile in every community.

Embracing positive structural changes: Structural change is essential for countries looking to grow after the pandemic. Improvements in digital communications will allow businesses to reap the benefits of new technologies, particularly in emerging market and developing economies. Likewise, retooling and reskilling workers are crucial to allow them to participate in the digital economy. The pandemic has interrupted schooling for many children across the world, but most critically in low-income countries, where online alternatives are less readily available. Without action to offset these learning losses, this setback to global education will affect productivity, earnings, and growth for many years. In the short term, lower tariffs and fewer barriers to trade would not only allow for more efficient allocation of productive resources but may also help ease supply bottlenecks and inflation pressure. With possible long-lasting disruptions to trade and reconfigurations of supply chains in the aftermath of the war in Ukraine, such measures are even more essential.

Tackling the climate emergency: Recent geopolitical events have brought into sharp relief the need for a coordinated approach to bring about the steady replacement of fossil fuels with renewables and other low-carbon energy sources. According to the International Energy Agency a threefold increase in clean energy investment is needed by 2030 to accelerate decarbonization of the power sector and electrify end uses of energy. In the medium term a step change is needed in fiscal policy—notably involving carbon pricing and fossil fuel subsidy reform to shift private investment. Pricing should be supplemented with supportive policies; for example, subsidies for renewables, public investment in enabling infrastructure such as smart grids, and feebates to reinforce incentives without further raising energy costs and boosting inflation. Some revenue could fund transition measures (for example, targeted compensation to those who are harmed) and to ensure buy-in. Reforms when energy prices are high may be less popular, but the surge in global fossil fuel prices underscores the need to shift economies toward cleaner energy that depends less on fluctuations in international prices. Permanent carbon and fuel subsidies (or tax relief) motivated by short-term price spikes must be avoided.

Multilateral cooperation: Given the international and mutual nature of many of the policy challenges, international cooperation and multilateral agencies will be essential. Main tasks include:

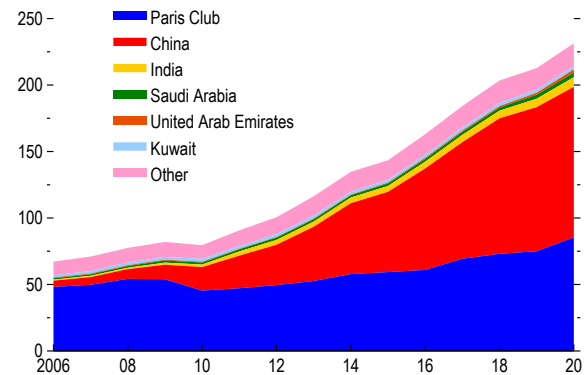
- *Providing a coordinated response to the humanitarian crisis:* The magnitude of refugee flows from Ukraine calls for a coordinated response. Given the greater burden on neighboring countries—particularly in the short-term—assistance must come from both European and

multilateral institutions. This includes emergency assistance as well as access to budget support financing to facilitate the integration of migrants if they are not able to return home. Once the war ends, concerted international efforts will be needed to support reconstruction in Ukraine.

- Maintaining liquidity in the global financial system:* International cooperation will be essential to manage the coming monetary tightening cycle. Access to emergency liquidity is a crucial backstop against international financial spillovers. During the pandemic, rapid financing instruments and credit facilities extended a lifeline to many economies, and a new Special Drawing Rights allocation boosted reserves. As the pandemic subsides, IMF facilities will continue to address imbalances, help devise credible adjustment paths to macroeconomic stability, and create conditions for sustained, inclusive medium-term growth. Central banks should be prepared to activate emergency swap lines as needed to reduce the risk of foreign currency liquidity hoarding and deposit withdrawals in overseas jurisdictions.

- Guaranteeing an orderly system for resolving debt:* Some cases call for more than liquidity support alone to avoid debt distress. For these, a timely and orderly resolution of debt is the best way to mitigate the economic consequences. Yet complicated claims with many lenders can hinder this process (Figure 1.23). To address this problem, the Group of Twenty (G20) has endorsed the Common Framework for Debt Treatments, setting out a consistent approach to international debt resolution. Its application must be stepped up; the three countries that have requested relief under the terms of this agreement have experienced significant delays. And the expiration in 2021 of the G20’s Debt Service Suspension Initiative program—which allowed low-income countries to suspend debt service payments temporarily without penalty—makes orderly debt resolution even more pressing.

Figure 1.23. Public External Debt
(Billions US dollars)

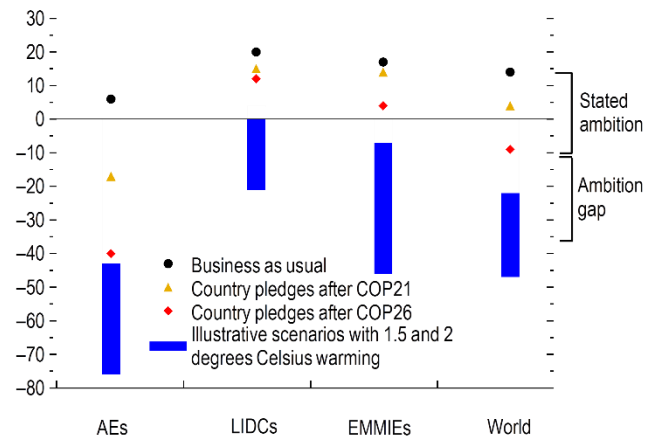


Source: World Bank, International Debt Statistics.
 Note: The figure shows public and privately guaranteed debt of countries eligible for the Debt Service Suspension Initiative. In terms of International Organization for Standardization (ISO) country codes, the Paris Club is composed of AUS, AUT, BEL, BRA, CAN, CHE, DEU, DNK, ESP, FIN, FRA, GBR, IRL, ISR, ITA, JPN, KOR, NLD, NOR, RUS, SWE, USA.

- Climate policies:* Despite almost 140 countries setting long-term net zero emissions targets, there is still a large gap between global mitigation ambition and policy action on climate change. Greenhouse gas emissions need to be cut by one-quarter to one-half by 2030 to be consistent with limiting warming to 1.5 to 2 degrees Celsius. At COP26, almost 140 countries

committed to net zero emissions sometime around midcentury. However, only a third of countries increased their near-term targets substantively, mostly advanced economies (Figure 1.24). And there is an even larger gap in policy action. Policies equivalent to a global carbon price of at least \$75 are required by 2030 to limit warming to 2C—and even more for 1.5C. Scaling up ambition and action to narrow these gaps could be done in an equitable way, with advanced economies delivering the deepest cuts and emerging market and developing economies increasing their commitments. International coordination regimes, such as price floors among large emitters, and multilateral climate finance initiatives will likely be needed to address competitiveness and policy uncertainties that hinder unilateral action.³

Figure 1.24. Changes in Emissions in 2030 versus 2021 under NDCs and Warming Scenarios
(Percent change a year)



Source: Black and others (2021).

Note: AEs = advanced economies; COP26 = United Nations Climate Change Conference 2021; COP21 = United Nations Climate Change Conference 2015; EMMIEs = emerging market and middle-income economies; LIDCs = low-income developing countries; NDCs = nationally determined contributions.

- Providing global public health goods:* As the world winds down from an emergency response to the pandemic, the focus should return to other global health priorities that have received less attention over the past two years. The world should not face a painful trade-off between saving lives from COVID-19 and from other diseases, such as malaria and tuberculosis. In this context, up-front financing from international donors is still an urgent priority. And closing the \$23.4 billion funding gap for the Access to COVID-19 Tools (ACT) Accelerator is an important first step. In addition, enhanced coordination between finance and health ministries is essential to increasing resilience—in the face both of potential new SARS-CoV-2 variants and of future pandemics that could pose systemic risk.

Cooperation on taxation and cross-border trade: Policymakers should continue to cooperate on cross-border tax matters to support revenue and equity (Chapter 2 of the April 2022 *Fiscal Monitor*) and avoid export controls and barriers to cross-border trade that will exacerbate supply disruptions. In a more difficult multilateral environment, countries should also avoid adding to the long list of existing trade disputes that further imperil global economic prospects.

³ On the proposal for an international carbon price floor, see Parry, Black, and Roaf (2021). Also see Chateau, Jaumotte, and Schwerhoff (forthcoming), who show that the proposal helps scale up reductions in global emissions and improves international burden sharing (relative to a uniform carbon price) while addressing competitiveness effects.

Scenario Box

The IMF's G20 model is used to explore the global macroeconomic implications of a scenario in which the sanctions on Russia arising from the war in Ukraine escalate further. In the scenario sanctions are broadened mid-2022 to include additional embargoes on oil and gas and the disconnection of Russia from much of the global financial and trade system.

In such a scenario the impact would propagate to the rest of the world through higher commodity prices, disruptions to supply chains, and tighter financial conditions. The resulting supply shock, at a time when commodity prices and inflationary pressures are already high, would lead to an upward shift in inflation expectations and require a greater tightening in monetary policy, further amplifying the negative impact on global activity. Except for oil and some commodity exporters, most countries would be negatively impacted by the economic fallout, with countries in the European Union more affected than other advanced and emerging market economies given their larger exposure.

The scenario assumptions are presented in three separate layers for ease of exposition.

Commodities, Supply Chain, and Inflation

Russian trade and productivity. Russia's current baseline forecast is for existing sanctions to produce a large contraction in non-energy exports, while energy exports decrease gradually but sizably as demand for Russian energy is reduced. Under the adverse scenario the decline in energy exports is instead larger and more abrupt, with oil and gas export volumes decreasing by 10 percent in 2022 and 20 percent in 2023 relative to the current baseline, and with volumes remaining at their lower 2023 levels through the rest of the forecast horizon. The additional sanctions also affect Russia's non-oil exports, which decline by 7 percent in 2022 and 15 percent in 2023, again relative to the current baseline, and remaining at their 2023 level through 2027. Russia's loss of access to foreign technology and investment is amplified, triggering a persistent decline in total factor productivity growth.

Commodity prices. The global supply of several commodities decreases in this scenario. As a result, oil prices increase by 10 percent in 2022 and 15 percent in 2023, while metal prices increase by 5 percent in 2022 and 7.5 percent in 2023 (all relative to baseline). Food commodity prices also increase, including because of the impact of higher energy prices on fertilizer costs, with a broad food index increasing by 4 percent in 2022 and 6 percent in 2023. Natural gas prices in Europe are assumed to rise by roughly 20 percent above baseline in 2022; Asian countries experience a similar increase due to the integration between the two markets. The increase in commodity prices is assumed to fade gradually beyond 2023 as supply responds and demand decreases.

Supply disruptions and confidence. Shortages of several commodities lead to additional disruption of supply chains, most notably in Europe, and add to the impact on inflation and activity. The combination of supply disruptions and higher energy prices in Europe, and Asia to a lesser extent, leads to weakened confidence, further dampening activity in those regions.

Inflation Expectations

The supply shock in the scenario triggers an increase in short-run inflation expectations over 2022-2023. The increase is more pronounced in countries where inflation is initially higher, such as the US and some EMs, or where the supply shock is expected to be larger, such as in Europe and developing countries. For reference, the increase in one-year ahead inflation expectations in the US is around 70 bp in 2023. The fading of the commodity shock, the endogenous monetary policy response, and the impact from lower demand bring short-term expectations back to target after 2023. An increase in longer-term inflation expectations would amplify the negative macro impact but is not considered here.

Financial Conditions

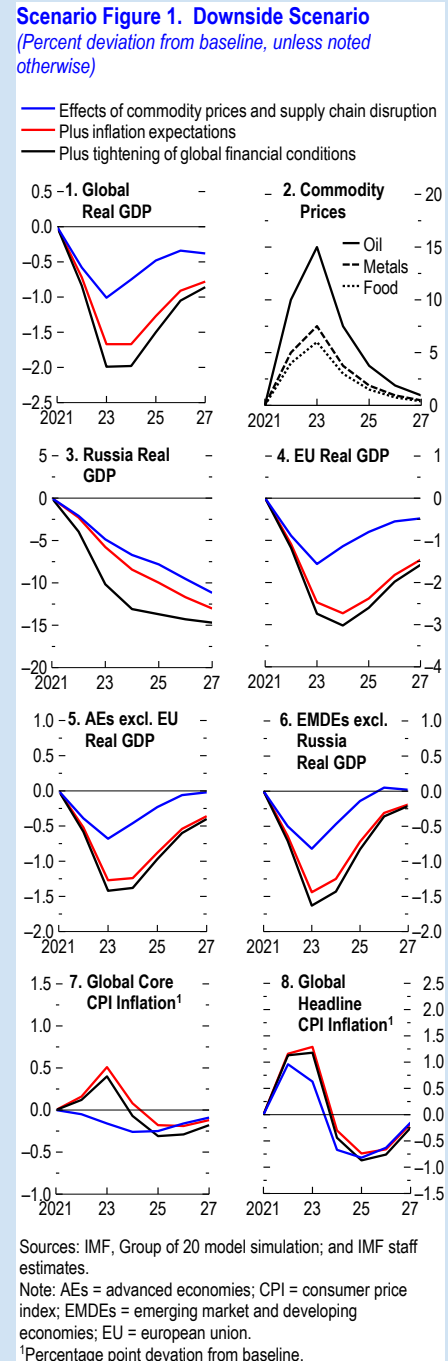
A broadening of sanctions will tighten domestic financial conditions in Russia further than has been the case so far. It is also assumed that sanctions halve the value of Russia's positive net foreign asset position, further dampening domestic demand. In the rest of the world, a risk-off episode also generates further tightening in financial conditions. Emerging markets experience an increase in both corporate and sovereign spreads; advanced economies face higher corporate spreads. The magnitude of the tightening is assumed larger in European countries.

Finally, regarding the fiscal policy response, automatic stabilizers are assumed to operate in the scenario but no additional discretionary response is included. The economic impact from the adverse scenario would be lower should such a response take place.

Global Macro Impact

Scenario Figure 1. presents the effect from each layer cumulatively and as deviation from baseline. For Russia, broader sanctions lead to a large, continued contraction in activity, reflecting the hit to exports, lower productivity, and tighter financial conditions. The cumulative impact implies that GDP is about 15 percent lower than baseline by 2027, coming on top of the large decrease in GDP already in the baseline relative to pre-conflict projections.

The impact on the European Union is sizable, with the level of GDP close to 3 percent below baseline by 2023, reflecting the impact from higher commodity prices but also from higher inflation expectations. Advanced economies excluding the EU and emerging economies excluding Russia see an impact on the level of activity of around -1.5 percent, by 2023, with greater variation among emerging market economies as those that are net oil exporters (not shown separately) benefit. Global GDP decreases by about 2 percent by 2023; the decrease is somewhat persistent, and



global activity remains about 1 percent lower than in the baseline by 2027, with more than half of that decline coming from the hit to activity in Russia.

The scenario also results in higher inflation in both 2022 and 2023. Global headline inflation increases by more than 1 percentage point in both 2022 and 2023. Core inflation increases by half a percentage point in 2023, again on top on high inflation in the baseline. The disinflationary effect of the underlying decrease in global activity starts to dominate after that, and inflation eventually falls below baseline by 2024.

Box 1.1. The Puzzle of Tight Labor Markets: US and UK Examples

Two years into the COVID-19 pandemic, a puzzle has emerged in several advanced economies: unfilled job vacancies have increased sharply even though employment has yet to fully recover.¹ The United States and the United Kingdom are two cases in point: most recent vacancies-to-unemployment ratios are significantly above pre-COVID-19 levels, but employment rates are not (Figure 1.1.1). This box sheds light on several factors that have contributed to this puzzling labor market phenomenon, including (1) labor market mismatch—discrepancies between the types of vacant positions and the skills of job seekers; (2) health-related concerns, which may be a strong driver of the withdrawal of older workers from the workforce; (3) changing job preferences among workers, which may account in part for historically high quit rates—a phenomenon sometimes called the “Great Resignation”; and (4) school and childcare center disruptions leading mothers of young children to exit the labor force—the “She-cession.”

Mismatch: The impact of the pandemic and lockdown measures differed markedly among industries and occupations. They hit particularly hard in sectors that require in-person interaction, such as accommodation and food services and arts and entertainment; “teleworkable” jobs fared substantially better. This resulted in mismatch that, however, receded gradually as hard-hit industries recovered from the COVID-19 shock and hired again throughout 2020 and 2021 (see also Pizzinelli and Shibata 2022). As of the third quarter of 2021, labor market mismatch accounted for at most one-fifth of the shortfall in the employment rate vis-à-vis the pre-COVID level in both the United Kingdom and the United States.

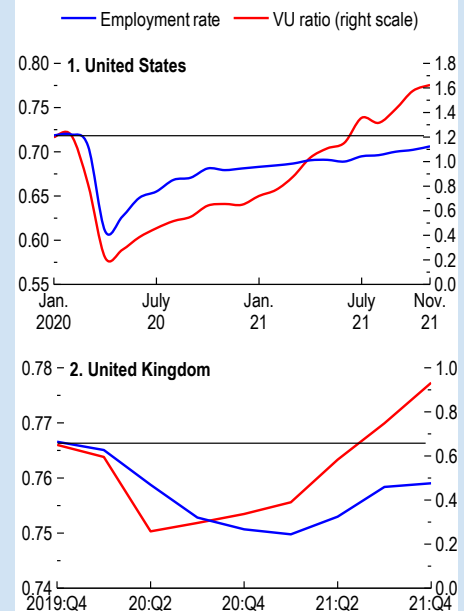
COVID-driven fall in labor force participation among specific demographic groups: The inactivity rate of older workers rose markedly above its pre-COVID-19 trend after 2020, with no subsequent reversion (Figure 1.1.2). Health concerns and, to a lesser extent in 2020–21, pension plan valuation gains have contributed to this labor force withdrawal, which by the fourth quarter of 2021 accounted for a third of the employment gap in the United Kingdom and the United States relative to pre-pandemic levels. Likewise, prolonged school closures and scarce childcare opportunities kept some women with young children home in the United States. This was not the case in the United Kingdom, possibly because nurseries largely remained open throughout the pandemic.²

The authors of this box are Myrto Oikonomou, Carlo Pizzinelli, and Ippei Shibata.

¹ For a broader analysis of labor market tightness in advanced economies, see Duval and others (2022).

² Besides older workers and women with young children, Duval and others (2022) document that the employment recovery is particularly lagging for low-skilled workers and that the decline in immigration has also contributed to labor shortages in low-skill occupations.

Figure 1.1.1. Employment Rate and Labor Market Tightness (Percent)



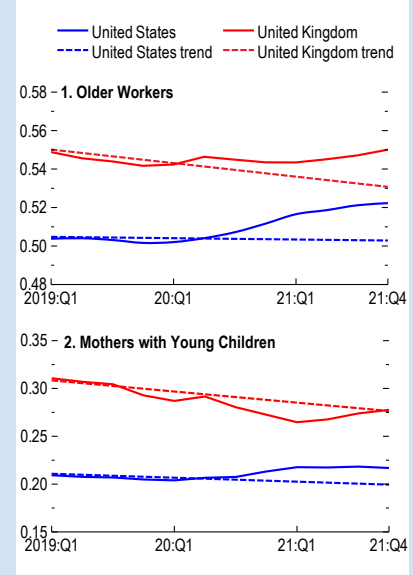
Sources: Current Population Survey and Job Opening and Labor Turnover Survey for United States; Labour Force Survey and Office of National Statistics for United Kingdom; and IMF staff calculations.

Note: VU ratio = vacancies-to-unemployment ratio.

Changing worker preferences: Rates of voluntary job quits have reached historic highs in both countries. There is tentative evidence that, beyond seizing new opportunities to move up the job ladder in tight labor markets, workers’ preferences may have partly shifted toward jobs that bring not only higher pay but also greater safety and flexibility. In particular, several industries in which job quit rates have risen the most involve a disproportionate share of contact-intensive, physically strenuous, less flexible, and low-paying jobs, such as in accommodation and food services and retail trade.

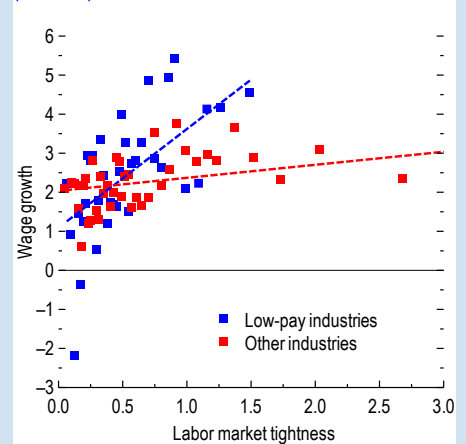
Rising labor market tightness has spurred faster nominal wage growth, particularly for low-paying jobs.³ Since the start of the pandemic, the increase in tightness alone is estimated to have directly increased overall nominal UK and US wage inflation by approximately 1.5 percentage points. In low-pay industries, this impact has been much greater, reflecting both above-average increases in labor market tightness and a stronger historical link between tightness and wage growth in these industries (Figure 1.1.3). So far, overall implications of increased tightness for wage inflation have been muted, partly because low-wage workers account for a relatively small share of firms’ total labor costs. To the extent that tightness remains concentrated primarily in these jobs, the pass-through from wage growth in low-pay occupations to economy-wide price inflation is likely to remain limited. However, with price inflation largely or (more than) fully outpacing wage increases so far, and given persistent labor markets, overall nominal wage growth is likely to remain solid. Workers’ demands for a pay raise to compensate for fast-rising prices, along with an increase in their inflation expectations, could intensify inflation pressure, more so than tight labor markets.

Figure 1.1.2. Inactivity Rates (Percent)



Sources: Current Population Survey and Job Opening and Labor Turnover Survey for United States; Labour Force Survey and Office of National Statistics for United Kingdom; and IMF staff calculations.
 Note: Older workers are aged 55–74; young children are aged 5 or younger. Linear trends are estimated over 2015–19.

Figure 1.1.3. United States Wage Growth and Tightness across Sectors (Percent)



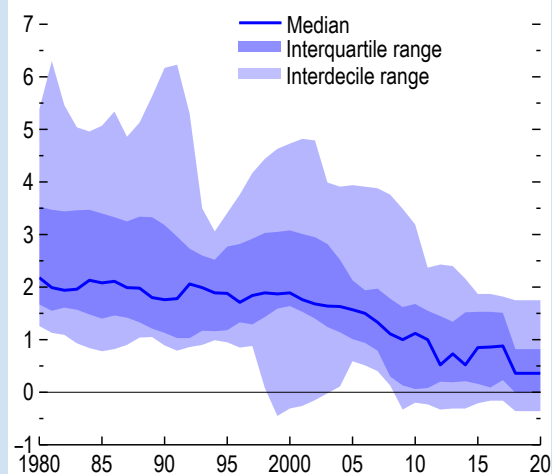
Sources: Current Population Survey; Job Opening and Labor Turnover Survey; and IMF staff calculations.
 Note: Wage growth is year-over-year quarterly nominal hourly wage inflation. Tightness is lagged one quarter between 2003:Q1 and 2020:Q1. Each dot represents the mean of the x-axis and y-axis variables for each of the 40 equal-sized bins of the x-axis variable. Low-pay industries are accommodation and food services, retail trade, and arts and entertainment.

³ In the United Kingdom and the United States, nominal wages are already growing faster than before the pandemic, although these gains have been largely or more than fully eroded by price inflation. (See Duval and others (2022) for more discussion.).

Box 1.2. Determinants of Neutral Interest Rates and Uncertain Prospects

The endpoint of the monetary tightening cycle that started in many economies over the first months of 2022 is heavily contingent on the evolution of the neutral rate of interest—the real interest rate consistent with a closed output gap and stable inflation. If neutral rates continue to decline as they have over the past four decades, inflation stabilization can be achieved with relatively less tightening. Given such policy relevance, it is crucial to revisit the long-term dynamics and determinants of neutral rates to project their future path. The fall in neutral interest rates has been a common phenomenon in many advanced economies since the 1980s. Despite some cross-country differences, the decline became more homogenous over the years, converging to very low values (Figure 1.2.1). The literature identifies some factors that can explain such decline. Lower fertility rates and longer life expectancy led to an increase in the share of older people in the population, boosting the supply of savings and depressing interest rates (Platzer and Peruffo 2022). At the same time, slower productivity growth (Eggertsson, Mehrotra, and Robbins 2019) and the decline in the price of capital goods (Sajedi and Thwaites 2016; Chapter 3 of the April 2019 *World Economic Outlook*) slowed investment spending and, consequently, led to a reduction in savings demand. High income inequality in many advanced economies has also contributed to lower interest rates, due to higher saving rates at the top of the income distribution (Straub 2019; Mian, Straub, and Sufi 2021a). Last, capital flows have upset the savings-investment balance in individual countries. Increased demand for safe assets, notably in emerging market economies (Bernanke 2005; Caballero and Farhi 2014), and higher risk premiums (Kopecky and Taylor 2020) are argued to put downward pressure on interest rates. Descriptive evidence generally supports these explanations (Figure 1.2.2).

Figure 1.2.1. Estimated Neutral Rates Since 1980
(Percent)



Source: IMF staff estimates.

Note: In terms of International Organization for Standardization (ISO) country codes, the sample comprises: AUS, BEL, CAN, CHE, DNK, ESP, FIN, FRA, GBR, ITA, JPN, NLD, NOR, SWE, USA.

Predicting neutral rates is a challenging task, in part because neutral rates are unobservable, and there is estimation uncertainty even about the past. In addition, the role of each determinant is hard to disentangle, and their future development is under debate.⁴ Some argue that continued improvements in life expectancy (Blanchard 2022) and the ongoing global demographic transition (Auclert and others 2021) will maintain downward pressure on interest rates. Goodhart and Pradhan (2020), however, argue for a demographic reversal, which will raise

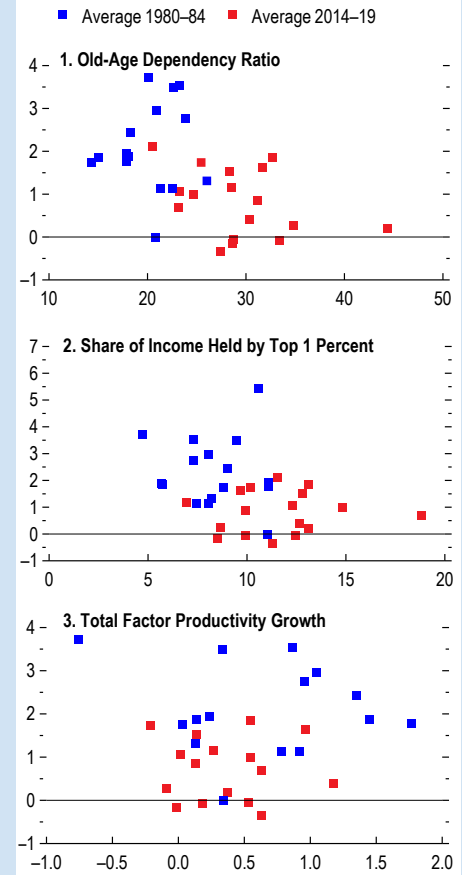
The authors of the box are Francesco Grigoli, Josef Platzer, and Robin Tietz.

⁴ The determinants of neutral rates often exhibit similar time trends, making it difficult to quantify the contribution of each one of them.

neutral rates. Unless inequality increases revert, downward pressure on neutral rates is bound to continue (Mian, Straub, and Sufi 2021b). China’s continued transition toward consumption-led growth may reduce the so-called savings glut and could have global effects. In addition, to the extent that pandemic-related uncertainty is resolved, liquidity preferences could shift and precautionary saving may decline as a result, leading to an increase in neutral rates. Rachel and Summers (2019) note that more generous social insurance and higher debt across Organisation for Economic Co-operation and Development countries were a major counteracting force in the past and prevented neutral rates from falling even further. In this regard, Blanchard (2022) points out that increases in demand that are only temporary—such as the stimulus package in the United States—are unlikely to lead to long-lasting increases in neutral rates.

Taking a more long-term view holds additional lessons. Borio and others (2017), using data ranging as far back as 1870, argue that changes in monetary regimes have an impact on neutral rates. Grigoli, Platzer, and Tietz (forthcoming) find evidence that structural shifts in policy frameworks, as well as financial intermediation, can be relevant for neutral rates of interest. Recent strategy reviews by the European Central Bank and the Federal Reserve highlight the relevance of these conclusions by showing how policy frameworks continue to evolve. Relatedly, the terminal size of central bank balance sheets could also affect prospects for the neutral interest rate. To conclude, forecasting neutral rates calls for extra caution given ongoing structural transformation involving the rise of shadow banking, fintech, and the climate transition.

Figure 1.2.2. Neutral Rate Factors (Percent)



Source: IMF staff calculations.
 Note: The title of each panel represents the units on the x-axis, in percent. For example, panel 1 shows the old-age dependency ratio on the x-axis in the range of 10–50 percent. The y-axis for each panel is the neutral interest rate. In terms of International Organization for Standardization (ISO) country codes, the sample comprises AUS, BEL, CAN, CHE, DEU, DNK, ESP, FIN, FRA, GBR, IRL, ITA, JPN, NLD, NOR, USA.

Commodities Special Feature: Market Developments and the Pace of Fossil Fuel Divestment

Primary commodity prices rose 24 percent between August 2021 and February 2022. Energy commodities, especially natural gas, drove the increase, due first to rising geopolitical tensions and later to Russia's invasion of Ukraine, while the Omicron COVID-19 variant created short-term volatility in late 2021. Base metal prices increased by 1.8 percent and precious metal prices rose by 2.9 percent, while agricultural commodities increased by 11 percent. This special feature also analyzes the pace of fossil fuel divestment. Anticipation of lower fossil fuel demand has likely reduced capital expenditures in oil and gas globally over the past three to four years—especially for publicly traded companies—reducing their investment by about 20 percent.

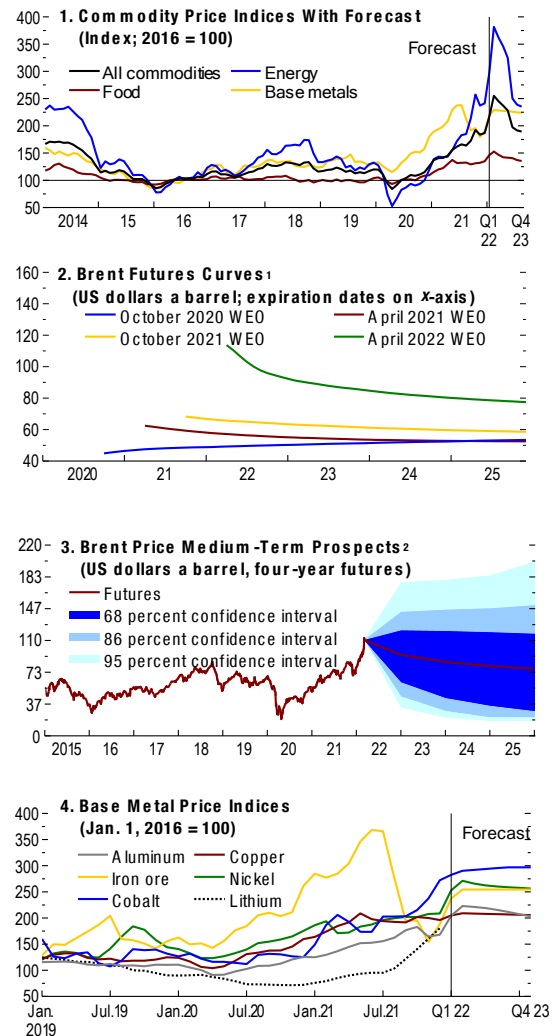
Oil and Gas Prices Up amid Ukraine War

Crude oil prices increased by 36 percent between August 2021 and February 2022, driven by a strong recovery in oil demand, with short-lived effects of the Omicron variant in late 2021 followed by geopolitical tensions and Russia's invasion of Ukraine in February 2022. Brent crude oil temporarily reached \$140 in early March as markets started to shun Russia's Urals oil and several countries banned imports of Russian oil.

Supply was already tight before the war, as OPEC+ (Organization of the Petroleum Exporting Countries, plus Russia and other non-OPEC oil exporters) members continued to ease supply curbs at a measured pace and production in major non-OPEC+ countries increased slowly. Non-OPEC+ producers had been focused on cash generation rather than investment, partly because of the energy transition. More countries are now seeking to reduce dependence on Russian energy, so supply disruptions have so far been buffered by globally coordinated releases of strategic petroleum reserves, while spare capacity has not been tapped.

Global demand for oil in 2022 is projected to increase to 99.7 million barrels a day (mb/d) in

Figure 1.SF.1. Commodity Market Developments



Sources: Bloomberg Finance L.P.; IMF, Primary Commodity Price System; Refinitiv Datastream; and IMF staff calculations.

Note: WEO = World Economic Outlook.

¹WEO futures prices are baseline assumptions for each WEO and are derived from futures prices. April 2022 WEO prices are based on March 3, 2022 closing.

²Derived from prices of futures options on March 3, 2022.

2022 (up 2.1 mb/d from 2021), according to the International Energy Agency—a downward revision of 1.1 mb/d compared with demand before the war in Ukraine. The risk of a major decline in Russian oil exports has caused a significant upward shift of the futures curve, with a spike in front-month futures prices (Figure 1.SF.1, panel 2). Futures markets suggest crude oil prices will increase 55 percent in 2022 and fall slightly thereafter, while short- and medium-term upside risks to oil prices remain elevated and include long-term downside risks from the energy transition (Figure 1.SF.1, panel 3).

Natural gas markets were driven by energy security concerns in Europe and low average storage levels going into last winter (Figure 1.SF.2). This led to greater competition with northeast Asia for spot cargoes of liquid natural gas, resulting in a global increase in natural gas prices, except in North America. Natural gas prices are expected to remain high until mid-2023 amid supply and energy security concerns, while Europe plans to reduce dependence on Russian natural gas. Coal prices rose 55 percent and reached historic highs in early March, reflecting tight supply-demand balances, production disruptions, and the shunning of Russian coal.

Metal Prices Rise to 10-year Highs

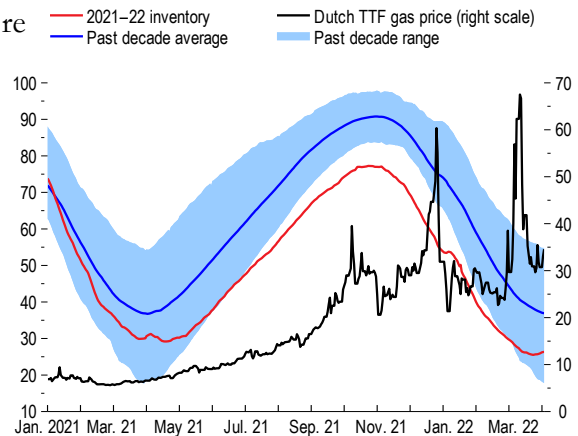
The base metal index initially retreated from a 10-year high in July 2021, mainly owing to iron ore prices falling 14.2 percent amid temporary restrictions on steel production and slowing construction activity in China (Figure 1.SF.1, panel 4). The index began to recover in December as steel production curbs were lifted. Increased demand for electric vehicle batteries sent prices higher for cobalt, nickel, and lithium. The war in Ukraine and sanctions partially disrupted metal and mineral exports from Russia and Belarus. Precious metal prices increased thanks to an upward shift in inflation expectations.

Base metal prices are expected to rise by 9.9 percent in 2022, compared with a decline of 6.5 percent in the October 2021 *World Economic Outlook*, and to remain unchanged in 2023. Risks to the outlook are to the upside due to continued disruptions of trade in metals with Russia and higher energy costs. Precious metal prices are expected to rise 5.8 percent in 2022 and 2.1 percent in 2023.

Agricultural Prices Rise on War, Weather, and Higher Fertilizer Costs

An increase of 17.2 percent in beverage prices and a 21.8 percent rise in cereal prices drove up the cost of food but was partially offset by a 5.3 percent decline in sugar prices and a 4.8 percent fall in vegetable prices. Wheat prices rose by 26.4 percent, as a severe drought in Canada and across the northern plains of the United States reduced spring wheat supplies. Looking

Figure 1.SF.2. European Gas Inventory and Gas Price
(Percent; US dollars per million British thermal units)



Sources: Argus Media; Gas Infrastructure Europe; and IMF staff calculations.
Note: Last observation is Mar. 29, 2022. Past decade refers to 2011–20. TTF = Title Transfer Facility.

ahead, a continuation of war in Ukraine—a major producer of wheat and corn—and falling Russian exports could fuel an additional surge in world cereal prices; adverse weather and fertilizer prices remain sources of upside risk for all food prices.

Pace of Fossil Fuel Divestment and Effect on Prices

The clean energy transition requires a substantial reduction in fossil fuel investment. The recent energy crisis, however, has raised concerns that, relative to the speed of adoption of renewable energy, the pace of divestment from fossil fuels is too fast, especially for oil and gas.¹ The next sections present recent trends in oil and gas investment and study their main drivers, examining the role of the shale boom, climate policies, and, more generally, the energy transition. They illustrate the starkly different effects that supply- and demand-side climate policies may have on prices of fossil fuels.

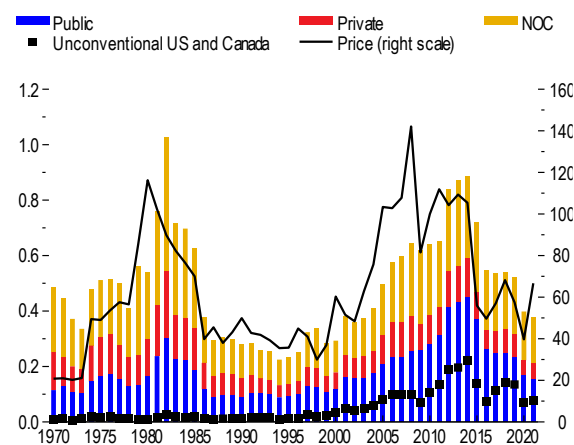
Oil and Gas Investment Has Declined Sharply since 2014

About half of total energy investment in 2021 was in fossil fuels—half of which was oil and gas *upstream* investment (IEA 2021a). The latter shapes the future production capacity of natural gas, crude oil, and condensates—and, thus, the supply of petroleum products, ranging from petrochemicals (such as ethylene and benzene) to jet fuel and motor gasoline.

After booming during the so-called shale revolution, global upstream oil and gas investment peaked at 0.9 (3.6) percent of global GDP (investment) in 2014. Since then, it declined to less than 0.5 (1.5) percent of global GDP (investment) in 2019, falling further during the pandemic (Figure 1.SF.3). The cyclical reversal disproportionately affected publicly traded companies, which cut oil and gas investment more than national oil companies—consistent with investment declining more notably in the Americas and Africa, as opposed to the Middle East and Russia.²

Swings in capital expenditure are not unusual in the oil and gas industry, though. Using data from 1970 to 2019, an empirical analysis shows that oil and gas prices are the main drivers of capital expenditure (Online Annex 1.SF.1). A 10 percent increase in oil and gas prices typically

Figure 1.SF.3. Oil and Gas Investment as Share of World GDP (Percent; US dollars a barrel)



Sources: Bloomberg Finance L.P.; International Energy Agency; Rystad Energy UCube; US Bureau of Economic Analysis; and IMF staff estimates. Note: The oil and gas price is the average of West Texas Intermediate crude oil and Henry Hub natural gas prices weighted by global oil and gas production, divided by US GDP deflator. NOC = national oil company.

¹ Fossil fuels still account for more than 80 percent of primary energy consumption, globally (IEA 2021a). Three-quarters of the CO₂ reductions from a globally efficient mitigation in the next decade would come from reduced use of coal rather than of oil and gas.

² The oil and gas investment share of the Americas and Africa (Middle East and Russia) combined declined (increased) by 2 (4) percentage points from 2010–14 to 2015–21, on average.

raises global oil and gas investment 3 percent in the same year and 5 percent after two years, cumulatively (Figure 1.SF.4). National oil companies tend to be less reactive since their investment decisions are often driven by a broader set of considerations.

Fossil fuel investment followed a typical boom-bust cycle over the past decade. However, since oil and gas prices declined 50 percent between 2014 and 2016 and then recovered partially, the 40 percent decline in capital expenditure between 2014 and 2019 was deeper than the model's prediction, which suggests a 20 to 25 percent decline. While many factors could have been involved, the next section explores the role the clean energy transition may have played.

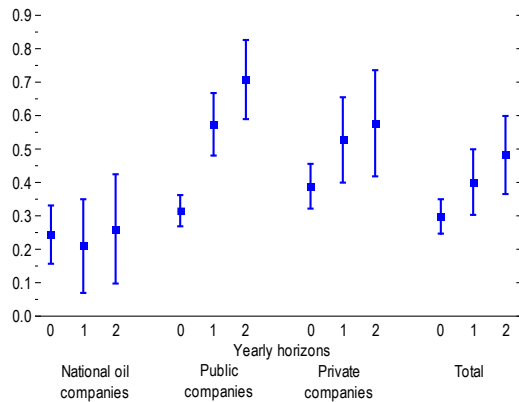
Climate Policies, the Energy Transition, and the Rise of Sustainable Investing

The energy transition affects oil and gas investment through three main channels: a *demand-side* channel related to existing demand-side climate policies (that is, carbon taxes on fossil fuel consumption); an *expectation channel* related to future fossil fuel demand (for example, solar and wind investment subsidies or announced demand-side policies such as future bans on internal combustion engines); and a *supply-side channel*. Top-down supply-side policies (such as regulatory restrictions and bans on fossil fuel production) and bottom-up shifts in public preferences (such as portfolio shifts related to sustainable investment) increase the cost of capital for fossil fuel projects (see the April 2022 *Global Financial Stability Report*).

Supply- and Demand-Side Effects on Capital Expenditure

To study the three channels, a set of climate-related policy indicators based on hard and soft data was collected (Figure 1.SF.5 and Online Annex 1.SF.1). Text-based analysis captures public awareness of the energy transition (the expectation channel)—which increased sharply after 2018. The demand-side channel is captured by carbon taxes (CO2 prices and greenhouse gas emission coverage by emission trading systems). Their increase slowed in 2019. The supply-side channel is captured by sustainable investing awareness and portfolio inflows into sustainable funds, which have both increased sharply since 2018.

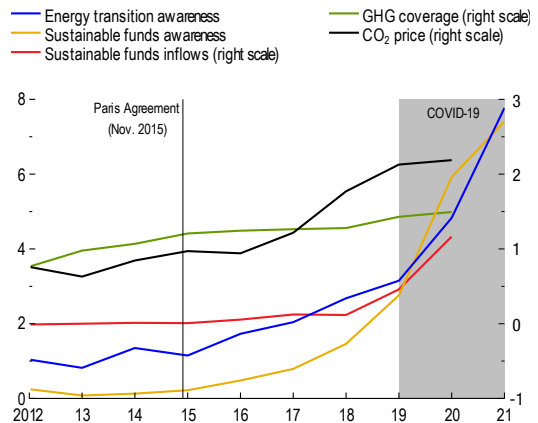
Figure 1.SF.4. Price Elasticity of Global Oil and Gas Capital Expenditure



Sources: Rystad Energy UCube; US Bureau of Economic Analysis; and IMF staff estimates.

Note: Results are based on a regression of global nominal capital expenditures (in log differences) on two lags of an oil and gas price index (in log differences) plus controls, over the sample years 1971–2020. See Online Annex 1.SF.1 for details.

Figure 1.SF.5. Climate Policy and Energy Transition Indicators



Sources: Google Trends; World Bank; and IMF staff calculations.

Note: The proxies for energy transition and sustainable funds as well as the GHG coverage (in percent) were divided by 10 to adjust the scale. The price of CO2 is expressed in dollars per ton. Sustainable funds inflows are presented as share of global gross fixed capital formation, in percent. GHG = greenhouse gas.

A firm-level regression (see Online Annex 1.SF.1) is then used to assess the impact of the climate indicators on fossil-fuel-producing companies’ capital expenditure (treatment group). Non-energy companies are used as the control group. Data are from 2012 to 2020, but the estimation sample excludes the pandemic period:

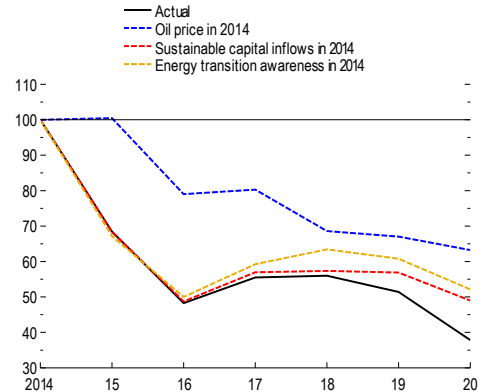
$$y_{ist} = a + \lambda D_s + (\beta_1 C_t + \beta_2 P_{oil,t}) D_s + \gamma X_{ist} + \varepsilon_{ist}, \tag{1.SF.1}$$

in which y_{ist} is log capital expenditure in firm i , group s , year t ; a is a constant; D_s is the “treatment dummy,” equal to 1 for oil and gas companies and 0 otherwise; $P_{oil,t}$ is the oil and gas price; and X_{ist} includes log total assets, debt-to-equity ratio, asset turnover, Altman credit strength, region, industry, and year fixed effects. C_t represents either a dummy since the Paris-Agreement on climate change in 2016 or a climate policy indicator. Energy companies in the treatment group derive most of their revenue from the upstream oil and gas sector and show little ability to diversify into green energy.

Estimation Results Point to Capital Investment Slump

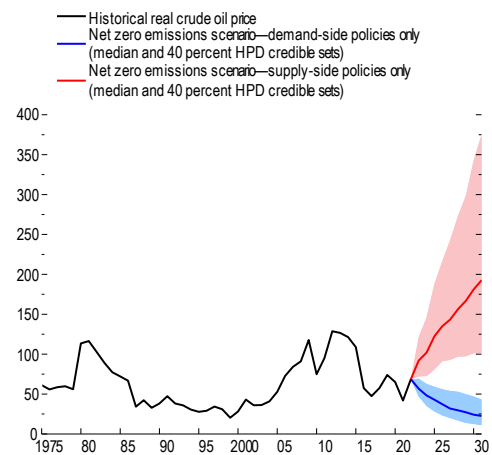
After the Paris Agreement, capital expenditure of a typical oil and gas company was 35 percent lower than that of the control group, even when factoring in firm-level variables, according to results shown in detail in Online Annex 1.SF.1. Part of that decline is explained by the effect of lower oil prices, which is related mostly to the shale boom-bust cycle and accounts for about half of the investment decline between 2014 and 2017 (Figure 1.SF.6). Between 2018 and 2020, however, the energy transition expectation channel was also a factor: if public awareness of the energy transition had been the same as in 2014, “brown” investment would have been 38 percent higher in 2020. The inflows into sustainable funds (supply-side channel) show a slightly smaller effect, even though their coefficient is not significant. The demand channel (that is, CO2 prices and greenhouse gas coverage) is not significant, because its effect is either small or already subsumed by oil prices. The pandemic has likely further penalized brown investment, probably through unprecedented uncertainty, given that 18 percent of the 2020 decline is not fully explained by the econometric model.

Figure 1.SF.6. Counterfactuals for Oil and Gas Capital Expenditure (Index)



Sources: Compustat; Google Trends; and IMF staff calculations. Note: The dashed lines show in-sample scenarios for oil and gas capital expenditure in which either the oil price, the energy transition awareness proxy, or the sustainable funds inflow were held at their 2014 values.

Figure 1.SF.7. Oil Prices Rise in a Net Zero Emissions Scenario Driven by Supply Policies, Decline when Driven by Demand Policy (US dollars a barrel)



Sources: Boer, Pescatori, and Stuermer (2021); British Petroleum; International Energy Agency; Schwerhoff and Stuermer (2020); and IMF staff calculations. Note: Brent crude oil spot prices were adjusted for inflation using the United States Consumer Price Index with the base year 2020. See Boer and others (2021) and Online Annex 1.SF.1 for underlying data and methodology. HPD = highest posterior density.

Supply-Side Policies Could Propel Prices

How might climate *supply*- and *demand-side* policies affect prices? It is typically assumed that the energy transition would work as a negative demand shock to fossil fuel prices. Subsidies for electric cars, for example, are a negative crude-oil-specific demand shock, since crude oil is replaced by electricity, leading to lower prices. However, a declining fossil fuel path can also stem from restricting investment flows into oil and gas because of sustainable investing pressures and other supply-side policies.

The case of crude oil highlights quantitatively how two different driving forces work in the International Energy Agency (2021b) Net Zero Emissions Scenario, in which crude oil production declines from 85 mb/d in 2020 to 66 mb/d in 2030. First, only demand-side policies are considered. In this hypothetical scenario, oil prices could decline to the \$20s in 2030, with dire consequences for oil exporters (Figure 1.SF.7, blue line). Rents would diminish, and oil production would come under pressure in high-cost regions (Figure 1.SF. 8).

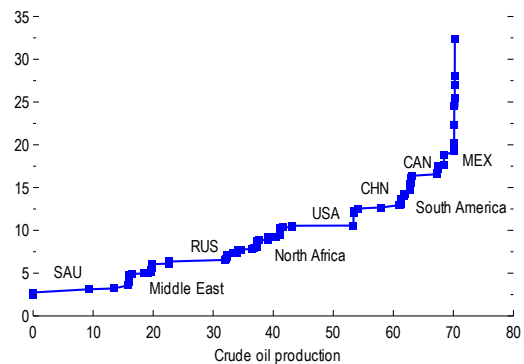
Reductions in oil production that are driven hypothetically *only* by *supply-side* measures would, instead, exert strong upward pressure, taking prices to roughly \$190 a barrel (Figure 1.SF.7, red line), benefiting producing countries at the expense of consuming countries. Since oil production would be profitable for all producers, the main determinants for the distribution of production and rents would be country restrictions, environmental regulations, and access to capital.

Consequently, the two hypothetical scenarios show that it is wrong to assume that fossil fuel prices will necessarily decline because of the energy transition. Instead, *supply-side* policies could exert upward price pressure, while *demand-side* policies would do the opposite. The reality is, of course, a mix of the two. If country policies are unpredictable and uncoordinated, the price effects of the energy transition are ultimately hard to determine, and this raises uncertainty.

Conclusions

Anticipation of lower fossil fuel demand and—possibly, but to a lesser extent—supply-side climate policies (including shifting public preferences for sustainable investing) have sapped capital expenditures in oil and gas globally over the past three to four years—especially for publicly traded companies, whose investment may have shrunk 20 percent during that time. This can put persistent upward pressure on oil and other fossil fuel prices, move production to less regulated producers, and add substantial uncertainty to the outlook for oil and gas prices. A coordinated climate effort among fossil fuel consumer and producer countries and divestment from fossil fuels at a pace commensurate with the speed of adoption of renewable energy would help reduce the risk of high and volatile energy prices. And less policy uncertainty would help countries make necessary adjustments.

Figure 1.SF.8. Production in High-Cost Regions Would Be under Pressure in Demand-Side Scenario, Uncertain in Supply-Side Scenario
(US dollars a barrel, million barrels a day)



Sources: Rystad Energy UCube; and IMF staff calculations.
Note: Production includes crude oil but excludes condensates and other liquids. The data set does not include all countries. Production costs refer to country averages. Data labels in the figure use International Organization for Standardization (ISO) country codes.

References

Atif Mian, Ludwig Straub and Amir Sufi .2021 “The Saving Glut of the Rich”.

Atif Mian and Ludwig Straub and Amir Sufi 2021b: What explains the decline in r^* ? Rising income inequality versus demographic shifts. Proceedings of the 2021 Jackson Hole Symposium

Auclert, Adrien, Hannes Malmberg, Frédéric Martenet, and Matthew Rognlie. 2021. “Demographics, Wealth, and Global Imbalances in the Twenty-First Century.” NBER Working Paper 29161, National Bureau of Economic Research, Cambridge, MA.

Barrett, Philip, Maximiliano Appendino, Kate Nguyen, and Jorge de Leon Miranda, 2020, “Measuring Social Unrest Using Media Reports”, IMF Working Paper 20/129.

Bernanke, Ben S. 2005. “The Global Saving Glut and the US Current Account Deficit.” Remarks at the Homer Jones Lecture, St. Louis, MO, April 14.

Black, Simon, Ian Parry, James Roaf, and Karlygash Zhunussova. 2021. “Not Yet on Track to Net Zero: The Urgent Need for Greater Ambition and Policy Action to Achieve Paris Temperature Goals.” *IMF Staff Climate Note* 2021/005, International Monetary Fund, Washington, DC.

Blanchard, Olivier. 2022. *Fiscal Policy under Low Interest Rates*. Cambridge, MA: MIT Press.

Boer, Lukas, Andrea Pescatori, and Martin Stuermer. 2021. “Energy Transition Metals.” IMF Working Paper 21/243, International Monetary Fund, Washington, DC.

Borio, Claudio, Piti Disyatat, Mikael Juselius, and Phurichai Rungcharoenkitkul. 2017. “Why So Low for So Long? A Long-Term View of Real Interest Rates.” BIS Working Papers, Bank for International Settlements, Basel.

British Petroleum. 2021. *Statistical Review of World Energy 2021*. London.

Caballero, Ricardo J., and Emmanuel Farhi. 2014. “The Safety Trap.” NBER Working Paper 19927 National Bureau of Economic Research, Cambridge, MA.

Casella, Bruno, Richard Bolwijn, Daniel Moran, and Keiichiro Kanemoto. 2019. “Improving the Analysis of Global Value Chains: The UNCTAD-Eora Database.” *Transnational Corporations* 26(3). United Nations, New York and Geneva.

Celasun, Oya, Niels-Jakob H. Hansen, Aiko Mineshima, Mariano Spector, and Jing Zhou. 2022. “Supply Bottlenecks: Where, Why, How Much, and What Next?” IMF Working Paper 22/31, International Monetary Fund, Washington, DC.

Chateau, J., F. Jaumotte, and G. Schwerhoff. Forthcoming. “Economic and Environmental Benefits of International Cooperation on Climate Policies.” IMF Research Department Paper, International Monetary Fund, Washington, DC.

Duval, Roman, Yi Ji, Longji Li, Myrto Oikonomou, Carlo Pizzinelli, Ipeei Shibata, Alessandra Sozzi, and Marina M. Tavares. 2022. “Labor Market Tightness in Advanced Economies. IMF Staff Discussion Note SDN/2022/001)

Eggertsson, Gauti B., Neil R. Mehrotra, and Jacob A. Robbins. 2019. “A Model of Secular Stagnation: Theory and Quantitative Evaluation.” *American Economic Journal: Macroeconomics* 11 (1): 1–48.

Gaspar, Medas, and Perrelli, 2021, Global Debt Reaches a Record \$226 Trillion, IMF blog, <https://blogs.imf.org/2021/12/15/global-debt-reaches-a-record-226-trillion/>

Goldman Sachs. 2021. “Supply Chains, Global Growth, and Inflation.” *Global Economics Analyst* (September).

Goodhart, Charles, and Manoj Pradhan. 2020. *The Great Demographic Reversal: Ageing Societies, Waning Inequality, and an Inflation Revival*. Cham, Switzerland: Palgrave Macmillan.

Grigoli, Francesco, Josef Platzer, and Robin Tietz. Forthcoming. “A Long-Run View on the Determinants of Neutral Interest Rates.”

Harstad, Bard. 2012. “A Case for Supply-Side Environmental Policy.” *Journal of Political Economy* 120 (1): 77–115.

Hoel, Michael. 1994. “Efficient Climate Policy in the Presence of Free Riders.” *Journal of Environmental Economics and Management* 27 (3): 259–74.

International Energy Agency (IEA). 2021a. *World Energy Outlook 2021*. Paris.

International Energy Agency (IEA). 2021b. “Net Zero by 2050: A Roadmap for the Global Energy Sector.” Paris.

IEA (2021c). *World Energy Outlook 2021*. International Energy Agency. Paris, France.
International Energy Agency (2021). *World Energy Outlook 2021*. Paris.

International Energy Agency (2021). *World Energy Outlook 2021*. Paris.

Kemp, Harri, Rafael Portillo, and Marika Santoro. Forthcoming. “Quantifying the Macro Effects of Global Supply Disruptions.” IMF Working Paper, International Monetary Fund, Washington, DC.

Kopeccky, Joseph, and Alan M. Taylor. 2020. “The Murder-Suicide of the Rentier: Population Aging and the Risk Premium.” Trinity College Dublin, Department of Economics Trinity Economics Papers tep1220.

Maddison, A. 2010. “Historical Statistics of the World Economy:1-2008 AD.” <http://www.ggdc.net/maddison/>.

Mian, Atif, Ludwig Straub, and Amir Sufi. 2021a. “The Saving Glut of the Rich.” Unpublished.

Mian, Atif, Ludwig Straub, and Amir Sufi. 2021b. “What Explains the Decline in r^* ? Rising Income Inequality versus Demographic Shifts.” Proceedings of the Kansas City Federal Reserve Jackson Hole Symposium, August 26–28.

Novta, Natalija and Evgenia Pugacheva, “The Macroeconomic Costs of Conflict”, *Journal of Macroeconomics* 68, 2021.

Parry, Ian, Simon Black, and James Roaf. 2021. “Proposal for an International Carbon Price Floor among Large Emitters.” IMF Staff Climate Notes 2021/001, International Monetary Fund, Washington, DC.

Pizzinelli, C., and I. Shibata. 2022. “Has COVID-19 Induced Labor Market Mismatch? Evidence from the US and the UK.” IMF Working Paper 22/5, International Monetary Fund, Washington, DC.

Platzer, Josef, and Marcel Peruffo. 2022. “Secular Drivers of the Natural Rate of Interest in the United States: A Quantitative Evaluation.” IMF Working Paper 22/030, International Monetary Fund, Washington, DC.

Rachel, Lukasz, and Lawrence H. Summers. 2019. “On Secular Stagnation in the Industrialized World,” *Brookings Papers on Economic Activity*, 1–54, Washington, DC.

Rystad Energy, UCube Database, January 2022.

Sajedi, Rana, and Gregory Thwaites. 2016. “Why Are Real Interest Rates So Low? The Role of the Relative Price of Investment Goods.” *IMF Economic Review* 64 (4): 635–59.

Straub, Ludwig. 2019. “Consumption, Savings, and the Distribution of Permanent Income.” Unpublished. Harvard University, Cambridge, MA.

Schwerhoff, Gregor, and Martin Stuermer. 2015. “Non-Renewable Resources, Extraction Technology, and Endogenous Growth.” Dallas Federal Reserve Working Paper 1506, updated version, August 2020. Federal Reserve Bank of Dallas.

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/		
	2021	Projections		2021	Projections		2021	Projections		2021	Projections	
		2022	2023		2022	2023		2022	2023		2022	2023
Europe	5.9	0.8	1.9	4.9	12.5	7.5	2.8	1.9	2.0	...	...	...
Advanced Europe	5.5	2.9	2.2	2.6	5.5	2.7	3.1	1.8	2.1	6.9	6.5	6.5
Euro Area 4/, 5/	5.3	2.7	2.2	2.6	5.2	2.3	2.6	1.8	2.2	7.7	7.3	7.2
Germany	2.8	2.1	2.7	3.2	5.5	2.9	7.4	5.9	6.9	3.5	3.2	3.2
France	7.0	2.9	1.4	2.1	4.1	1.8	-0.9	-1.8	-1.7	7.9	7.8	7.6
Italy	6.6	1.8	1.1	1.9	5.3	2.5	3.3	1.8	2.5	9.5	9.5	9.4
Spain	5.1	4.8	3.3	3.1	5.3	1.3	0.9	0.3	0.4	14.8	13.4	13.1
The Netherlands	5.0	3.0	2.0	2.8	5.2	2.3	9.5	7.4	7.3	4.2	4.0	4.0
Belgium	6.3	2.1	1.4	3.2	8.0	1.3	0.9	0.5	0.9	6.3	6.0	5.8
Ireland	13.5	5.2	5.0	2.4	5.7	2.7	13.9	10.2	8.4	6.3	6.0	5.4
Austria	4.5	2.6	3.0	2.8	5.6	2.2	-0.6	-0.6	0.8	6.2	5.2	4.9
Portugal	4.9	4.0	2.1	0.9	4.0	1.5	-1.1	-2.6	-1.4	6.6	6.5	6.4
Greece	8.3	3.8	2.6	0.6	3.5	1.3	-6.4	-6.5	-6.0	15.0	12.9	12.4
Finland	3.3	1.6	1.7	2.1	3.8	2.7	0.9	0.4	0.0	7.6	7.0	6.7
Slovak Republic	3.0	2.6	5.0	2.8	8.4	4.1	-2.0	-5.0	-4.8	6.8	6.4	6.2
Lithuania	4.9	1.8	2.6	4.6	13.3	4.3	2.7	-0.7	-2.1	7.1	7.3	7.0
Slovenia	8.1	3.7	3.0	1.9	6.7	5.1	3.3	-1.0	-1.9	4.7	4.5	4.5
Luxembourg	6.9	1.8	2.1	3.5	5.6	2.0	2.8	2.0	2.7	5.7	5.0	5.0
Latvia	4.8	2.1	2.8	3.2	8.5	5.5	-2.9	-3.3	-3.6	7.6	8.1	8.1
Estonia	8.3	0.2	2.2	4.5	11.9	4.6	-1.1	1.6	1.8	6.2	7.2	6.9
Cyprus	5.5	2.1	3.5	2.2	5.3	2.3	-7.6	-9.4	-8.3	7.5	8.5	7.5
Malta	9.4	4.8	4.5	0.7	4.7	2.8	-5.1	-1.7	-1.4	3.6	3.5	3.5
United Kingdom	7.5	3.5	1.3	2.6	7.4	5.3	-3.5	-5.4	-4.8	4.5	4.2	4.6
Switzerland	3.7	2.2	1.4	0.6	2.5	1.6	9.3	6.3	7.0	3.0	2.6	2.7
Sweden	4.8	2.9	2.7	2.7	4.8	2.2	5.5	4.9	4.4	8.8	7.8	7.2
Czech Republic	3.3	2.3	4.2	3.8	9.0	2.3	-0.8	-0.7	-1.2	2.8	2.5	2.3
Norway	3.9	4.0	2.6	3.5	3.5	1.8	15.3	19.9	16.8	4.4	3.9	3.8
Denmark	4.1	2.3	1.7	1.9	3.8	2.1	8.4	7.3	7.1	5.1	5.1	5.1
Iceland	4.3	2.5	2.4	4.5	6.8	5.5	-2.8	2.9	3.2	6.0	4.7	4.0
Andorra	8.9	4.5	2.7	1.7	2.9	1.3	15.9	16.9	17.4	2.9	2.0	1.8
San Marino	5.2	1.3	1.1	2.1	4.9	2.0	2.7	0.3	1.2	6.2	5.8	5.7
Emerging and Developing Europe 6/	6.7	-3.8	1.2	9.5	27.2	18.2	1.6	2.4	1.2	...	...	...
Russia	4.7	-11.2	-2.6	6.7	21.3	14.3	6.8	12.7	8.3	4.8	10.4	8.9
Turkey	11.0	2.7	3.0	19.6	60.5	37.2	-1.8	-5.7	-2.0	12.0	11.3	10.6
Poland	5.7	3.7	2.9	5.1	8.9	10.3	-0.9	-2.9	-2.7	3.5	3.2	3.0
Romania	5.9	2.2	3.4	5.0	9.3	4.0	-7.1	-7.0	-6.5	5.3	5.6	5.5
Ukraine 7/	3.4	-35.0	...	9.4	...	...	-1.1	...	...	9.8	...	...
Hungary	7.1	3.7	3.6	5.1	10.3	6.4	-0.9	-1.3	0.1	4.1	4.3	4.2
Belarus	2.3	-6.4	0.4	9.5	12.6	14.1	2.7	-1.2	-1.0	3.9	4.5	4.3
Bulgaria 5/	4.2	3.2	4.5	2.8	11.0	3.3	-2.0	-2.2	-2.0	5.3	4.9	4.6
Serbia	7.4	3.5	4.0	4.1	7.7	4.7	-4.4	-6.1	-5.7	10.1	9.9	9.7
Croatia	10.4	2.7	4.0	2.6	5.9	2.7	2.0	-0.4	0.3	8.2	7.7	7.4

Source: IMF staff estimates.

Note: Data for some countries are based on fiscal years. Please refer to Table F in the Statistical Appendix for a list of economies with exceptional reporting periods.

1/ Movements in consumer prices are shown as annual averages. Year-end to year-end changes can be found in Tables A5 and A6 in the Statistical Appendix.

2/ Percent of GDP.

3/ Percent. National definitions of unemployment may differ.

4/ Current account position corrected for reporting discrepancies in intra-area transactions.

5/ Based on Eurostat's harmonized index of consumer prices except for Slovenia.

6/ Includes Albania, Bosnia and Herzegovina, Kosovo, Moldova, Montenegro, and North Macedonia.

7/ See 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/		
	2021	Projections		2021	Projections		2021	Projections		2021	Projections	
		2022	2023		2022	2023		2022	2023		2022	2023
Asia	6.5	4.9	5.1	2.0	3.2	2.7	2.2	1.5	1.3	...	...	...
Advanced Asia	3.6	2.8	2.8	1.2	2.4	1.7	5.0	3.8	3.6	3.4	3.1	3.0
Japan	1.6	2.4	2.3	-0.3	1.0	0.8	2.9	2.4	2.7	2.8	2.6	2.4
Korea	4.0	2.5	2.9	2.5	4.0	2.4	4.9	2.2	3.2	3.7	3.6	3.5
Taiwan Province of China	6.3	3.2	2.9	1.8	2.3	2.2	14.7	13.2	11.6	4.0	3.6	3.6
Australia	4.7	4.2	2.5	2.8	3.9	2.7	3.5	3.0	0.5	5.1	4.0	4.3
Singapore	7.6	4.0	2.9	2.3	3.5	2.0	18.1	13.0	12.7	2.6	2.4	2.4
Hong Kong SAR	6.4	0.5	4.9	1.6	1.9	2.1	11.2	10.9	9.4	5.2	5.7	4.0
New Zealand	5.6	2.7	2.6	3.9	5.9	3.5	-5.8	-6.5	-5.3	3.8	3.6	3.9
Macao SAR	18.0	14.5	23.0	0.0	2.8	2.7	13.8	2.6	13.9	3.0	2.6	1.8
Emerging and Developing Asia	7.3	5.4	5.6	2.2	3.5	2.9	1.0	0.6	0.4	...	...	...
China	8.1	4.4	5.1	0.9	2.1	1.8	1.8	1.1	1.0	4.0	3.7	3.6
India 4/	8.9	8.2	6.9	5.5	6.1	4.8	-1.6	-3.1	-2.7	...	...	...
ASEAN-5	3.4	5.3	5.9	2.0	3.5	3.2	-0.1	2.0	0.9	...	...	...
Indonesia	3.7	5.4	6.0	1.6	3.3	3.3	0.3	4.5	0.5	6.5	6.0	5.6
Thailand	1.6	3.3	4.3	1.2	3.5	2.8	-2.1	-0.1	2.0	1.5	1.0	1.0
Vietnam	2.6	6.0	7.2	1.9	3.8	3.2	-0.5	-0.1	0.8	2.7	2.4	2.3
Philippines	5.6	6.5	6.3	3.9	4.3	3.7	-1.8	-2.7	-2.2	7.8	5.8	5.4
Malaysia	3.1	5.6	5.5	2.5	3.0	2.4	3.5	3.9	3.9	4.7	4.5	4.3
Other Emerging and Developing Asia 5/	3.0	5.1	5.5	5.0	8.7	7.2	-2.5	-2.4	-2.0	...	...	...
<i>Memorandum</i>												
Emerging Asia 6/	7.4	5.4	5.6	2.1	3.2	2.8	1.1	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 A5 and A6 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, Nepal, Palau, Papua New Guinea, Samoa, Solomon Islands, Sri Lanka, Timor-Leste, Tonga, Tuvalu, and Vanuatu.

6/ Emerging Asia comprises the ASEAN-5 economies, China, and India.

Annex Table 1.1.3. Western Hemisphere Economies: Real GDP, Consumer Prices, Current Account Balance, and Unemployment

(Annual percent change, unless noted otherwise)

	Real GDP			Consumer Prices 1/			Current Account Balance 2/			Unemployment 3/		
	2021	Projections		2021	Projections		2021	Projections		2021	Projections	
		2022	2023		2022	2023		2022	2023		2022	2023
North America	5.5	3.5	2.3	4.7	7.4	2.9	-3.1	-3.1	-3.0	...	...	...
United States	5.7	3.7	2.3	4.7	7.7	2.8	-3.5	-3.6	-3.4	5.4	3.5	3.5
Mexico	4.8	2.0	2.5	5.7	6.8	3.9	-0.4	-0.6	-0.7	4.1	4.1	3.9
Canada	4.6	3.5	2.7	3.4	5.6	2.3	0.1	1.1	-0.2	7.4	5.9	5.0
Puerto Rico 4/	1.0	4.8	0.4	2.3	4.4	3.3	...	...	...	7.9	6.9	7.9
South America 5/	7.2	2.3	2.1	12.1	13.1	9.5	-2.0	-1.3	-1.4	...	...	...
Brazil	4.6	0.8	1.4	8.3	8.2	5.1	-1.7	-1.5	-1.6	14.2	13.7	12.9
Argentina	10.2	4.0	3.0	48.4	...	...	1.3	0.5	0.4	9.3	9.2	8.1
Colombia	10.6	5.8	3.6	3.5	7.7	4.2	-5.7	-3.3	-3.4	13.7	11.9	10.6
Chile	11.7	1.5	0.5	4.5	7.5	4.5	-6.7	-4.5	-3.4	8.9	7.0	6.9
Peru	13.3	3.0	3.0	4.0	5.5	3.6	-2.8	-1.3	-1.1	10.9	9.3	8.8
Ecuador	4.2	3.0	2.7	0.1	2.0	1.8	2.3	2.1	2.0	4.2	4.0	3.8
Venezuela	-1.5	1.5	1.5	1,588.5	500.0	500.0	-1.4	9.0	6.5	...	...	...
Bolivia	6.1	3.8	3.7	0.7	3.2	3.6	0.5	-1.5	-2.0	5.2	4.5	4.0
Paraguay	5.0	1.5	4.5	4.8	9.6	4.5	0.5	-1.9	0.4	7.7	7.0	6.3
Uruguay	4.5	3.5	3.0	7.7	7.0	5.6	-1.7	0.1	0.4	9.4	7.7	7.7
Central America 6/	10.8	4.8	4.0	4.5	5.6	4.1	-1.6	-3.0	-2.4	...	...	...
Caribbean 7/	3.5	10.5	9.1	8.6	11.3	7.4	-5.0	3.1	3.2	...	...	...
<i>Memorandum</i>												
Latin America and the Caribbean 8/	6.8	2.6	2.5	9.8	10.9	7.6	-1.6	-1.2	-1.2	...	...	...
Eastern Caribbean Currency Union 9/	3.4	7.6	5.5	1.5	5.0	3.4	-17.2	-17.8	-12.8	...	...	...

Source: IMF staff estimates.

Note: Data for some countries are based on fiscal years. Please refer to Table F in the Statistical Appendix for a list of economies with exceptional reporting periods.

1/ Movements in consumer prices are shown as annual averages. Year-end to year-end changes can be found in Tables A5 and A6 in the Statistical Appendix. 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/		
	2021	Projections		2021	Projections		2021	Projections		2021	Projections	
		2022	2023		2022	2023		2022	2023		2022	2023
Middle East and Central Asia	5.7	4.6	3.7	13.2	12.7	10.5	2.8	8.3	5.6	...	...	...
Oil Exporters 4/	6.5	5.0	3.3	11.6	10.9	8.8	4.9	12.1	8.5	...	...	...
Saudi Arabia	3.2	7.6	3.6	3.1	2.5	2.0	6.6	19.5	14.8	6.7	...	...
Iran	4.0	3.0	2.0	40.1	32.3	27.5	2.0	3.5	2.0	9.8	10.2	10.5
United Arab Emirates	2.3	4.0	3.6	0.2	3.7	2.8	11.7	18.4	13.1	...	...	...
Kazakhstan	4.0	2.3	4.4	8.0	8.5	7.1	-3.0	3.0	0.3	4.9	4.9	4.8
Algeria	4.0	2.4	2.4	7.2	8.7	8.2	-2.8	2.9	-0.2	13.4	11.1	9.8
Iraq	5.9	9.5	5.7	6.0	6.9	4.7	5.9	15.8	10.1	...	...	...
Qatar	1.5	3.4	2.5	2.3	3.9	3.0	10.6	21.4	16.9	...	...	...
Kuwait	1.3	8.2	2.6	3.4	4.8	2.3	16.1	31.3	27.2	1.3	...	...
Azerbaijan	5.6	2.8	2.6	6.7	12.3	8.7	15.2	37.2	28.5	6.0	5.9	5.8
Oman	2.0	5.6	2.7	1.5	3.7	2.2	-3.7	5.9	5.6	...	...	...
Turkmenistan	4.9	1.6	2.5	15.0	17.5	10.5	2.0	5.8	5.9	...	...	...
Oil Importers 5/ 6/	4.5	4.0	4.3	16.0	15.7	13.4	-4.0	-5.8	-5.1	...	...	...
Egypt	3.3	5.9	5.0	4.5	7.5	11.0	-4.6	-4.3	-4.6	7.3	6.9	6.9
Pakistan	5.6	4.0	4.2	8.9	11.2	10.5	-0.6	-5.3	-4.1	7.4	7.0	6.7
Morocco	7.2	2.6	3.1	1.4	2.4	1.8	-2.8	-3.2	-2.7	11.9	11.5	11.1
Uzbekistan	7.4	3.2	5.0	10.9	11.1	13.1	-6.6	-12.0	-7.9	9.5	9.5	9.0
Sudan	0.5	0.3	3.9	359.1	245.1	111.4	-5.9	-6.6	-7.0	28.3	30.2	29.3
Tunisia 7/	3.1	2.2	...	5.7	7.7	...	-6.2	-10.1	...	...	...	...
Jordan	2.0	2.4	3.1	1.3	2.8	2.5	-10.1	-5.9	-4.6	24.4	...	...
Georgia	10.4	3.2	6.0	9.6	9.9	5.1	-10.2	-11.9	-7.8	20.3	18.5	19.2
Armenia	5.7	1.5	4.0	7.2	7.6	6.0	-2.4	-6.2	-5.9	18.5	19.5	19.0
Tajikistan	9.2	2.5	3.5	8.7	10.0	10.5	2.8	-1.4	-2.2	...	...	...
Kyrgyz Republic	3.7	0.9	5.0	11.9	13.2	10.1	-5.2	-12.2	-9.3	6.6	6.6	6.6
West Bank and Gaza	6.0	4.0	3.5	1.2	2.8	2.4	-12.7	-12.8	-12.4	26.4	25.7	25.0
Mauritania	3.0	5.0	4.4	3.8	4.9	4.0	-2.0	-10.8	-10.9	...	...	...
<i>Memorandum</i>												
Caucasus and Central Asia	5.6	2.5	4.2	9.2	10.5	9.0	-0.7	5.3	3.2	...	...	...
Middle East, North Africa, Afghanistan, and												
Pakistan 6/	5.7	4.9	3.6	13.8	13.0	10.7	3.1	8.6	5.8	...	...	...
Middle East and North Africa	5.8	5.0	3.5	14.6	13.3	10.8	3.4	9.6	6.6	...	...	...
Israel 8/	8.2	5.0	3.5	1.5	3.5	2.0	4.6	3.2	3.1	5.0	3.9	3.8
Maghreb 9/	22.2	2.6	2.8	5.0	6.2	5.6	-1.1	2.2	-0.1	...	...	...
Mashreq 10/	2.9	5.2	4.8	9.0	10.2	11.5	-5.8	-5.2	-5.2	...	...	...

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/ Movements in consumer prices are shown as annual averages. Year-end to year-end changes can be found in Tables A5 and A6 in the Statistical Appendix.

2/ Percent of GDP.

3/ Percent. National definitions of unemployment may differ.

4/ Includes Bahrain, Libya, and Yemen.

5/ Includes Djibouti, 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/ See the country-specific note for Tunisia in the "Country Notes" section of the Statistical Appendix.

8/ Israel, which is not a member of the economic region, is shown for reasons of geography but is not included in the regional aggregates.

9/ The Maghreb comprises Algeria, Libya, Mauritania, Morocco, and Tunisia.

10/ 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/		
	2021	Projections		2021	Projections		2021	Projections		2021	Projections	
		2022	2023		2022	2023		2022	2023		2022	2023
Sub-Saharan Africa	4.5	3.8	4.0	11.0	12.2	9.6	-1.0	-1.4	-2.3	...	...	...
Oil Exporters 4/	2.8	3.4	3.1	16.8	16.2	12.3	0.7	1.8	0.2	...	...	...
Nigeria	3.6	3.4	3.1	17.0	16.1	13.1	-0.8	-1.1	-1.1	...	...	...
Angola	0.2	3.0	3.3	25.8	23.9	13.2	11.5	11.2	5.1	...	...	...
Gabon	0.9	2.7	3.4	1.1	2.9	2.6	-6.9	1.7	-0.1	...	...	...
Chad	-1.1	2.4	3.5	-0.5	2.9	2.8	-5.7	-5.0	-6.3	...	...	...
Equatorial Guinea	-3.5	6.1	-2.9	-0.1	4.0	3.9	-3.4	-1.6	-2.0	...	...	...
Middle-Income Countries 5/	4.9	3.2	3.3	5.6	7.3	5.5	0.8	-0.7	-1.7	...	...	...
South Africa	4.9	1.9	1.4	4.5	5.7	4.6	3.7	1.3	-1.0	34.2	35.2	37.0
Ghana	4.2	5.2	5.1	10.0	16.3	13.0	-3.0	-3.6	-3.5	...	...	...
Côte d'Ivoire	6.5	6.0	6.7	4.2	5.5	2.3	-3.7	-4.8	-4.4	...	...	...
Cameroon	3.5	4.3	4.9	2.3	2.9	2.3	-3.3	-1.6	-2.9	...	...	...
Zambia	1.0	1.1	1.3	22.8	19.2	13.0	13.5	14.9	16.8	...	...	...
Senegal	6.1	5.0	9.2	2.2	3.0	2.2	-11.8	-13.0	-8.4	...	...	...
Low-Income Countries 6/	5.6	4.8	5.6	11.2	13.5	11.3	-5.0	-5.8	-6.1	...	...	...
Ethiopia	6.3	3.8	5.7	26.8	34.5	30.5	-3.2	-4.5	-4.4	...	...	...
Kenya	7.2	5.7	5.3	6.1	7.2	7.1	-5.4	-5.8	-5.3	...	...	...
Tanzania	4.9	4.8	5.2	3.7	4.4	5.4	-3.3	-4.3	-3.6	...	...	...
Uganda	5.1	4.9	6.5	2.2	6.1	4.1	-7.9	-7.0	-9.8	...	...	...
Democratic Republic of the Congo	5.7	6.4	6.9	9.0	6.4	6.1	-1.0	-0.3	-0.3	...	...	...
Burkina Faso	9.2	4.5	5.0	3.9	6.0	2.0	-3.0	-5.5	-5.0	...	...	...
Mali	3.1	2.0	5.3	4.0	8.0	3.0	-4.5	-5.3	-4.9	...	...	...

Source: IMF staff estimates.

Note: Data for some countries are based on fiscal years. Please refer to Table F in the Statistical Appendix for a list of economies with exceptional reporting periods.

1/ Movements in consumer prices are shown as annual averages. Year-end to year-end changes can be found in Table A6 in the Statistical Appendix.

2/ Percent of GDP.

3/ Percent. National definitions of unemployment may differ.

4/ Includes Republic of Congo and South Sudan.

5/ Includes Botswana, Cabo Verde, Eswatini, Lesotho, Mauritius, Namibia, and Seychelles.

6/ Includes Benin, Burundi, Central African Republic, Comoros, Eritrea, The Gambia, Guinea, Guinea-Bissau, Liberia, Madagascar, Malawi, Mozambique, Niger, Rwanda, São Tomé and Príncipe, Sierra Leone, Togo, and Zimbabwe.

Annex Table 1.1.6. Summary of World Real per Capita Output

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

	Average									Projections	
	2004–13	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
World	2.5	2.1	2.1	1.8	2.5	2.4	1.7	-4.2	5.4	2.7	2.5
Advanced Economies	1.0	1.5	1.7	1.3	2.0	1.9	1.3	-5.0	5.0	2.9	2.1
United States	0.9	1.6	2.0	0.9	1.6	2.4	1.8	-4.2	5.4	3.3	1.8
Euro Area 1/	0.5	1.2	1.7	1.6	2.4	1.6	1.3	-6.7	5.3	2.6	2.1
Germany	1.4	1.8	0.6	1.4	2.3	0.8	0.8	-4.6	2.7	2.0	2.6
France	0.6	0.5	0.6	0.8	2.2	1.5	1.4	-8.3	6.7	2.7	1.1
Italy	-0.9	-0.1	0.9	1.5	1.8	1.1	0.7	-8.8	7.4	1.9	1.2
Spain	-0.4	1.7	3.9	2.9	2.8	1.9	1.3	-11.3	5.0	4.4	2.9
Japan	0.7	0.5	1.7	0.8	1.8	0.8	0.0	-4.2	1.9	2.7	2.8
United Kingdom	0.5	2.2	1.8	1.4	1.5	1.0	1.1	-9.8	6.7	3.0	0.9
Canada	0.9	1.8	-0.1	0.0	1.8	1.4	0.4	-6.4	3.9	2.3	1.6
Other Advanced Economies 2/	2.6	2.2	1.5	1.8	2.5	2.0	1.3	-2.4	5.1	2.8	2.5
Emerging Market and Developing Economies	4.7	3.1	2.8	2.8	3.3	3.3	2.4	-3.3	5.9	2.6	3.2
Emerging and Developing Asia	7.3	5.8	5.9	5.8	5.7	5.6	4.4	-1.5	6.5	4.8	5.0
China	9.7	6.7	6.5	6.2	6.4	6.3	5.6	2.1	8.0	4.4	5.1
India 3/	6.2	6.2	6.8	7.1	5.7	5.4	2.6	-7.3	7.9	7.1	5.9
ASEAN-5 4/	4.0	3.4	3.7	3.9	4.3	4.3	3.7	-4.5	2.5	4.3	4.9
Emerging and Developing Europe	4.1	1.5	0.5	1.6	3.9	3.3	2.4	-1.7	7.2	2.9	0.7
Russia	4.2	-1.1	-2.2	0.0	1.8	2.9	2.2	-2.3	6.5	-11.1	-2.5
Latin America and the Caribbean	2.7	0.1	-0.8	-1.9	0.3	0.2	-1.3	-8.1	5.9	1.7	1.6
Brazil	3.0	-0.4	-4.4	-4.1	0.5	1.0	0.4	-4.6	4.2	0.2	0.8
Mexico	0.8	1.6	2.1	1.5	1.0	1.1	-1.2	-9.0	3.8	1.1	1.6
Middle East and Central Asia	2.2	0.6	0.5	1.0	-0.3	0.5	0.2	-5.0	6.1	2.7	1.9
Saudi Arabia	1.3	2.5	1.7	-0.6	-3.3	0.1	-2.0	-6.3	1.9	5.5	1.6
Sub-Saharan Africa	2.7	2.3	0.5	-1.2	0.3	0.6	0.4	-4.3	1.9	1.2	1.4
Nigeria	4.5	3.5	0.0	-4.2	-1.8	-0.7	-0.4	-4.3	1.1	0.9	0.6
South Africa	1.9	-0.1	-0.2	-0.8	-0.3	0.0	-1.3	-7.8	4.0	0.4	-0.1
<i>Memorandum</i>											
European Union	0.9	1.5	2.1	1.9	2.8	2.1	1.8	-6.1	5.4	2.6	2.3
Middle East and North Africa	1.6	0.0	0.2	2.1	-1.0	0.0	-0.2	-5.5	2.5	3.2	1.8
Emerging Market and Middle-Income Economies	4.9	3.2	3.0	3.1	3.5	3.6	2.5	-3.2	6.1	3.0	3.5
Low-Income Developing Countries	3.6	3.8	2.2	1.5	2.6	2.7	2.9	-2.1	2.4	2.4	3.1

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/ 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, Thailand, Vietnam.