

Introduction

As the global economy recovered from COVID-19-related disruptions and as exceptional measures by governments largely came to an end, fiscal policy moved to a tightening stance in 2021–22 amid high inflation and the need to reduce debt vulnerabilities. Nearly three-quarters of economies tightened both fiscal and monetary policy in 2022, up from a quarter in 2021 (Figure 1.1). With signs of easing inflationary pressures, the global economy is now entering a new phase (April 2023 *World Economic Outlook*). The effects of policy tightening will weigh on economic activity. Governments will need to manage high debt against a backdrop of modest growth and less favorable financing conditions in the medium term (Figure 1.2).

Over 2021–22, global public debt declined to about 92 percent of GDP—reversing half of the record increase in 2020—because of the economic rebound following the COVID-19 crisis, inflation surprises, and the end of exceptional fiscal support measures enacted during the pandemic.¹ The pace of fiscal retrenchment and decline in debt varied from country to country depending on how fast they exited the pandemic and how subsequent shocks affected them. In emerging markets and low-income developing countries, which have lower levels of domestic currency debt, inflation surprises provided less relief for public debt ratios.

The near-term fiscal outlook remains complex, and risks are firmly to the downside with significant uncertainty surrounding the growth outlook and rapidly changing financial conditions (April 2023

Global Financial Stability Report). The pace of fiscal tightening is projected to slow in 2023 as economies face spending pressures. Ongoing geopolitical tensions may lead to further increases in defense spending and fiscal support to address negative effects from disruptions to international trade. Industrial policies, including government subsidies, may also emerge to foster import substitution. Progress on reducing global poverty stalled in 2022, with about 7 percent of the world's population now projected to be in extreme poverty in 2030, which will fall far short of the goal of eradicating extreme poverty. Low-income developing countries, many of which are in or near debt distress or have limited fiscal space, face a particularly difficult balancing act. Many developing countries are grappling with tighter budgetary constraints. Low and stagnant levels of revenue have also hampered progress in achieving the Sustainable Development Goals, and food insecurity has even reversed the progress made in combatting hunger prior to the pandemic.

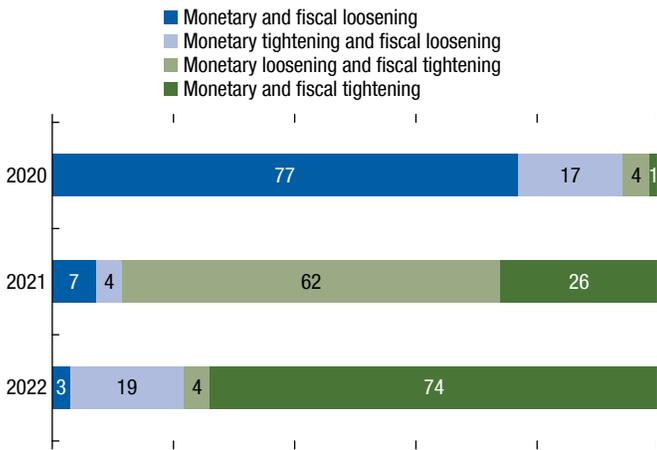
Governments will need to continue to balance their efforts between rebuilding fiscal buffers, supporting disinflation, and protecting the most vulnerable amid considerable uncertainty about future economic growth as the global economy adjusts after massive shocks. In the event that inflation turns out to be stickier than expected, further monetary tightening will be needed and will weigh on economic activity. Downside growth risks could also be magnified if financial sector instabilities intensify (see Chapter 1 of the April 2023 *World Economic Outlook*) and increase stress on public finances, as governments may be called to support the private sector. Global growth could also be adversely impacted by a faltering in China's recovery and an escalation of *Russia's* war in *Ukraine*, which could renew tensions in energy markets and exacerbate food insecurity in low-income countries.

Over the medium term, under current policies, public debt is expected to rise to close to the record levels seen at the height of the pandemic. Its path will depend crucially on the pace of economic growth and whether borrowing costs, which remain elevated in emerging market economies (Figure 1.3),

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¹Inflation surprises refer to the component of actual inflation that was not expected. For public finances, it is critical to distinguish the unexpected component of high inflation for the reasons discussed later in this chapter and in Chapter 2 of the April 2023 *Fiscal Monitor*.

Figure 1.1. Monetary and Fiscal Policy Mix
(Percentage of economies)



Sources: IMF, World Economic Outlook database; and IMF staff calculations.
Note: The sample includes 34 advanced economies, 48 emerging market economies, and 16 low-income developing countries. Fiscal policy is tightening (loosening) if the annual change in the primary balance is positive (negative or zero). Monetary policy is tightening (loosening) if the annual change in the policy rate is positive (negative or zero). The policy rate is proxied by nominal short-term interest rates in the World Economic Outlook database and from central bank websites.

will gradually return to low prepandemic levels (see Chapter 2 of the April 2023 *World Economic Outlook*). Debt sustainability risks are exacerbated by large contingent liabilities contracted as governments provided exceptional support during the pandemic and by the sovereign-bank nexus. Related fiscal risks typically manifest themselves in weak growth and tight financial conditions (Bova and others 2016; Battersby and others 2022; Chapter 2 of the April 2022 *Global Financial Stability Report*).

Long-standing challenges—including the climate agenda and population aging—have become more

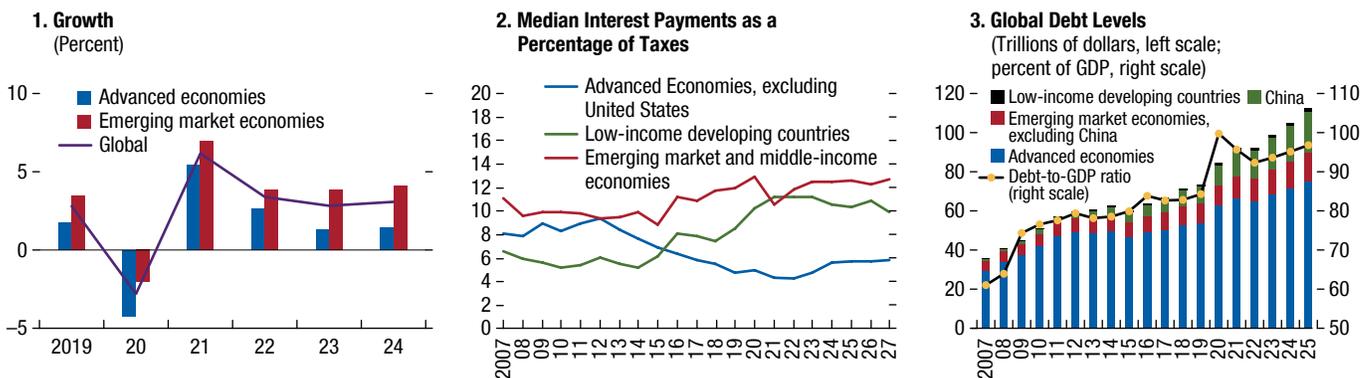
pressing. The energy crisis should provide momentum to press ahead with the transition to renewable sources of energies. Climate change calls for international coordination in areas such as carbon pricing and investment in renewable energy. The global community should give priority to agreements on climate change mitigation and adaptation, while ensuring financing for the climate transition, especially in low-income countries. The breadth of risks and challenges argues for enhancing medium-term fiscal frameworks to address debt vulnerabilities in a credible manner.

Recent Fiscal Developments and Outlook

Fiscal deficits fell to 4.7 percent of GDP on average in 2022, about half of the levels observed in 2020 at the height of the COVID-19 pandemic (Table 1.1). The large shifts in deficits and debt reflect several shocks that have hit economies around the globe in recent years—the pandemic, the war in *Ukraine*, and energy and food price shocks—and the exceptional policy response. But there is substantial heterogeneity both across and within income groups (Figure 1.4). In advanced economies, primary fiscal deficits fell for the second year in a row in 2022, from levels well above those in other income groups at the peak of the pandemic. In emerging markets (excluding *China*), primary balances nearly returned to their prepandemic averages. In low-income developing countries, primary balance improved compared to the height of the pandemic, albeit by a smaller margin compared to other income groups.

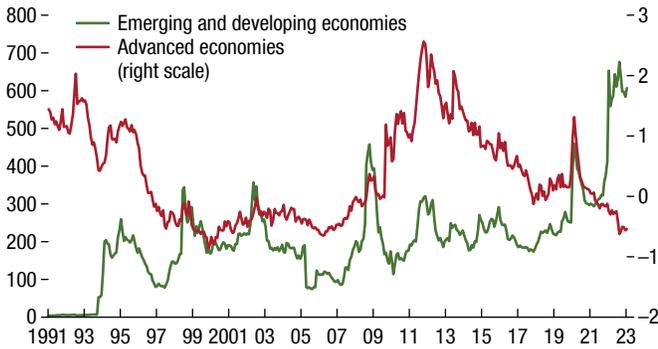
In some countries, primary deficits improved by more than expected in the beginning of 2022, partly

Figure 1.2. Low Growth, Rising Rates, and High Debt



Sources: IMF, World Economic Outlook database; and IMF staff calculations.
Note: In panel 2, the United States (US) is excluded due to missing values from the World Economic Outlook database.

Figure 1.3. Sovereign Spreads by Income Group
(Basis points)



Source: DataStream, Global Financial Data.
Note: Emerging Markets Bond Index (EMBI) spreads, if available, or the government 10-year bond spread over US or German bonds. Averages are weighted by GDP in US dollars. Latest observation is March 1, 2023.

an increase in global public debt. After declining for two years, public debt is expected to resume an upward trend, driven by some large advanced and emerging market economies. This worse debt dynamics reflects both higher primary deficits (e.g., advanced economies) and higher interest bills (especially in emerging markets). Whether this projected upward trend will materialize is subject to uncertainty, however, as economies and policies are still normalizing after the substantial shocks of the last few years. In addition, global prices for energy have recently come down from their peaks in March 2022 by more than 30 percent, and even 70 percent in the case of the European gas price. Nonetheless, although international food prices have also fallen from their peaks, domestic food prices remain near record levels in many countries.

reflecting higher-than-expected inflation (Figure 1.5; see the next subsection for a more in-depth discussion). Commodity-rich countries (*Australia* and *Canada*) benefited from positive terms-of-trade shocks. Deficits declined by less in countries where governments adopted measures to address a cost-of-living crisis.

The decline in public debt in 2022 was notable for advanced and emerging market economies (excluding *China*), although their debt ratios remain about 8 and 4 percentage points above prepandemic levels, respectively (Table 1.2). The public-debt-to-GDP ratio in low-income developing countries remained elevated at about 48 percent, a level not seen since the early 2000s.

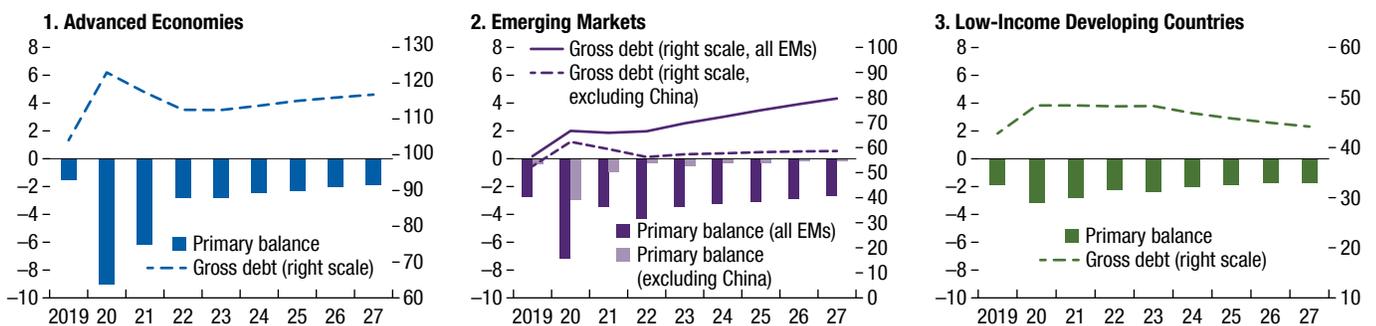
Over the medium term, the projected gradual and moderate fiscal tightening will likely not prevent

Advanced Economies: Falling Deficits, at a Diverse Pace

The average primary balance in advanced economies improved by 3.4 percentage points in 2022—for a cumulative improvement of 6.2 percentage points since 2020 (Figure 1.4, panel 1). The cyclically adjusted primary balance in these economies improved by 2.1 percentage points, on average, in 2022 (Figure 1.6). Even so, the average primary deficit as a share of GDP remained about 1.3 percentage points above prepandemic levels.

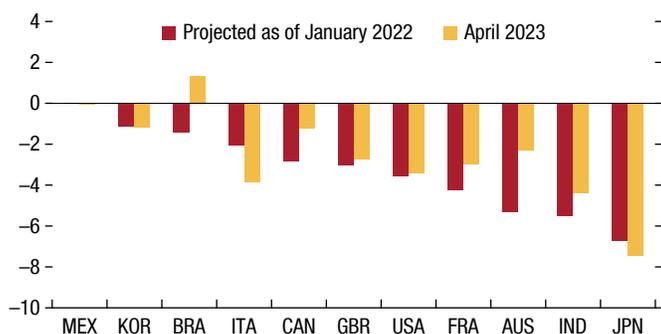
These averages conceal important differences across countries, however. Fiscal tightening was significant in the *United States*, with a 4.6 percentage point decline in its cyclically adjusted primary balance in 2022 alone, reflecting the economic recovery from

Figure 1.4. General Government Primary Balance and Debt, 2019–27
(Percent of GDP)



Sources: IMF, World Economic Outlook database; and IMF staff calculations.
Note: Averages are weighted by purchasing-power-parity-adjusted nominal GDP in US dollars. EMs = emerging markets.

Figure 1.5. Projected and Actual Primary Balance for 2022
(Percent of GDP)

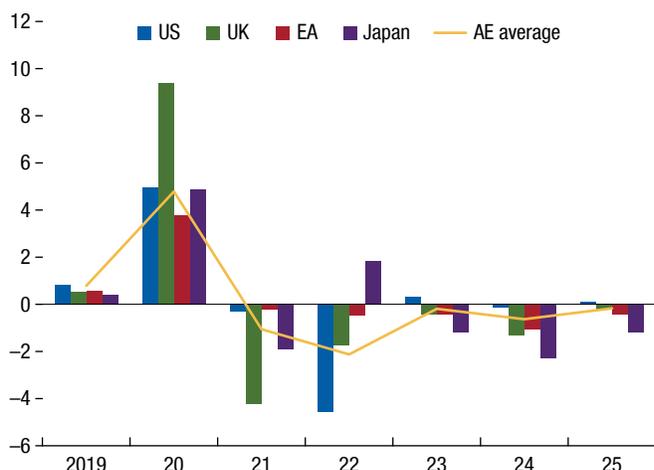


Sources: IMF, World Economic Outlook database; and IMF staff calculations.
Note: The figure compares the projected primary balance from the January 2022 *World Economic Outlook Update* with the actual primary balance from the April 2023 *World Economic Outlook*. Data labels in the figure use International Organization for Standardization (ISO) country codes.

the pandemic. With rebounding private activity and households drawing on excess savings built up during the pandemic, overall demand weathered the withdrawal of governments' support. The improvements in the cyclically adjusted primary balance in the *euro area* and the *United Kingdom* were smaller at 0.5 and 1.8 percentage point each, because further support measures were taken in response to a deterioration of the terms of trade stemming from *Russia's* invasion of *Ukraine*. *Japan* announced a series of fiscal packages throughout the year, including measures to mitigate the deterioration in the cost of living. Other economies in Asia (*Hong Kong SAR, Korea*) also loosened their fiscal stances in 2022.

The average debt-to-GDP ratio in advanced economies shed 10 percentage points between the end of 2020 and the end of 2022, thanks to favorable contributions from growth and inflation surprises. Nevertheless, the average current public-debt-to-GDP ratio of about 113 percent of GDP stands above its pre-pandemic levels. Over the medium term, fiscal tightening is projected to moderate or abate among advanced economies as a group. Under current projections for higher interest payments and lackluster growth, public debt would rise to about 118 percent of GDP over the medium term. Countries facing mounting pressures to engage in age-related spending (*Japan*), those contemplating further increases in public wages and other social spending (*United Kingdom*), and those expanding

Figure 1.6. Fiscal Impulse: Advanced Economies
(Percentage points)



Sources: IMF, World Economic Outlook database; and IMF staff calculations.
Note: The fiscal impulse is calculated as the annual change in the cyclically adjusted primary balance, multiplied by -1. A positive (negative) fiscal impulse implies an expansionary (contractionary) fiscal stance. Advanced economy (AE) averages are weighted by purchasing-power-parity-adjusted nominal GDP in US dollars. EA = euro area; UK = United Kingdom; US = United States.

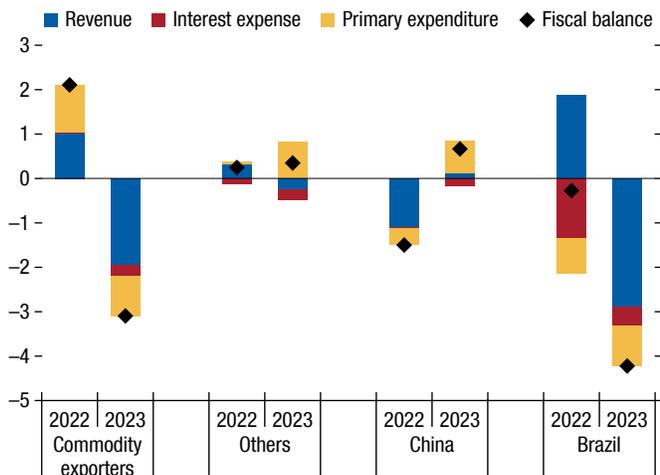
tax incentives, grants, and other fiscal measures to promote a transition to clean energy (*United States*) have steeper upward trajectories.

Emerging Markets: Growth Fears and Varied Headwinds

Following fiscal adjustment in 2021, primary deficits declined further by 1.1 percentage points in 2022, on average, in emerging markets excluding *China*. The decline was largely driven by positive revenue surprises compared to the October 2022 *Fiscal Monitor*, but with large cross-country differences (Figure 1.7). Primary surpluses increased by more than 2 and 5 percentage points, respectively, in non-oil commodity exporters and oil-producing economies (excluding *Russia*), which benefited from an upswing in commodity prices and from keeping expenditures in check. However, some large countries among the emerging market economies group experienced different fiscal trends. In *China*, the government introduced fiscal measures to alleviate growth headwinds from COVID-19-related policies and concerns about its ailing real estate market. Support included a series of tax and other relief measures for small and medium-sized enterprises.

The overall deficit in emerging market economies (excluding *China*) is set to widen in 2023 by

Figure 1.7. Drivers of Changes in the Fiscal Balance, 2022–23
(Percent of GDP)



Sources: IMF, World Economic Outlook database; and IMF staff calculations.
Note: The figure shows annual changes in the fiscal balance (diamond) and contributions from revenues (blue), interest expenses (red), and primary expenditures (yellow). Positive (negative) values show improvement (deterioration) compared with the previous year. Positive values from primary expenditures, for instance, imply a reduction in primary expenditures as a share of GDP compared with the previous year.

1.6 percentage points, on average. Many emerging market economies are projected to cut primary spending further in 2023 from their 2022 levels. However, countries will continue to see higher interest bills following the large increase in financing costs (Figure 1.3), and revenues are expected to decline. The fiscal position among commodity exporters and oil producers is likely to deteriorate as their revenues decline by about 2 percentage points with a decline in commodity prices expected in 2023. In *Brazil*, the primary balance is projected to worsen with the extension of social support and 2022 tax reductions, although some compensating measures are being considered to lower the deficits. In *Chile*, the primary balance is projected to deteriorate by 2.4 percentage points in 2023 with weaker revenue collection. In *China*, on the other hand, the primary balance is expected to increase in 2023, as not all temporary measures introduced in 2022 may be extended.

With moderate fiscal adjustments in the medium term, the average government-debt-to-GDP ratio in emerging markets excluding *China* is projected to rise to about 59 percent of GDP through 2028, above its prepandemic level, with some countries facing growing

concerns about debt vulnerabilities. The debt-to-GDP ratio in oil producers and exporters has already declined, reaching levels in 2022 close to those seen before the pandemic. In *China*, debt and associated gross financing needs are expected to be on an upward trajectory over the medium term under current policies. In *Brazil*, the decline in debt from revenue overperformance and inflation surprises in 2021–22 is projected to reverse over the medium term.

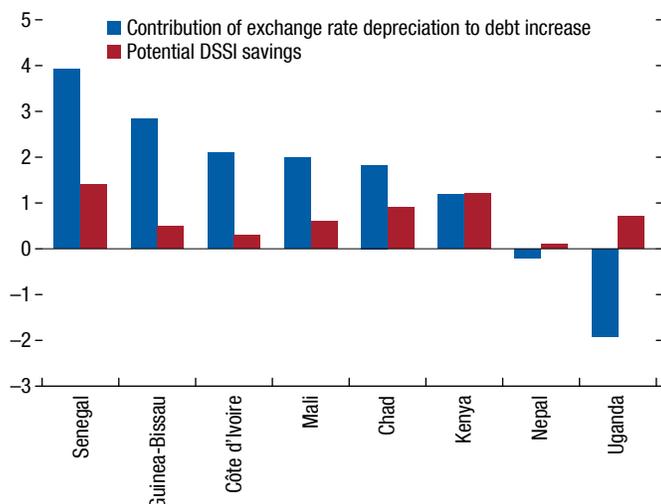
Low-Income Developing Countries: Rising Debt Vulnerabilities amid Low Revenues

Low-income developing countries have been hit by several concomitant shocks, including the COVID-19 pandemic and the cost-of-living and food security crises, which have taken their toll on public finances. Fiscal deficits in low-income developing countries, at an average 4.2 percent of GDP in 2022, showed moderate improvements relative to the worst of the pandemic. Primary spending remained stable at 16.9 percent of GDP, just below its 2021 level, on average, as countries increased fuel subsidies and social spending to respond to rising energy and food import prices. The increase in spending was larger among commodity exporters (*Burundi*, *Democratic Republic of Congo*) and oil exporters (*Nigeria*, *Yemen*), with the latter group benefitting from more fiscal space thanks to high energy prices. In non-oil commodity exporters, the average fiscal deficit rose by 0.6 percentage points in 2022, reversing the improvement in 2021, as both primary spending and debt service payments increased. For commodity importers, fiscal deficits narrowed by 1.1 percentage point, on average, with the decreases driven by spending cuts including a reduction in fuel subsidies (*Kenya*) and slower execution of infrastructure spending (*Vietnam*), or new tax measures (*Kenya*).

Fiscal deficits in low-income developing countries are expected to remain stable on average in 2023 at 4.2 percent of GDP, despite a deterioration of 0.3 percent of GDP in non-commodity exporting countries. In contrast, commodity exporters will reduce their deficit by 0.4 percentage point in 2023, driven by spending cuts, including reductions in fuel subsidies (*Democratic Republic of Congo*, *Mauritania*), even as progress in revenue mobilization weakens, reflecting lower commodity prices and slowing growth.

In addition to the multiple shocks that have occurred since the pandemic, some international debt

Figure 1.8. Impact of Exchange Rate Depreciation on Debt Change, and Potential Debt Service Suspension Initiative Savings, 2021–22
(Percent of GDP)



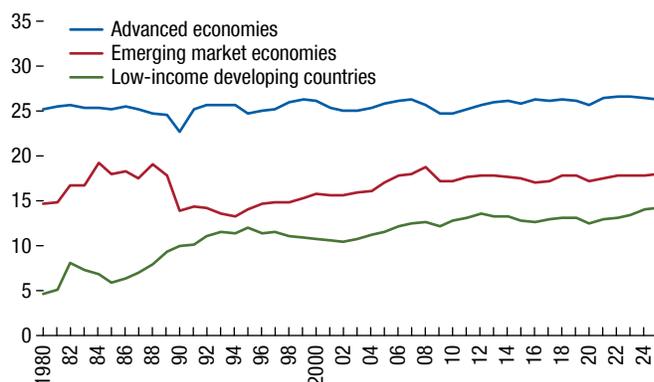
Sources: IMF, World Economic Outlook database; World Bank; and IMF staff calculations.

Note: The figure shows the impact of exchange rate depreciation in 2022 on changes in the debt ratio between the end of 2021 and the end of 2022. It also shows estimated debt service payments owed between January and December 2021. Estimated debt service payments owed to all official bilateral creditors as per the World Bank Debtor Reporting System and International Debt Statistics (IDS) definitions and classifications. Estimates are derived from annual IDS projections based on end-2020 external public and publicly guaranteed debt outstanding and disbursed. DSSI = Debt Service Suspension Initiative.

relief measures have expired, such as the Debt Service Suspension Initiative (DSSI) that ended in 2021. At the beginning of 2023, 11 countries were in debt distress and another 28 countries were at high risk of debt distress. Average public debt in low-income developing countries in 2022 remained stable at 48.2 percent of GDP, just below the level in 2020. However, the debt burden soared for countries with a high share of foreign currency borrowing, as their exchange rates depreciated (Figure 1.8).

Over the medium term, average debt is projected to decline from 48.3 percent of GDP in 2023 to 43.2 percent of GDP in 2028, still above prepandemic levels but featuring significant projected declines in large countries (*Ethiopia, Kenya, Uzbekistan, Vietnam*). Nevertheless, debt-servicing burdens are expected to climb above prepandemic levels. In some low-income developing countries, debt is projected to continue rising (*Nigeria*), and some have asked for debt relief under the Group of Twenty (G20) Common Framework (*Chad, Ethiopia, Ghana, Zambia*). *Chad* recently reached

Figure 1.9. Total Tax Collection
(Percent of GDP)



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

a debt treatment agreement with creditors under the framework.

Low-income developing countries have also made limited progress in ramping up their tax capacity, as is needed to achieve the Sustainable Development Goals and manage their debt burdens. In 2022, tax-to-GDP ratios in low-income developing countries remained, on average, 4.7 and 13.5 percentage points lower than those in emerging markets, and advanced economies, respectively (Figure 1.9). In some cases, total revenues remain exceptionally low (*Nigeria* at 8.8 percent and *Bangladesh* at 8.7 percent of GDP). Tax revenues-to-GDP ratios, on average, surpassed prepandemic levels in 2022, but in 28 of 57 countries for which tax revenue data exist, tax collection remains below its prepandemic levels (*Cameroon, Ethiopia, Honduras, Tanzania, and Vietnam*, among others). Stronger efforts will be needed to increase revenue capacity, which has been stagnant for the past 20 to 30 years (revenues can fluctuate significantly, especially in commodity-rich countries). Progress has been sluggish, especially in the decade following the global financial crisis, in mobilizing revenues from personal income, corporate, and indirect taxes, despite waves of tax reforms that have included the adoption of large taxpayer units to monitor and maintain relationships with large businesses and, in some cases, high-net-worth individuals (Box 1.1 and Online Annex 1.1).²

²However, the benefits of better monitoring and servicing of corporate taxpayers seem to materialize over longer stretches of time, and with considerable variability in magnitude (Online Annex 1.1).

Table 1.1. General Government Fiscal Balance, 2018–28: Overall Balance
(Percent of GDP)

	2018	2019	2020	2021	2022	Projections					
						2023	2024	2025	2026	2027	2028
World	-2.9	-3.6	-9.6	-6.6	-4.7	-5.0	-4.6	-4.5	-4.3	-4.2	-4.2
Advanced Economies	-2.4	-3.0	-10.2	-7.5	-4.3	-4.4	-4.2	-4.1	-3.9	-3.8	-3.9
Canada	0.4	0.0	-10.9	-4.4	-0.7	-0.4	-0.4	-0.3	-0.2	-0.1	0.0
Euro Area	-0.4	-0.6	-7.1	-5.4	-3.8	-3.7	-2.8	-2.3	-2.1	-2.0	-1.9
France	-2.3	-3.1	-9.0	-6.5	-4.9	-5.3	-4.8	-4.5	-4.1	-3.9	-4.0
Germany	1.9	1.5	-4.3	-3.7	-2.6	-3.7	-1.9	-0.9	-0.7	-0.5	-0.5
Italy	-2.2	-1.5	-9.7	-9.0	-8.0	-3.7	-3.3	-2.3	-1.8	-1.3	-0.7
Spain ¹	-2.6	-3.1	-10.1	-6.9	-4.5	-4.5	-3.5	-3.8	-4.0	-4.0	-4.0
Japan	-2.5	-3.0	-9.1	-6.2	-7.8	-6.4	-4.0	-2.9	-3.1	-3.4	-3.7
United Kingdom	-2.2	-2.2	-13.0	-8.3	-6.3	-5.8	-4.4	-4.2	-3.9	-3.9	-3.7
United States ²	-5.3	-5.7	-14.0	-11.6	-5.5	-6.3	-6.8	-7.1	-6.9	-6.6	-6.8
Other Advanced Economies	1.2	-0.1	-4.8	-1.3	0.2	0.7	0.7	0.7	0.7	0.6	0.6
Emerging Market and Developing Economies	-3.5	-4.5	-8.6	-5.2	-5.2	-5.8	-5.3	-5.0	-4.8	-4.7	-4.7
Emerging Markets excl. China	-3.0	-3.4	-8.2	-4.5	-3.4	-5.0	-4.4	-4.1	-3.8	-3.7	-3.6
Excluding MENA Oil Producers	-3.7	-4.8	-8.9	-5.5	-6.0	-6.3	-5.7	-5.5	-5.2	-5.1	-5.0
Asia	-4.2	-5.8	-9.7	-6.5	-7.4	-6.8	-6.3	-6.2	-6.0	-5.9	-5.9
China ³	-4.3	-6.1	-9.7	-6.0	-7.5	-6.9	-6.4	-6.3	-6.2	-6.1	-6.0
India	-6.4	-7.7	-12.9	-9.6	-9.6	-8.9	-8.3	-7.9	-7.7	-7.7	-7.6
Europe	0.3	-0.6	-5.5	-1.9	-2.8	-5.8	-4.0	-3.5	-2.9	-2.7	-2.4
Russian Federation	2.9	1.9	-4.0	0.8	-2.2	-6.2	-2.8	-1.8	-0.8	-0.3	0.2
Latin America	-5.0	-4.1	-8.8	-4.5	-3.9	-5.2	-4.4	-3.7	-3.2	-3.0	-2.7
Brazil	-7.0	-5.8	-13.3	-4.3	-4.6	-8.8	-8.2	-6.6	-5.5	-4.9	-4.4
Mexico	-2.2	-2.3	-4.4	-3.9	-4.4	-4.1	-2.7	-2.7	-2.7	-2.7	-2.7
MENA	-1.7	-2.5	-8.5	-2.1	2.6	-1.0	-1.7	-2.0	-1.9	-1.9	-2.1
Saudi Arabia	-5.5	-4.2	-10.7	-2.3	2.5	-1.1	-1.2	-0.8	-0.3	-0.1	-0.3
South Africa	-3.7	-4.7	-9.6	-5.6	-4.5	-5.9	-6.1	-6.7	-6.3	-6.3	-6.5
Low-Income Developing Countries	-3.3	-3.5	-5.0	-4.7	-4.2	-4.2	-4.0	-3.8	-3.7	-3.7	-3.6
Kenya	-6.9	-7.4	-8.1	-7.1	-6.0	-5.2	-4.4	-3.9	-3.9	-4.0	-3.9
Nigeria	-4.3	-4.7	-5.6	-6.0	-5.5	-5.3	-5.4	-5.6	-5.8	-6.0	-6.1
Vietnam	-1.0	-0.4	-2.9	-3.4	-2.5	-3.3	-3.1	-2.9	-2.5	-2.3	-2.0
Oil Producers	0.4	-0.1	-7.5	-1.1	2.0	-0.3	0.1	0.0	0.0	-0.1	-0.2
Memorandum											
World Output (percent)	3.6	2.8	-2.8	6.3	3.4	2.8	3.0	3.2	3.2	3.1	3.0

Source: IMF staff estimates and projections.

Note: All country averages are weighted by nominal GDP converted to US dollars (adjusted by purchasing power parity only for world output) at average market exchange rates in the years indicated and based on data availability. Projections are based on IMF staff assessments of current policies. In many countries, 2022 data are still preliminary. For country-specific details, see "Data and Conventions" and Tables A, B, C, and D in the Methodological and Statistical Appendix. MENA = Middle East and North Africa.

¹ Including financial sector support.

² For cross-economy comparability, expenditure and fiscal balances of the *United States* are adjusted to exclude the imputed interest on unfunded pension liabilities and the imputed compensation of employees, which are counted as expenditures under the 2008 System of National Accounts (2008 SNA) adopted by the *United States* but not in countries that have not yet adopted the 2008 SNA. Data for the *United States* in this table may thus differ from data published by the US Bureau of Economic Analysis.

³ *China's* deficit and public debt numbers presented in this table cover a narrower perimeter of the general government than IMF staff's estimates in *China* Article IV reports (see IMF 2023 for a reconciliation of the two estimates).

What Explains the Unusually Large Movements in Deficits and Debt?

Since early 2020, public finances worldwide have been hit by large shocks and subject to exceptional policies that make it more complex to understand developments in fiscal variables and policy stances. This section takes a deeper look at these developments to inform policies.

Inflation Surprises and Declining Debt Ratios

Since the onset of the COVID-19 pandemic, debt dynamics have been characterized by unprecedented fluctuations (IMF 2022).³ The largest one-year debt surge since World War II took place in 2020, with

³The exceptional debt dynamics have been both for public and private debt (Gaspar, Medas, and Perrelli, 2022).

Table 1.2. General Government Debt, 2018–28
(Percent of GDP)

	2018	2019	2020	2021	2022	Projections					
						2023	2024	2025	2026	2027	2028
Gross Debt											
World¹	82.8	84.3	99.7	95.5	92.1	93.3	94.6	96.1	97.3	98.4	99.6
Advanced Economies	102.9	104.0	122.9	117.4	112.5	112.4	113.6	115.0	115.9	116.7	117.8
Canada ²	90.8	90.2	118.9	115.1	106.6	105.1	102.2	99.2	96.2	93.6	91.1
Euro Area	85.6	83.5	96.6	94.9	90.9	89.8	89.0	87.9	86.9	86.2	85.4
France	97.8	97.4	114.7	112.6	111.1	111.4	112.4	112.8	113.3	114.2	115.0
Germany	61.3	58.9	68.0	68.6	66.5	67.2	66.5	64.4	62.3	60.9	59.6
Italy	134.4	134.1	154.9	149.8	144.7	140.3	140.0	138.5	136.9	134.8	131.9
Spain	100.4	98.2	120.4	118.4	112.0	110.5	108.3	107.9	108.3	108.7	109.3
Japan	232.4	236.4	258.7	255.4	261.3	258.2	256.3	257.6	259.2	261.5	264.0
United Kingdom	85.2	84.5	105.6	108.1	102.6	106.3	109.7	112.8	112.7	113.0	113.1
United States ²	107.4	108.7	133.5	126.4	121.7	122.2	125.8	129.1	131.8	134.0	136.2
Emerging Market and Developing Economies	52.7	55.1	64.8	64.3	64.6	67.5	69.8	72.2	74.3	76.3	78.1
Emerging Markets excl. China	51.0	52.6	62.3	59.4	56.2	57.3	57.7	58.2	58.4	58.6	58.7
Excluding MENA Oil Producers	55.3	57.6	67.5	67.1	68.4	71.4	74.1	76.8	79.3	81.7	83.8
Asia	56.5	59.8	70.2	71.5	75.1	79.1	82.6	86.2	89.4	92.5	95.4
China ³	56.7	60.4	70.1	71.8	77.1	82.4	87.2	92.0	96.5	100.8	104.9
India	70.4	75.0	88.5	84.7	83.1	83.2	83.7	83.8	83.8	83.7	83.6
Europe	29.0	28.5	37.0	34.7	32.7	36.9	37.9	38.6	39.0	39.2	39.2
Russian Federation	13.6	13.7	19.2	16.5	19.6	24.9	25.3	25.3	24.3	23.2	21.5
Latin America	67.4	68.3	77.3	71.9	69.7	68.6	69.3	70.1	70.3	70.3	70.1
Brazil ⁴	85.6	87.9	96.8	90.7	85.9	88.4	91.5	93.7	95.2	96.0	96.2
Mexico	53.6	53.3	60.1	58.7	56.0	55.6	55.8	56.3	56.9	57.5	57.9
MENA Region	40.3	43.9	55.4	52.1	43.0	42.5	41.2	41.6	42.0	42.3	42.5
Saudi Arabia	17.6	21.6	31.0	28.8	22.6	23.6	23.1	22.3	21.5	20.7	19.9
South Africa	51.7	56.2	69.0	69.0	71.0	72.3	74.0	77.1	80.0	82.4	84.9
Low-Income Developing Countries	41.7	42.8	48.4	48.4	48.2	48.3	46.8	45.8	44.9	44.2	43.2
Kenya	56.4	59.1	67.8	67.0	67.9	66.6	65.4	64.1	62.7	61.1	59.5
Nigeria	27.7	29.2	34.5	36.5	38.0	38.8	39.0	40.3	41.5	42.3	43.1
Vietnam	43.5	40.8	41.3	39.3	37.1	36.3	35.4	34.6	33.8	32.9	31.3
Oil Producers	44.4	45.7	60.4	56.0	49.1	50.5	49.9	49.4	48.8	48.3	47.7
Net Debt											
World¹	67.2	68.2	80.0	77.9	74.6	75.3	76.8	77.9	78.7	79.4	80.2
Advanced Economies	73.9	74.7	86.8	84.6	81.6	82.5	84.3	85.7	86.7	87.6	88.7
Canada ²	11.6	8.5	15.7	15.4	13.9	14.1	13.9	13.7	13.1	12.5	12.0
Euro Area	70.6	69.0	79.0	77.8	74.8	74.5	74.3	73.7	73.2	72.8	72.4
France	89.2	88.9	101.7	100.6	99.0	99.4	100.4	100.8	101.3	102.2	103.0
Germany	42.2	40.1	45.4	45.6	45.1	46.7	46.8	45.6	44.3	43.5	42.7
Italy	121.8	121.7	141.4	137.3	133.0	129.3	129.4	128.2	126.9	125.1	122.6
Spain	84.9	83.7	103.0	102.3	97.4	96.6	95.2	95.3	96.1	96.9	97.9
Japan	151.1	151.7	162.3	156.9	162.7	161.0	159.3	159.2	159.4	160.2	161.3
United Kingdom	75.4	74.6	94.5	96.7	91.9	95.1	98.2	101.0	100.9	101.2	101.2
United States ²	81.1	83.1	98.3	98.3	94.2	95.5	99.8	103.1	105.7	108.0	110.5

Source: IMF staff estimates and projections.

Notes: All country averages are weighted by nominal GDP converted to US dollars (adjusted by purchasing power parity only for world output) at average market exchange rates in the years indicated and based on data availability. Projections are based on IMF staff assessments of current policies. In many countries, 2022 data are still preliminary. For country-specific details, see "Data and Conventions" and Tables A, B, C, and D in the Methodological and Statistical Appendix. MENA = Middle East and North Africa.

¹ Gross and net debt averages do not include the debt incurred by the European Union and used to finance the grants portion of the NextGenerationEU (NGEU) package. This totaled €58 billion (0.4 percent of EU GDP) as of December 31, 2021, and €158 billion (1 percent of EU GDP) as of February 16, 2023. Debt incurred by the European Union and used to on-lend to member states is included within member state debt data and regional aggregates.

² For cross-economy comparability, gross and net debt levels reported by national statistical agencies for economies that have adopted the 2008 System of National Accounts (*Australia, Canada, Hong Kong SAR, United States*) are adjusted to exclude unfunded pension liabilities of government employees' defined-benefit pension plans.

³ *China's* deficit and public debt numbers presented in this table cover a narrower perimeter of the general government than IMF staff's estimates in *China* Article IV reports (see IMF 2023 for a reconciliation of the two estimates).

⁴ Gross debt refers to the nonfinancial public sector, excluding Eletrobras and Petrobras, and includes sovereign debt held on the balance sheet of the central bank.

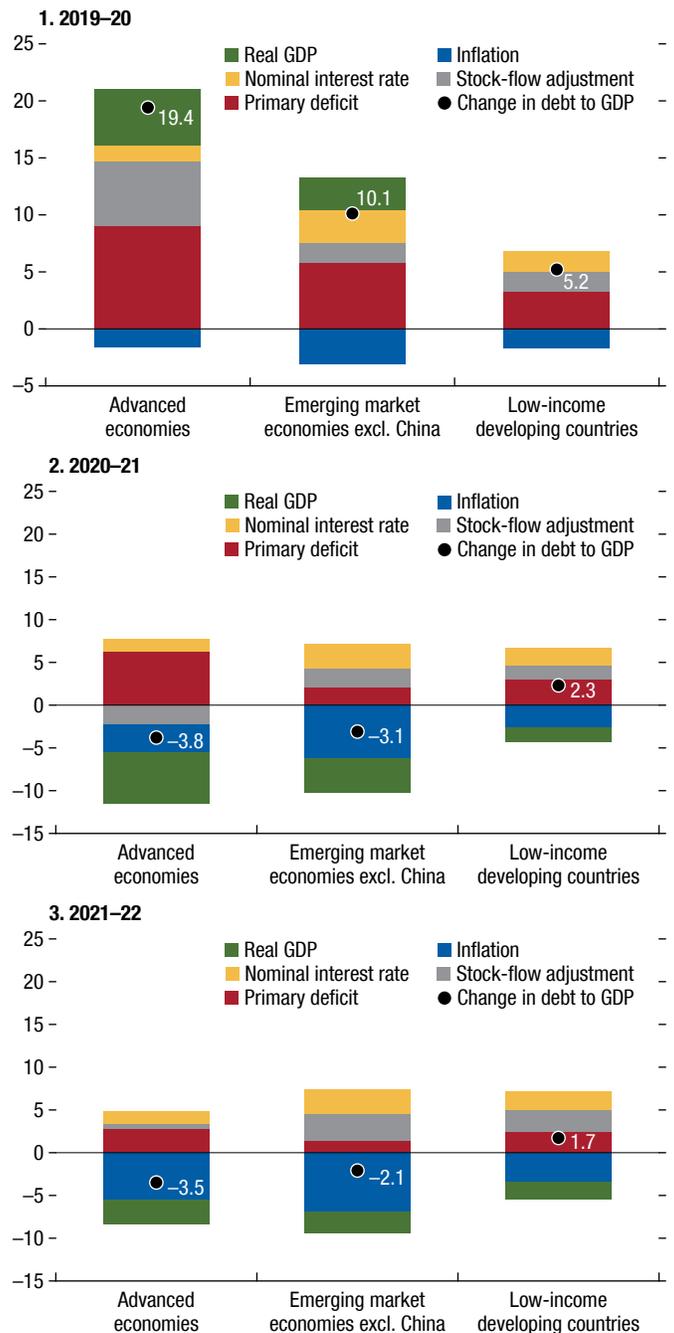
global public debt reaching almost 100 percent of GDP, reflecting a pandemic-induced economic contraction and associated fall in tax revenues, as well as unprecedented policy responses deployed by governments (Figure 1.10, panel 1). In the subsequent two years, debt declined at an unusually fast pace (Figure 1.10, panels 2 and 3). The global trends mask large differences across country groups, however. In advanced and emerging market economies, public debt fell, despite positive (yet declining) primary deficits, thanks to the growth rebound and inflation surprises. In low-income developing countries, however, a combination of exchange rate depreciation, primary deficits, and nominal interest rates more than offset the impact of inflation surprises, leading to a small increase in their overall debt-to-GDP ratios (Figure 1.10, panel 3).⁴

The role of inflation surprises in debt reduction during 2022 was shaped by individual countries' debt size and composition (Figure 1.11). Countries with high initial levels of debt, combined with large inflation surprises and strong growth, experienced significant debt declines (*Greece*). In some emerging market economies, on the other hand, rising interest rates almost fully offset the impact of inflation surprises (*India*). In some low-income developing countries, overall debt increased as nominal exchange rate depreciation and primary deficits more than offset the effects of inflation (*Senegal*).

Looking ahead, as fiscal and monetary policies normalize, inflation subsides, and real interest rates rise, debt dynamics are also expected to change. Under current projections, advanced and emerging market economies will require larger primary balances to prevent a further rise in debt ratios. However, there is great uncertainty surrounding the projections, namely for long-run growth and interest rates, and debt developments may prove different than initially expected, as the experience after the global financial crisis showed. Compared with forecasts prepared in 2010, fiscal consolidation did not materialize, and debt ratios remained stable thanks to lower-than-expected interest rates (Han, Mauro, and Ralyea, forthcoming).

⁴The difference with respect to Table 1.2 is driven by country coverage.

Figure 1.10. Drivers of Change in General Government Debt
(Change in end-of-year debt stocks as percentage of GDP)



Sources: IMF, World Economic Outlook database; and IMF staff calculations. Note: The figure shows contributions to changes in the debt-to-GDP ratio, following Escolano (2010). Stock-flow adjustment includes effects of exchange rate depreciations. GDP deflators are used for inflation. The country averages are constructed by weighting the debt change by nominal fiscal year GDP in dollars in the most recent year of the change. Selected groups of countries. Excl. = excluding.

Inflation Spikes and the Budget Balance

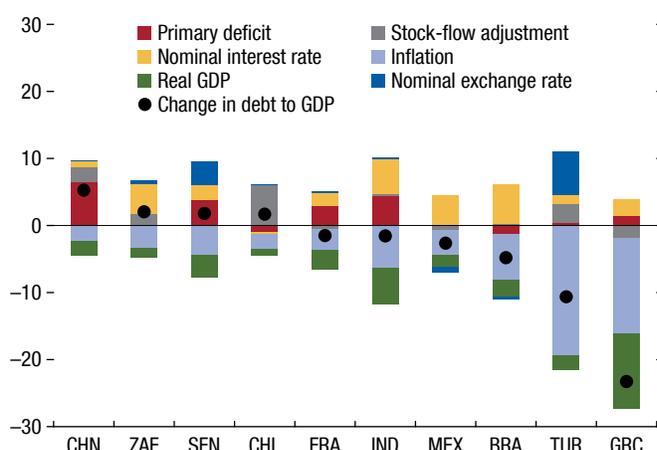
In addition to the debt-to-GDP ratio, inflation surprises can also affect budgetary aggregates, such as the overall fiscal balance (see Chapter 2 for an analysis of various channels and their implications). High inflation may also make conventional fiscal indicators an inaccurate gauge of policy efforts (Tanzi, Blejer, and Teijeiro 1987). For instance, an improvement in a country's overall balance may partly reflect tax buoyancy from an inflation surprise (combined with budget spending targets set in nominal terms) rather than consolidation measures.⁵

In 2022, most governments enjoyed positive revenue surprises, stemming in part from tax buoyancy related to inflation surprises (Figure 1.12; see also Online Annex 1.4 for the effect of inflation surprises on primary balances and debt).⁶ On average, these revenue surprises amounted to 3.1 percent of GDP in advanced economies and 2.5 percent in emerging market economies. Commodity exporters (for example, *Australia, Brazil, Saudi Arabia*) experienced even larger revenue surprises, reflecting positive terms of trade shocks, while the benefits were smaller for commodity importers, especially for those that experienced a large fall in the terms of trade. Some countries saved, to different degrees, part of the resulting windfalls

⁵A country's fiscal balance may also not accurately measure the fiscal impulse, as interest payments may include an inflationary component that has no relevance to aggregate demand. Some argue that if the inflationary component of interest rates is not removed from interest payments, the deficit will be overstated by the size of the amortization element included, which has no relevance to the aggregate demand. To alleviate this issue, alternative measures of a country's fiscal deficit have been proposed, such as the "operational balance," which excludes the inflation-induced portion of interest payments from deficit calculations (Blejer and Cheasty 1991).

⁶The amount of the revenue surprise saved by government is calculated as the difference between realized and projected revenues ("revenue surprise") and an "expenditure surprise" calculated the same way. Projected revenues and expenditures used are from the January 2022 *World Economic Outlook* vintage, which pre-dates the economic implications of *Russia's* invasion in *Ukraine*. Both actual and projected revenue and expenditures are divided by 2022 GDP from the April 2023 *World Economic Outlook* database. Hence, inflation surprises in 2022 should mostly drive revenue surprises. Nevertheless, the surprises may include factors other than inflation surprises, namely, terms-of-trade shocks and measures taken by government to address the cost-of-living crisis, both on the revenue and expenditure side. For example, the *United Kingdom* introduced reductions in fuel duties and rebates in council taxes, affecting 80 percent of households in the country, to dampen price pressures. Online Annex 1.4 also presents an alternative exercise that assesses how the indexation of tax brackets and expenditure items (public wages, pensions, and social transfers) has affected primary balances across a select group of countries at different income levels.

Figure 1.11. Drivers of Annual Change in General Government Debt, 2021–22
(Percent of GDP)



Sources: IMF, *World Economic Outlook* database; and IMF staff calculations. Note: The figure shows contributions to changes in the debt-to-GDP ratio, following Escolano (2010). The sample includes a selected set of countries for which the share of general government debt in foreign currency is available. GDP deflators are used for inflation. Data labels in the figure use International Organization for Standardization (ISO) country codes.

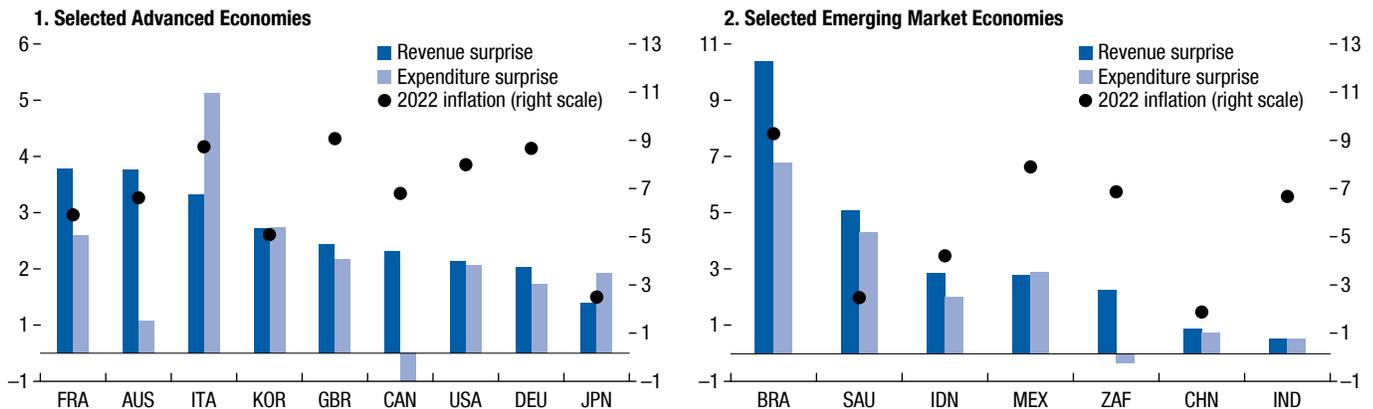
(difference between dark and light blue bars in Figure 1.12). Even when countries did not save the surprise revenue, some observed significant drops in debt ratios due to rising nominal GDP. However, neither the size of a country's revenue surprise nor its overall fiscal deficit displays a close association with its inflation rate, suggesting that additional factors were at play.

An important source of variation of spending across countries in 2022 was the surge in energy and food prices, which prompted several governments to introduce measures to support people and firms. An analysis of subcomponents of expenditures reveals that some countries (*France, Germany, Italy, Mexico*) allocated a substantial portion of this additional spending to "other spending," which includes subsidies (Figure 1.13).

Challenges for Governments amid Spending Pressures

Inflation surprises may lead to a persistent increase in some spending items, for instance, through backward-looking indexation practices (see Chapter 2 for indexation practices by countries). More generally, governments are likely to confront social and economic pressures to compensate various groups for past and future increases in the cost of living. In 2022, several governments introduced ad-hoc adjustments to compensation to civil servants and pension

Figure 1.12. What Share of Revenue Surprises Was Saved?
(Percent of 2022 GDP)



Sources: IMF, World Economic Outlook database; and IMF staff calculations.
 Note: The revenue (expenditure) surprise is the difference between actual and projected revenues (expenditures), divided by actual 2022 GDP. All variables are in nominal terms. Projections are from the January 2022 *World Economic Outlook Update* vintage, which predates *Russia's* invasion of *Ukraine*. Figures for 2022 are from the April 2023 *World Economic Outlook* database. Data labels in the figure use International Organization for Standardization (ISO) country codes.

benefits to mitigate surges in energy and food prices (Amaglobeli and others 2023).⁷ Because inflation surprises eroded public wages in real terms in 2021 and 2022 (Figure 1.14), countries will likely experience significant spending pressures as indexation operates with a lag or if workers request compensation. Past evidence shows that fiscal consolidations undertaken in higher-inflation environments are shorter, but have a larger effect on reducing debt, than those undertaken in a low-inflation environment.⁸ An empirical analysis of fiscal consolidations in 25 advanced and emerging market economies reveals that consolidations improved the cyclically adjusted primary balance more when inflation was high (defined as above the 75th percentile of the distribution of Consumer Price Index inflation, or 4.6 percent) than when it was low (below the 25th percentile of the distribution of Consumer Price Index inflation, or 1.7 percent) (Figure 1.15, panel 1). When inflation was high, fiscal consolidations also resulted in larger debt reductions (Figure 1.15, panel 2).⁹

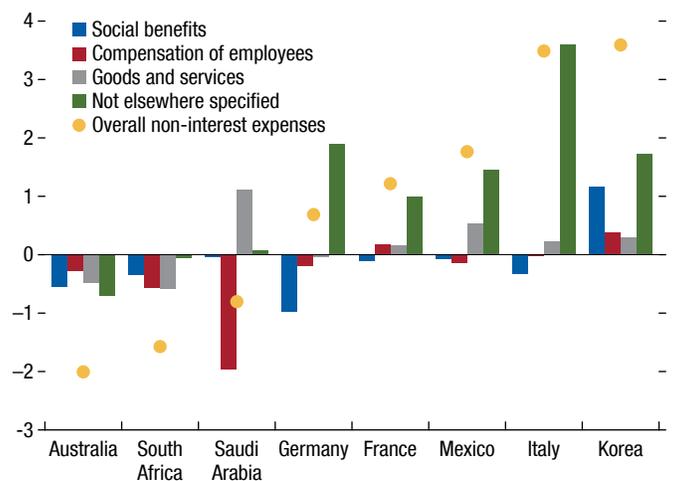
⁷One-off adjustments to pensions or transfers to pensioners were introduced (*Czech Republic, Germany, Hungary, Portugal, Sri Lanka*), as well as increases in minimum wages (*Andorra, Argentina, Türkiye*) and wages for civil servants (*Bosnia and Herzegovina, Democratic Republic of Congo, France, Sri Lanka*).

⁸Fiscal adjustment under very low (close to zero) inflation requires cutting nominal spending and can prove more challenging (Bandeira and other 2018). Moreover, downward wage rigidities also make cutting spending more difficult when inflation is particularly low.

⁹Point estimates suggest that fiscal consolidations during high inflation reduced debt, but the effect was not statistically significant. See Online Annex 1.2 for more details on the methodology and the dataset.

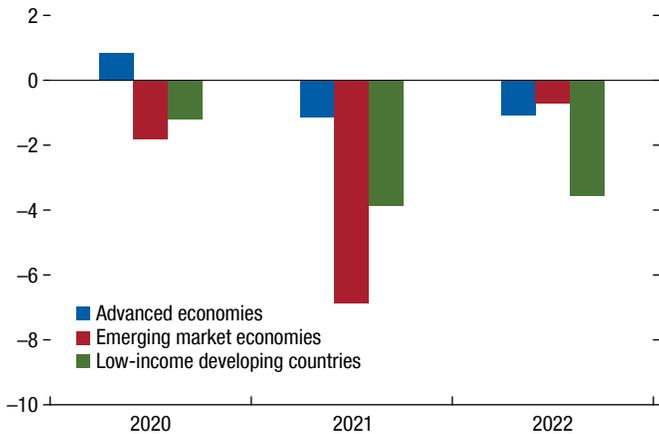
Governments will need to find the right balance between avoiding excessive real cuts in some spending items and achieving an appropriate overall fiscal stance consistent with reducing inflation, deficits, and debt. Clear communication by governments can help to steer the public's expectations and avoid de-anchoring inflation expectations—especially in countries where public wages influence private

Figure 1.13. Inflation Effects on Different Types of Expenditures: Expenditure Forecast Errors
(Percentage points)



Sources: IMF, World Economic Outlook database; and IMF staff calculations.
 Note: Figure includes only Group of Twenty countries that report data for all spending categories depicted. Bars report the difference between government expenditure, and its components for 2022, as a share of GDP, in the January 2022 *World Economic Outlook Update*, and those from the April 2023 *World Economic Outlook* database.

Figure 1.14. Difference in Projected and Actual Real Public Wage Growth
(Percentage points)



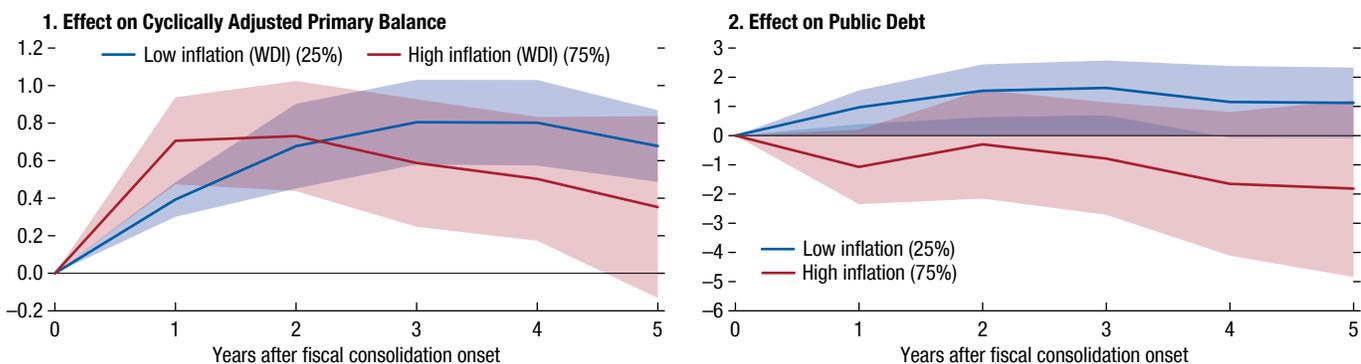
Sources: IMF, World Economic Outlook database; and IMF staff calculations.
Note: Bars plot the difference between the real public wage growth projected in the October 2019 *World Economic Outlook* and actual real public wage growth based on the April 2023 *World Economic Outlook*.

sector wages. Indexing public wages, pensions, and welfare payments may reduce uncertainty and compensate for losses in real incomes (see Chapter 2). However, pervasive indexation can harm public finances and make inflation more persistent—eventually requiring a more disruptive monetary and fiscal tightening.

In general, governments can prepare budgets consistent with inflation targets but incorporate some flexibility to respond to inflation surprises. The degree of real adjustments should be decided in the context of a budget set consistently with broader fiscal goals, while prioritizing different programs, including social benefits for vulnerable households. Automatic indexation of wages to inflation or other variables outside government control may lead to spending increases that are inconsistent with a government’s fiscal objectives (IMF 2016). Governments should preferably adopt systematic, rules-based, and regular benefit adjustment regimes that allow for some flexibility. Social benefits should typically be adjusted once a year, but in the current high-inflation environment, applying interim adjustments may be necessary to shield vulnerable households from significant losses in their purchasing power.

Large inflation surprises also complicate choices when governments must comply with expenditure rules. An expenditure rule expressed in nominal terms can imply large cuts in real government expenditures if inflation surprises on the upside. It may in some cases be appropriate to set up a rule this way, especially if reducing inflation requires curbing excess demand pressures, but it may also involve difficult policy choices. Some countries (for example, *Sweden*) already include safety margins in their budgets to

Figure 1.15. Effects of Fiscal Consolidation: High Inflation versus Low Inflation
(Percent of GDP)



Source: IMF staff calculations.
Note: Based on fiscal consolidations in 25 countries (15 advanced economies and 10 emerging market economies) from 1985 to 2016. Fiscal consolidation episodes and sizes are constructed using a news-based narrative approach from DeVries and others (2011), Alesina and others (2013), and David, Guajardo, and Yépez (2022). Coefficients measure the impact of fiscal consolidations on the cyclically adjusted primary balance and debt-to-GDP ratio in low- and high-inflation periods (defined as the 25th and 75th percentiles of Consumer Price Index inflation, respectively) using panel local projection estimations, controlling for two-way fixed effects and lags of real GDP growth and real GDP per capita. Shaded areas denote 90 percent confidence intervals for the respective scenarios. Standard errors are clustered at the country level.

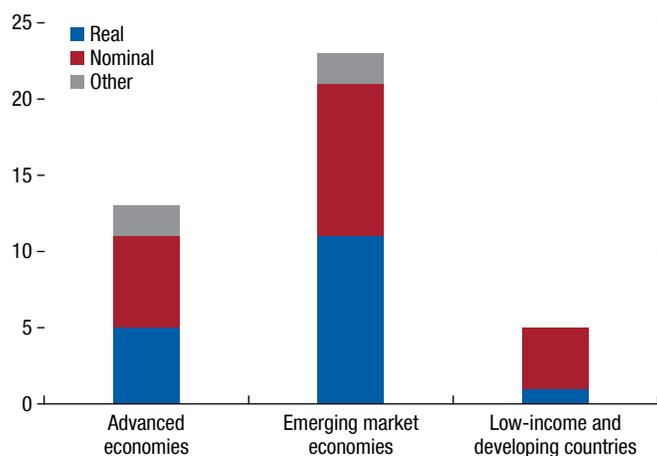
allow for growth and inflation surprises based on historical averages.

If expenditure limits are set in real terms, compliance is not as affected by the level of inflation. However, spending rules set in real terms may also be more complicated and less transparent in terms of how they account for inflation surprises. For example, in some countries, the degree of indexation allowed varies by type of spending, may be done with a lag, and may create space to increase other spending. Moreover, spending rules set in real terms may result in countries fully accommodating inflation surprises, making higher inflation more entrenched. Ceilings on real spending growth are relatively more frequent in emerging market economies than in other groups of economies (Figure 1.16). The 2016 expenditures rule in *Brazil* was set in real terms and is currently being revised. This 2016 rule had set a ceiling on federal government real primary expenditure, with some exclusions, and indicates that nominal expenditure can grow in line with inflation. In *Finland*, the rule sets annual limits to government expenditure for the four-year term of office of the government, with limits set in real terms for primary noncyclical expenditure.

Ultimately, fiscal rules may need to be designed for periods with broadly stable inflation and safety margins used to deal with upside surprises. In the context of the pandemic, countries also took advantage of fiscal rules being suspended or escape clauses being activated to adjust policies flexibly amid the different large shocks they faced.

More generally, as countries return to fiscal rules, it is timely to reflect on how to improve rule-based fiscal frameworks. Such frameworks should be designed with the right balance between having enough flexibility to adjust to shocks and being credible. Key elements of a revamped fiscal framework include feasible and stable medium-term fiscal plans with transparent fiscal anchors, flexibility to respond to shocks, risk-based rules that ensure a path to debt sustainability and buildup of fiscal buffers, and the strengthening of institutions to increase credibility and accountability (more transparency and upgraded independent fiscal councils). Shocks or surprises can then be accommodated within a well-defined framework depending on an assessment of risks and consistent with medium-term debt sustainability (Caselli and others 2022).

Figure 1.16. Number of Countries with Expenditure Rules as of 2022



Sources: IMF, Fiscal Rules Database (2022); and IMF staff calculations.

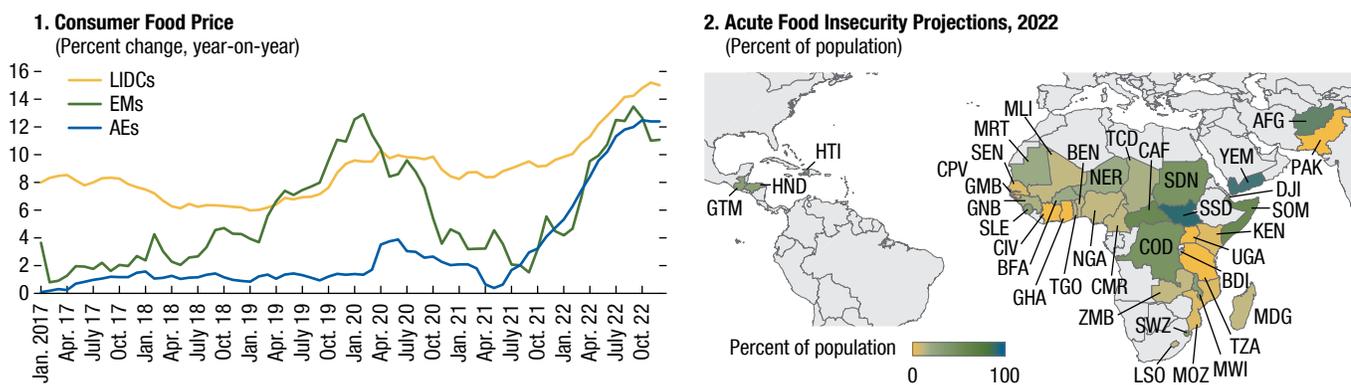
Ongoing Food and Energy Crises

Even as price pressures have subsided, countries have continued to cope with the aftermath of global food and energy price shocks and the high level of uncertainty surrounding the economic outlook and its fiscal implications. Governments have introduced a wide array of measures to mitigate the shocks (Amaglobeli and others 2023), and many of these measures have been extended in 2023.

Tackling Food Insecurity in Low-Income Developing Countries

The war in *Ukraine* has intensified price pressures in global food product markets in a context of already-soaring commodity prices and surging inflation from demand recovery and supply chain disruptions. Although global commodity food prices have fallen from their peak levels in mid-2022, domestic prices continue to be elevated, and the risks to food production will continue to threaten food price stability in 2023. The persistent conflict in *Ukraine* may further disrupt cereal production and prolong overly high costs of fertilizers.

Low-income developing countries continued to suffer the most from persistently high food price inflation throughout the pandemic (Figure 1.17, panel 1). Food accounts for a larger share of household consumption baskets in low-income countries. In addition, high reliance on imported food makes

Figure 1.17. Food Prices and Food Insecurity

Sources: Haver Analytics; Rother and others 2022; and IMF staff calculations.

Note: The map is from Rother and others (2022). Panel 2 includes data for 39 countries. The projection period varies by country between January 2022 and February 2023. See IPC Technical Manual Figure 27 for a detailed description of the classification system. The boundaries, colors, denominations, and any other information shown on the maps do not imply, on the part of the International Monetary Fund, any judgment on the legal status of any territory or any endorsement or acceptance of such boundaries. AEs = advanced economies; EMs = emerging markets; LDCs = low-income developing countries.

households in low-income countries vulnerable to movements in exchange rates.¹⁰ In many of these countries, high oil prices have exacerbated domestic food price inflation through their impact on transport and food distribution costs.

About 860 million people worldwide were estimated to be malnourished in August 2022, a steep increase from less than 800 million in 2021. Of these, 345 million people were suffering from acute food insecurity. Many live in sub-Saharan Africa, often in fragile and conflict-affected states (FAOSTAT 2023) (Figure 1.17, panel 2). Extreme weather events and conflicts (for example, those in *Chad*, *Somalia*, *Sudan*, and *Yemen* and in the north of *Mozambique*) also contribute to food insecurity by impeding domestic food production. Meanwhile, the coverage and adequacy of social safety nets is weak, and many of the countries most affected also face tight budget constraints. As a result, food insecurity is expected to peak at unprecedented levels in 2023 (World Bank 2023). Recent projections suggest that almost 8 percent of the world's population could still be facing hunger in 2030 (FAO and others 2022).

¹⁰The global food import bill increased by 10 percent year-over-year in 2022 alone, surpassing historical records (FAO and others 2022). The average import share of total wheat consumption in low-income countries is 80 percent, compared with 50 percent for other importing countries.

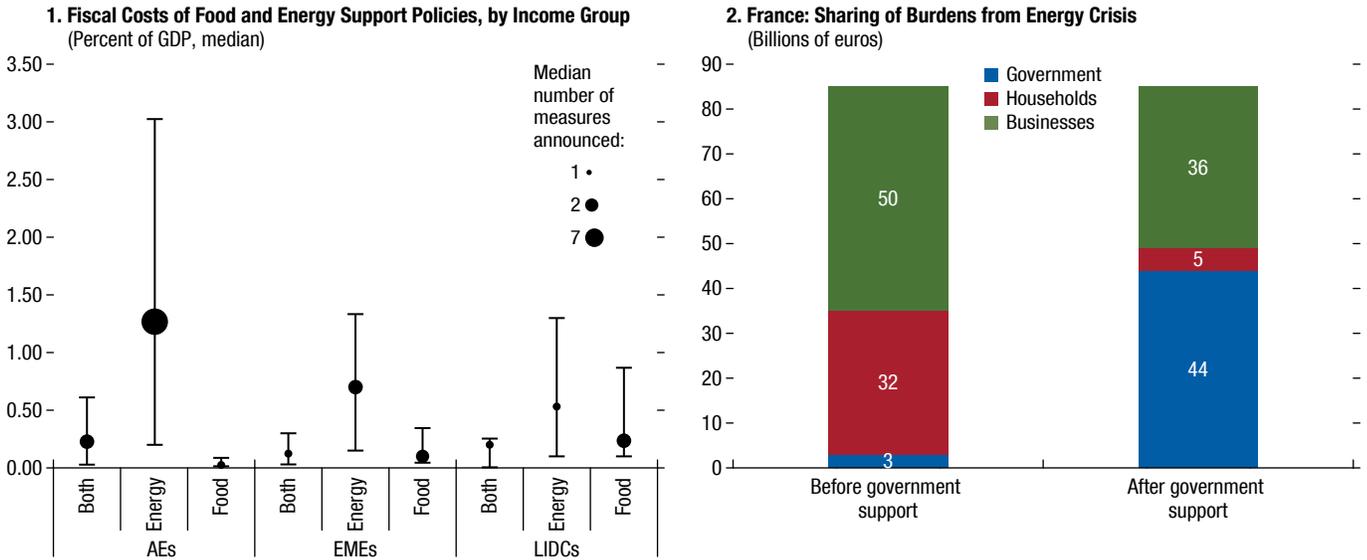
Strong and timely action across countries is necessary to mitigate the food crisis (April 2022 *Fiscal Monitor*). International humanitarian assistance, backed by the full funding of the World Food Programme, is crucial to adequately and swiftly help vulnerable households facing food insecurity. Effective fiscal policy measures at the domestic level should focus on improving social assistance while building resilient public infrastructure to improve poorer households' access to affordable food, facilitate expansion of climate-resilient agricultural production, and support quicker recovery from adverse climate events. The IMF's new food shock window under its Rapid Credit Facility and Rapid Financing Instrument is designed to help member countries fill the balance of payments gap associated with global food price shocks and to support the most vulnerable through feeding programs and cash and in-kind transfers.

From Energy Crisis to Clean Energy Transition

The softening of global energy prices is providing breathing room for governments, but risks remain. Ensuring energy security, while accelerating the green transition, remains a policy priority.

The large volatility in energy prices in the last two years led governments around the world to take measures to protect households. The International Energy Agency estimates global fossil fuel

Figure 1.18. Fiscal Costs of Energy Price Increases



Sources: Updated results of the DEFPA IMF Country Desk Survey from Amaglobeli and others (2023); Direction Générale du Trésor; and Ministry of the Green Transition. Note: In panel 1, whiskers reflect the 20th and 80th percentiles. Dots reflect the median and the number of policies announced. In panel 2, “Before government support” shows counterfactual sharing of the energy cost burden among economic agents. The projected increase in the energy price for 2022 uses futures price as of August 2022, with France’s imported energy mix incorporated. “After government support” shows projected sharing after measures introduced are incorporated. Energy consumption data are from a 2019 survey by Ministry of the Green Transition, and the share is assumed to remain the same. AEs = advanced economies; EMEs = emerging market economies; LIDCs = low-income developing countries.

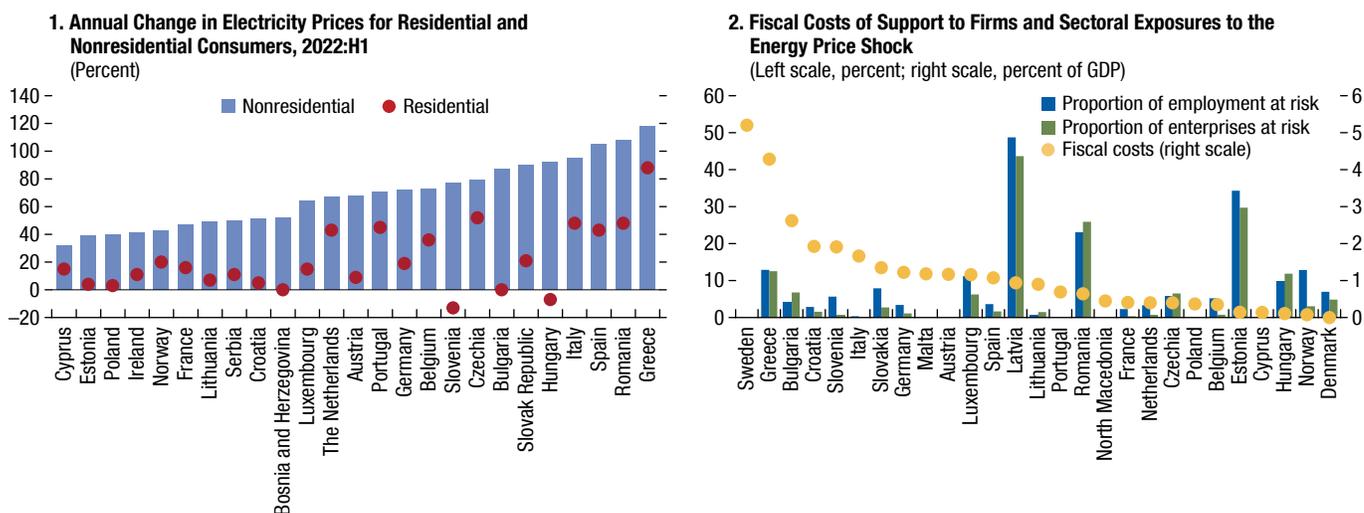
consumption subsidies doubled from the previous year to an all-time high of \$1 trillion.¹¹ In addition, countries spent an additional 0.5 trillion on other spending measures to help households (more than two-thirds of them in Europe). Countries with existing energy subsidies have faced substantial fiscal costs, which exceeded 2 percent of GDP in 2022 alone for some countries (*Bolivia, Cameroon, Ecuador, Iraq, Malaysia, Nigeria, Uzbekistan*). Newly announced policy measures have encompassed targeted measures (*Argentina, Georgia, Thailand*) and untargeted measures (*Chile, Ecuador, Jordan, Oman*) to dampen the impact of international prices on domestic prices (Figure 1.18, panel 1). Suppressing price signals through energy subsidies can hamper global energy security by continuing to encourage higher energy demand, pushing energy prices higher for other countries. The focus should be on strengthening social safety nets, including targeted cash transfers, and on measures to promote energy efficiency. Countries also need to accelerate their efforts to transition to renewable energy over time.

¹¹The subsidies are mainly concentrated in emerging market and developing economies, and more than half were in fossil-fuel exporting countries (IEA 2023).

Europe provides a stark example of the effects of the energy crisis, as well as lessons on the effectiveness of policies, as the shock has been particularly severe owing to European countries’ reliance on Russian natural gas. Contrary to fears of a large drag on businesses, however, economies in European countries have thus far shown resilience. Energy consumption has fallen—for example, electricity consumption decreased an average of 7 percent across European countries in the fourth quarter of 2022 compared with the same period in 2021,¹² reflecting various factors, including increases in energy prices (which provide incentives for energy efficiency) and unusually warm weather. Major energy supply disruptions, such as power outages and rationing, have largely been avoided. Increases in energy prices have disproportionately affected energy-intensive sectors and firms with low energy efficiency. Manufacturing activity has also slowed in energy-intensive sectors compared with other sectors. But overall, economic activity and labor markets have remained resilient.

The more-benign-than-expected effects of the energy crisis have also reflected significant measures

¹²According to the European Network of Transmission System Operators for Electricity.

Figure 1.19. Impact of Energy Cost Increases for Firms and Fiscal Costs

Sources: Panel 1. Eurostat; Panel 2. Eurostat (bars), Arregui and others 2022 (yellow dots); and IMF staff calculations.

Note: In panel 1, changes are calculated based on annual electricity prices for residential and nonresidential consumers in euros. Panel 2 uses the country-level two-digit NACE2 industry classification for manufacturing and construction sectors. See Online Annex 1.3 for details.

taken by governments, such as procuring alternative sources of energy, as well as shielding—to some degree—households and firms from the steep rise in energy prices. In some cases, governments have shouldered a large share of the fiscal burden, as in the case of *France* (Figure 1.18, panel 2). Fiscal costs related to the energy crises were sizable for all income groups. For European countries, these costs are expected to remain elevated in 2022–23 at an average of 2–3 percent of GDP. The size of the energy bill reflects not only the unusually large shock but also the implementation of broad-based and untargeted measures (for example, intervention in wholesale or retail energy markets and end-user price cuts through value-added taxes and other fees and taxes; see Arregui and others 2022).

Although countries initially directed support mainly to households, over time they have expanded their support for firms, which experienced a larger price shock than households (Figure 1.19, panel 1). Some countries have provided support to ailing energy companies to avoid supply disruptions (*Finland, Sweden*). Whereas some countries have supported small and medium enterprises or firms in specific nonenergy sectors (*France, Luxembourg, Norway*), others have subsidized energy or reduced ad valorem taxes for all firms (*Germany, Greece, United Kingdom*). A few countries have provided

support conditional on efforts to increase energy efficiency (*Bulgaria, Luxembourg*).

One question is whether countries have appropriately designed their support to firms in a way that reflects the size of the shock and potential economic risks (for example, loss of jobs). A cross-country comparison reveals that the fiscal cost of countries' support measures to firms has not been proportionate to countries' exposures to energy price increases (Figure 1.19, panel 2; see also Online Annex 1.3 for details). In addition, the capacity of firms to cope with energy price increases differs from that of households and across sectors. Unlike during the pandemic, when public health measures disrupted normal business operations, firms have margins of adjustment to dampen increases in energy costs. Firms can pass cost increases on to consumers by adjusting prices, reallocating inputs for production, or switching to alternative energy sources (Bialek, Schaffranka, and Schnitzer 2023). Early evidence shows that firms have been adapting to energy price shocks by swiftly increasing investments in energy efficiency and renewable technologies (European Investment Bank and Ipsos Public Affairs 2022; Ifo Institute 2022).

The recent crisis offers some general lessons on the decision of when and how to support firms. In general, allowing energy prices to fluctuate creates incentives

for firms to adjust their energy demand. Moreover, governments can take actions to ensure energy security, including finding additional sources of energy and accelerating transition to renewable energy, and they did so in the recent crisis. But other reasons have also been given to justify government support:

- *Preventing large-scale bankruptcies* to reduce the risk of economic disruption. If firms pass prices through to final products, government measures that temporarily shield firms from price shocks just delay the inevitable transition to renewable sources of energy at a cost to the budget. If governments decide in the face of large shocks to support sectors that are more vulnerable, such support should be temporary and linked with incentives to promote energy efficiency and transition to renewable energy sources.
- *Dampening price pressures in a high-inflation environment*, as passing high energy costs through to final products may have second-round effects and add price pressures. Such an approach assumes the energy shock is short-lived, because it would otherwise risk prolonging the inflation episode. In addition, measures that shield firms from higher energy prices can carry large immediate budgetary costs or contingent liabilities (for example, forcing electricity companies to take the losses).
- *Maintaining the competitiveness of domestic firms*, given the wedge between domestic energy prices and those of international competitors when energy price shocks have uneven global effects. To boost competitiveness in the face of a more persistent shock, government support should focus on productivity-enhancing measures and encourage firms to be energy efficient, rather than providing temporary relief through price-distorting measures.

Policy Conclusions

Fiscal policy has entered a period of normalization, with the priority turning to ensuring a consistent policy mix to deliver price and financial stability and reduce debt vulnerabilities.

Fiscal deficits and public debt ratios have fallen since 2020, and inflation surprises have helped the adjustment of public balance sheets in some countries. But relying on inflation to keep reducing debt is not a sustainable approach, as bondholders would demand

higher interest rates to compensate for higher and more volatile inflation. Moreover, deficits and debts generally remain above prepandemic levels, which means that additional fiscal efforts will be needed in the years ahead.

In the present environment of high inflation, rising interest rates, and elevated debt, it is critical that fiscal and monetary policies are aligned to ensure price and financial stability. In many countries, fiscal policy should tighten to help ease inflation pressures, thereby allowing central banks to raise interest rates by less than otherwise (see Chapter 2). Such fiscal restraint should protect priority areas and manage heightened social demands from the cost-of-living crisis amid a slowdown in economic growth. Even so, spending pressures will need to be contained, as different groups may seek to be compensated for past inflation. Full compensation could make inflation more persistent and require additional monetary and fiscal tightening in the future. An overall fiscal tightening that protects the vulnerable through targeted measures can help countries achieve an appropriate policy mix (see Chapter 2).

Given heightened uncertainty, fiscal policy should stand ready to respond in case risks materialize. If elevated inflation proves more persistent, the policy mix will need to remain tighter for longer. Should systemic financial stress arise, fiscal policy may need to intervene swiftly to facilitate the resolution process and minimize its economic costs, while mitigating moral hazard (October 2016 *Fiscal Monitor*). Governance principles, supported by strong insolvency and bankruptcy procedures, should be applied in the decision-making process to safeguard public funds. In the event that economic growth turns out significantly weaker than expected and labor market conditions deteriorate, governments should allow automatic stabilizers to work, especially where inflation is under control and fiscal space is available.

Over the medium term, the challenge will be to reduce debt vulnerabilities and rebuild fiscal buffers. Projections suggest that modest fiscal adjustments will not be enough to prevent a rise in debt in many countries, especially in some large advanced and emerging market economies. Pressure on public sector balance sheets could be exacerbated from support to the private sector in a scenario of heightened financial turbulence. Building a credible medium-term fiscal

framework can guide the process and could include revamped fiscal rules, which many countries are considering (see Box 1.2).¹³ In particular,

- Countries can enhance medium-term fiscal frameworks to combine more flexible rules or targets with strengthened institutions. A credible and well-communicated fiscal framework that promotes consistent macroeconomic policies and addresses concerns with debt sustainability will be critical. Interactions between fiscal and monetary policy should be considered, implying a need for fiscal policy to support monetary tightening in view of large inflation surprises.
- Fiscal plans should put a greater emphasis on risk assessment. Medium-term fiscal policy should be anchored by debt sustainability objectives and build up sufficient fiscal buffers over time, consistent with the expanded role of fiscal policy in times of crises. Risk-based frameworks should (1) provide incentives to build up buffers over time, even when there is no immediate high risk of debt distress; (2) prescribe more ambitious fiscal consolidation paths for countries with high debt sustainability risks; and (3) incorporate well-defined escape clauses to allow greater flexibility when countries are hit by shocks.

Low-income countries currently face severe challenges. Increasing revenue collection is necessary to restore fiscal sustainability and help achieve the Sustainable Development Goals. In many countries, tax systems and administration have improved significantly since the early 1990s, with the introduction of value-added taxes, large taxpayer units, and, more recently, electronic filing. However, revenue growth has disappointed in general (Box 1.1), which calls for rethinking tax systems and boosting tax revenues by adopting and implementing medium-term revenue strategies. These should include reducing levels of informality, establishing effective reporting and auditing systems in synergy with digitalization efforts, and improving incentives for tax compliance in a cost-effective manner. Tax policy settings need to be redesigned, revenue agencies reformed, and legal frameworks strengthened to build efficient, equitable, and effective tax policy frameworks.

¹³Two recent IMF staff papers discuss these revamped rules. Davoodi and others (2022) provide an account of recent trends relating to fiscal rules and fiscal councils, and Caselli and others (2022) discuss the return to fiscal rules.

The recent energy crisis has highlighted the need to press ahead with an energy transition consistent with climate goals and energy security. The energy crisis should provide momentum for countries to accelerate a clean energy transition with a faster shift to low-carbon energy (for example, the EU Innovation Fund for demonstrating innovative low-carbon technologies) and more resilient and efficient energy systems.

The COVID-19 pandemic and increased geopolitical tensions have tested international relations and raised questions about the benefits of global integration (Aiyar and others 2023). Now more than ever, however, international cooperation is crucial to tackle these urgent global challenges. Countries should avoid unilateral actions, such as the introduction of export restrictions. Moreover, international cooperation is needed to help highly indebted low-income developing economies. It is urgent to strengthen the international financial architecture, especially in the areas of debt resolution and enhancing the Global Financial Safety Net. The latter is a set of institutions and mechanisms that provide insurance against crises and financing to mitigate their impact. In some cases, a comprehensive approach that encompasses a country's fiscal consolidation efforts as well as debt restructuring—renegotiation of terms of servicing of existing debt—may be necessary.¹⁴

Regarding the climate agenda, global coordination of carbon pricing, investment in renewable energy, subsidies to promote a green transition, and data transparency and sharing are needed for a number of reasons, among them to avoid trade tensions. International agreements on climate change mitigation and on ensuring financing for the climate transition and adaptation, especially in low-income countries, should be priorities for the global community. Furthermore, international cooperation on taxation, including in the areas of corporate taxation, transparency, and carbon pricing, can encourage necessary investments by mobilizing resources to address common concerns that countries face around the world (April 2022 *Fiscal Monitor*; see also de Mooij, Klemm, and Waerzeggers 2023).

¹⁴See Chapter 3 of the April 2023 *World Economic Outlook* for a discussion of debt restructuring and the effectiveness of reductions in the face value of debt, particularly, under coordinated and large-scale initiatives for debt reductions such as the G20 Common Framework for highly indebted low-income countries.

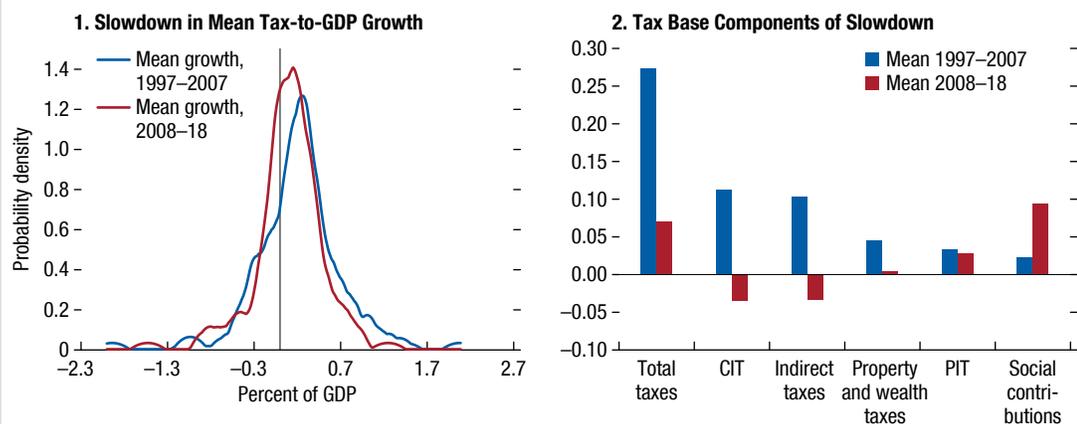
Box 1.1. Improving Tax Capacity in Emerging Market and Developing Economies

In the decade before the COVID-19 pandemic, countries made mixed progress in mobilizing domestic revenue, including revenue to fund the Sustainable Development Goals agenda. On average, tax collection in emerging market and developing economies stagnated after the global financial crisis, mostly owing to slow progress in personal income tax collection (against the backdrop of stubbornly large informal sectors), as well as weak corporate income and indirect tax performance (Figures 1.1.1 and 1.1.2).

Difficulties in implementing the significant transformations in emerging market and developing economies over the past 30 years can partly account for the slower progress in mobilizing revenues. Since the 1990s, a number of countries have reshaped their tax systems, changing both their tax policies—by

introducing value-added taxes, for instance—and their tax administration practices—by segmenting taxpayers according to risk, including by establishing large taxpayer units (see Online Annex 1.1) and initiating the expansion of electronic services. Emerging market and developing economies that established large taxpayer units are found to have increased their total-tax-to-GDP ratios from 0.5 percent of GDP to as much as 3.6 percent of GDP after about two decades of the units’ operations. As reform waves have abated, however, translating new tax systems into higher tax collection has often been undermined by unstable political leadership and frequent staff turnover, inadequate human and financial resources, and the lack of a comprehensive vision of tax capacity as part of state capacity (Gaspar, Jaramillo, and Wingender 2016).

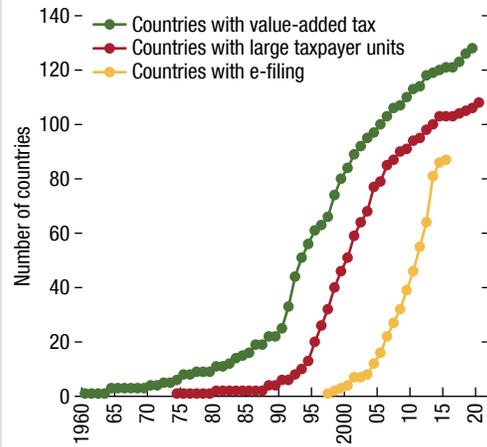
Figure 1.1.1. Low Growth in Tax Revenues and Its Drivers



Sources: Bachas and others 2022; and IMF staff calculations.
 Note: In panel 1, x-axis is percent of GDP, y-axis is the density. In panel 2, bars reflect decade average of year fixed effects in a panel regression of the yearly change in the tax-to-GDP ratio on year and country fixed effects, with each country weighted by its share of GDP in the same year. CIT = corporate income tax; PIT = personal income tax.

Box 1.1 (continued)

Figure 1.1.2. Tax Reform Waves in Emerging Market and Developing Economies



Sources: Bachas, Fattal Jaef, and Jensen 2019; International Survey on Revenue Administration; Organisation for Economic Co-operation and Development; World Bank; and IMF staff calculations.

Climate change, aging, digitalization, and the increasing international activity of taxpayers highlight the importance of building skilled and responsive administrations that can meet complex challenges. One such comprehensive approach to reform is to adopt a medium-term revenue strategy. Currently, 26 countries are engaging with such strategies. The experiences of *Papua New Guinea* and *Uganda*, among the earliest adopters, show the importance of seeking broad consensus with civil society and ensuring cooperation across all parts of government.

Box 1.2. Revamping Fiscal Rules and Fiscal Frameworks

Many countries are considering reforming their fiscal frameworks as they emerge from the COVID-19 pandemic. The global health and economic crisis stemming from the pandemic led to a fiscal response of unprecedented magnitude worldwide, with many countries activating escape clauses or suspending their fiscal rules to create flexibility. Now countries need to decide whether to return to fiscal rules and, if so, how fast and which ones.

The European Union's extension of its escape clause until 2023 provides a window of opportunity to reform the union's fiscal governance framework. The European Commission's reform guidance, published in November 2022, aims to simplify the current framework by reducing the number of indicators and rules.¹ It proposes a move toward a risk-based framework centered on comprehensive debt sustainability analysis, binding multi-annual fiscal plans, and the introduction of a single operational tool focused on (net primary) expenditures. Countries would be required to ensure that debt is on a plausible debt reduction path at the end of a four-year and seven-year adjustment period for countries with "substantial" and "moderate" debt challenges, respectively. The proposal also creates incentives for investment and reforms that enhance sustainable growth and address common EU priorities

¹For instance, the revised framework would eliminate the procedure for significant deviation from the medium-term objective for the structural balance, as well as the one-twentieth debt reduction rule, which currently implies an unrealistic pace of debt reduction for many countries.

(by postponing the debt reduction requirement) and recognizes the need to improve compliance by strengthening national ownership through a greater role for national fiscal councils, in addition to enhancing "smart" ex post enforcement.

A number of other countries have initiated reforms of their fiscal frameworks as their situations have continued to normalize. After a two-year suspension of its fiscal rule in 2020–21, *Colombia* enhanced its fiscal framework in 2021 by outlining a transition path toward a structural primary balance rule with a new debt anchor and by introducing an autonomous fiscal rule oversight committee (the *Comité Autónomo de la Regla Fiscal*). *Uruguay* introduced an expenditure rule in 2020 as a new pillar of its fiscal framework and established a committee of experts and advisory council. Also in 2020, *Ecuador* revised its expenditure rule and introduced new rules regarding budget balance and debt that reflect its updated medium-term fiscal strategy. In 2022, *Chile* introduced a new debt sustainability objective and escape clause applicable only after 2026 to signal commitment to a gradual fiscal consolidation path. Several other countries have transitioned to a rules-based fiscal responsibility framework in the aftermath of COVID-19. *Antigua and Barbuda* adopted expenditure, revenue, and debt rules in 2021. Also in 2021, *Dominica* established a debt ceiling of 60 percent of GDP, to be achieved by 2035, and set a primary balance rule of maintaining a primary surplus of 2 percent of GDP in all years when debt exceeds 60 percent. Discussions surrounding fiscal framework reform are ongoing in many more countries.

References

- Aiyar, Shekhar, Jiaqian Chen, Christian Ebeke, Roberto Garcia-Saltos, Tryggvi Gudmundsson, Anna Ilyina, Alvar Kangur, and others. 2023. “Goeconomic Fragmentation and the Future of Multilateralism.” IMF Staff Discussion Note 2023/001, International Monetary Fund, Washington, DC. www.imf.org/en/Publications/Staff-Discussion-Notes/Issues/2023/01/11/Geo-Economic-Fragmentation-and-the-Future-of-Multilateralism-527266.
- Alesina, Alberto, and Silvia Ardagna. 2013. “The Design of Fiscal Adjustments.” *Tax Policy and the Economy* 27(1): 19–67. <https://doi.org/10.1086/671243>.
- Amaglobeli, David, Mengfei Gu, Emine Hanedar, Gee Hee Hong, and Céline Thévenot. 2023. “Policy Responses to High Energy and Food Prices.” IMF Working Paper 23/074, International Monetary Fund, Washington, DC. <https://www.imf.org/en/Publications/WP/Issues/2023/03/24/Policy-Responses-to-High-Energy-and-Food-Prices-531343>.
- Arregui, Nicolas, Oya Celasun, Dora Iakova, Aiko Mineshima, Victor Mylonas, Frederik Toscani, Yu Ching Wong, Li Zeng, and Jing Zhou. 2022. “Targeted, Implementable, and Practical Energy Relief Measures for Households in Europe.” IMF Working Paper 22/262, International Monetary Fund, Washington, DC. www.imf.org/en/Publications/WP/Issues/2022/12/17/Targeted-Implementable-and-Practical-Energy-Relief-Measures-for-Households-in-Europe-526980.
- Bachas, Pierre, Roberto N. Fattal Jaef, and Anders Jensen. 2019. “Size-Dependent Tax Enforcement and Compliance: Global Evidence and Aggregate Implications.” *Journal of Development Economics* 140: 203–22. <https://doi.org/10.1016/j.jdeveco.2019.05.001>.
- Bachas, Pierre, Matthew H. Fisher-Post, Anders Jensen, and Gabriel Zucman. 2022. “Globalization and Factor Income Taxation.” NBER Working Paper 29819, National Bureau of Economic Research, Cambridge, MA. <https://www.nber.org/papers/w29819>.
- Bandeira, Guilherme, Evi Pappa, Rana Sajedi, and Eugenia Vella. 2018. “Fiscal Consolidation in a Low Inflation Environment: Pay Cuts versus Lost Jobs.” *International Journal of Central Banking*, 14: 7–52. <https://www.ijcb.org/journal/ijcb18q2a1.htm>.
- Battersby, Bryn, Raphael Espinoza, Jason Harris, Gee Hee Hong, Sandra Lizarazo, Paulo Mauro, and Amanda Sayegh. 2022. “The State as Financier of Last Resort.” IMF Staff Discussion Note 2022/003, International Monetary Fund, Washington, DC. www.imf.org/en/Publications/Staff-Discussion-Notes/Issues/2022/10/11/The-State-as-Financier-of-Last-Resort-523706.
- Bialek, Sylwia, Claudia Schaffranka, and Monika Schnitzer. 2023. “The Energy Crisis and the German Manufacturing Sector: Structural Change but No Broad Deindustrialization to Be Expected.” *VoxEU*, January 17. <https://cepr.org/voxeu/columns/energy-crisis-and-german-manufacturing-sector-structural-change-no-broad>.
- Blejer, Mario I., and Adrienne Cheasty. 1991. “The Measurement of Fiscal Deficits: Analytical and Methodological Issues.” *Journal of Economic Literature* 29(4): 1644–78. <https://www.jstor.org/stable/2727793>.
- Bova, Elva, Marta Ruiz-Arranz, Frederik Toscani, and H. Elif Ture. 2016. “The Fiscal Costs of Contingent Liabilities: A New Dataset.” IMF Working Paper 16/16, International Monetary Fund, Washington, DC. www.imf.org/en/Publications/WP/Issues/2016/12/31/The-Fiscal-Costs-of-Contingent-Liabilities-A-New-Dataset-43685.
- Caselli, Francesca, Hamid R. Davoodi, Carlos Goncalves, Gee Hee Hong, Andresa Lagerborg, Paulo A. Medas, Anh D.M. Nguyen, and Jiae Yoo. 2022. “The Return to Fiscal Rules.” IMF Staff Discussion Note 2022/002, International Monetary Fund, Washington, DC. <https://doi.org/10.5089/9798400219467.006>.
- David, Antonio C., Jaime Guajardo, and Juan F. Yépez. 2022. “The Rewards of Fiscal Consolidations: Sovereign Spreads and Confidence Effects.” *Journal of International Money and Finance* 123: 102602. <https://doi.org/10.1016/j.jimonfin.2022.102602>.
- Davoodi, Hamid R., Paul Elger, Alexandra Fotiou, Daniel Garcia-Macia, Xuehui Han, Andresa Lagerborg, W. Raphael Lam, and Paulo Medas. 2022. “Fiscal Rules and Fiscal Councils: Recent Trends and Performance during the COVID-19 Pandemic.” IMF Working Paper 22/11, International Monetary Fund, Washington, DC. www.imf.org/en/Publications/WP/Issues/2022/01/21/Fiscal-Rules-and-Fiscal-Councils-512128.
- DeMooij, Ruud, Alexander Klemm, and Christophe Waerzeggers. 2023. “The Unfinished Business of International Business Tax Reform.” *IMF Blog*, February 16. <https://www.imf.org/en/Blogs/Articles/2023/02/16/the-unfinished-business-of-international-business-tax-reform>.
- DeVries, Pete, Jaime Guajardo, Daniel Leigh, and Andrea Pescatori. 2011. “A New Action-Based Database of Fiscal Consolidation,” IMF Working Paper 11/128, International Monetary Fund, Washington, DC.
- Escolano, Julio. 2010. “A Practical Guide to Public Debt Dynamics, Fiscal Sustainability, and Cyclical Adjustment of Budgetary Aggregates.” IMF Technical Notes and Manuals, International Monetary Fund, Washington, DC.
- European Investment Bank and Ipsos Public Affairs. 2022. *EIB Investment Survey 2022: European Union Overview*. Luxembourg: European Investment Bank.
- Food and Agriculture Organization (FAO), International Fund for Agricultural Development (IFAD), United Nations Children’s Fund (UNICEF), World Food Programme (WFP), and World Health Organization (WHO). 2022. *The State of Food Security and Nutrition in the World 2022: Repurposing Food and Agricultural Policies to Make Healthy Diets More Affordable*. Rome: Food and Agriculture Organization.

- Gaspar, Vitor, Laura Jaramillo, and Philippe Wingender. 2016. “Political Institutions, State Building, and Tax Capacity: Crossing the Tipping Point.” IMF Working Paper 16/233, International Monetary Fund, Washington, DC. www.imf.org/external/pubs/ft/wp/2016/wp16233.pdf.
- Gaspar, Vitor, Paolo Medas, and Roberto Perrelli. 2022. “Riding the Global Debt Rollercoaster.” *IMF Blog*, December 12. www.imf.org/en/Blogs/Articles/2022/12/12/riding-the-global-debt-rollercoaster
- Han, Xuehui, Paolo Mauro, and John Ralyea. Forthcoming. “Fiscal Anatomy of Two Crises and an Interlude.” International Monetary Fund, IMF Working Paper, Washington, DC.
- Ifo Institute. 2022. “Many Industrial Companies in Germany Cut Gas Consumption without Curbing Production.” Press Release, November 22. www.ifo.de/en/press-release/2022-11-22/many-industrial-companies-germany-cut-gas-consumption-without-curbing.
- International Energy Agency (IEA). 2023. “Fossil Fuels Consumption Subsidies 2022 – Analysis.” IEA Policy Report, International Energy Agency, Paris.
- International Monetary Fund (IMF). 2016. “Managing Government Compensation and Employment—Institutions, Policies, and Reform Challenges.” Policy Paper, Washington, DC. www.imf.org/en/Publications/Policy-Papers/Issues/2016/12/31/Managing-Government-Compensation-and-Employment-Institutions-Policies-and-Reform-Challenges-PP5044.
- International Monetary Fund (IMF). 2022. “Global Debt Monitor.” IMF Fiscal Affairs Department, Washington, DC. www.imf.org/-/media/Files/Conferences/2022/12/2022-12-12-global-debt-monitor.aspx.
- Rother, Björn, Sebastian Sosa, Daehaeng Kim, Lukas Kohler, Gaëlle Pierre, Naoya Kato, Majdi Debbich, and others. 2022. “Tackling the Global Food Crisis: Impact, Policy Response, and the Role of the IMF.” IMF Note 2022/004, International Monetary Fund, Washington, DC.
- Tanzi, Vito, Mario I. Blejer, and Mario I. Teijeiro. 1987. “Inflation and the Measurement of Fiscal Deficits.” *IMF Staff Papers* 34(4): 711–38. <https://doi.org/10.2307/3867195>.
- World Bank. 2023. “Food Security Update.” <https://thedocs.worldbank.org/en/doc/40ebbf38f5a6b68bfc11e5273e1405d4-0090012022/related/Food-Security-Update-LXXVII-January-26-2023.pdf>