INTERNATIONAL MONETARY FUND

WORLD ECONOMIC OUTLOOK

The Great Lockdown

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A number of assumptions have been adopted for the projections presented in the *World Economic Outlook* (WEO). It has been assumed that real effective exchange rates remained constant at their average levels during February 17 to March 16, 2020, except for those for the currencies participating in the European exchange rate mechanism II (ERM II), which are assumed to have remained constant in nominal terms relative to the euro; that established policies of national authorities will be maintained (for specific assumptions about fiscal and monetary policies for selected economies, see Box A1 in the Statistical Appendix); that the average price of oil will be $35.61 a barrel in 2020 and $37.87 a barrel in 2021 and will remain unchanged in real terms over the medium term; that the six-month London interbank offered rate (LIBOR) on US dollar deposits will average 0.7 percent in 2020 and 0.6 percent in 2021; that the three-month euro deposit rate will average –0.4 percent in 2020 and 2021; and that the six-month Japanese yen deposit rate will yield, on average, –0.1 percent in 2020 and 2021. These are, of course, working hypotheses rather than forecasts, and the uncertainties surrounding them add to the margin of error that would, in any event, be involved in the projections. The estimates and projections are based on statistical information available through April 7, 2020.

The following conventions are used throughout the WEO:

. . . to indicate that data are not available or not applicable;

– between years or months (for example, 2019–20 or January–June) to indicate the years or months covered, including the beginning and ending years or months; and

/ between years or months (for example, 2019/20) to indicate a fiscal or financial year.

"Billion" means a thousand million; "trillion" means a thousand billion.

"Basis points" refers to hundredths of 1 percentage point (for example, 25 basis points are equivalent to ¼ of 1 percentage point).

Data refer to calendar years, except in the case of a few countries that use fiscal years. Please refer to Table F in the Statistical Appendix, which lists the economies with exceptional reporting periods for national accounts and government finance data for each country.

For some countries, the figures for 2019 and earlier are based on estimates rather than actual outturns. Please refer to Table G in the Statistical Appendix, which lists the latest actual outturns for the indicators in the national accounts, prices, government finance, and balance of payments indicators for each country.

What is new in this publication:

- Due to the high level of uncertainty in current global economic conditions, the April 2020 WEO database and statistical tables contain only these indicators: real GDP growth, consumer price index, current account balance, unemployment, per capita GDP growth, and fiscal balance. Projections for these indicators are provided only through 2021.
- The Timorese authorities have revised the compilation methodology of GDP and, under the new classification, oil and gas revenue before September 2019, which was previously classified as export in national accounts, is now classified as primary income.
- As of February 1, 2020, the United Kingdom is no longer part of the European Union. Data for the United Kingdom are no longer included in the European Union composites.

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- If no source is listed on tables and figures, data are drawn from the WEO database.
- When countries are not listed alphabetically, they are ordered on the basis of economic size.
- Minor discrepancies between sums of constituent figures and totals shown reflect rounding.

As used in this report, the terms "country" and "economy" do not in all cases refer to a territorial entity that is a state as understood by international law and practice. As used here, the term also covers some territorial entities that are not states but for which statistical data are maintained on a separate and independent basis.

Composite data are provided for various groups of countries organized according to economic characteristics or region. Unless noted otherwise, country group composites represent calculations based on 90 percent or more of the weighted group data.

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PREFACE

The analysis and projections contained in the *World Economic Outlook* are integral elements of the IMF's surveillance of economic developments and policies in its member countries, of developments in international financial markets, and of the global economic system. The survey of prospects and policies is the product of a comprehensive interdepartmental review of world economic developments, which draws primarily on information the IMF staff gathers through its consultations with member countries. These consultations are carried out in particular by the IMF's area departments—namely, the African Department, Asia and Pacific Department, European Department, Middle East and Central Asia Department, and Western Hemisphere Department—together with the Strategy, Policy, and Review Department; the Monetary and Capital Markets Department; and the Fiscal Affairs Department.

The analysis in this report was coordinated in the Research Department under the general direction of Gita Gopinath, Economic Counsellor and Director of Research. The project was directed by Gian Maria Milesi-Ferretti, Deputy Director, Research Department; Malhar Nabar, Division Chief, Research Department; and Oya Celasun, Division Chief, Research Department and Head of IMF's Spillover Task Force.

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Joseph Procopio from the Communications Department led the editorial team for the report, with production and editorial support from Christine Ebrahimzadeh, and editorial assistance from Lucy Scott Morales, James Unwin, The Grauel Group, and Vector Talent Resources.

The analysis has benefited from comments and suggestions by staff members from other IMF departments, as well as by Executive Directors following their discussion of the report on April 7, 2020. However, both projections and policy considerations are those of the IMF staff and should not be attributed to Executive Directors or to their national authorities.

FOREWORD

The world has changed dramatically in the three months since our last *World Economic Outlook* update on the global economy. A pandemic scenario had been raised as a possibility in previous economic policy discussions, but none of us had a meaningful sense of what it would look like on the ground and what it would mean for the economy. We now encounter a grim reality, where exponential growth of contagion means 100 infected individuals become 10,000 in a matter of a few days. Tragically, many human lives are being lost and the virus continues to spread rapidly across the globe. We owe a huge debt of gratitude to the medical professionals and first responders who are working tirelessly to save lives.

This crisis is like no other. First, the shock is large. The output loss associated with this health emergency and related containment measures likely dwarfs the losses that triggered the global financial crisis. Second, like in a war or a political crisis, there is continued severe uncertainty about the duration and intensity of the shock. Third, under current circumstances there is a very different role for economic policy. In normal crises, policymakers try to encourage economic activity by stimulating aggregate demand as quickly as possible. This time, the crisis is to a large extent the consequence of needed containment measures. This makes stimulating activity more challenging and, at least for the most affected sectors, undesirable.

The forecast for the global economy laid out in this report reflects our current understanding of the path of the pandemic and the public health measures required to slow the spread of the virus, protect lives, and allow health care systems to cope. In this regard, we have benefited from numerous conversations with epidemiologists, public health experts, and infectious disease specialists working on therapies for COVID-19. However, there remains considerable uncertainty around the forecast, the pandemic itself, its macroeconomic fallout, and the associated stresses in financial and commodity markets.

It is very likely that this year the global economy will experience its worst recession since the Great Depression, surpassing that seen during the global financial crisis a decade ago. The Great Lockdown, as one might call it, is projected to shrink global growth dramatically. A partial recovery is projected for 2021, with above-trend growth rates, but the level of GDP will remain below the pre-virus trend, with considerable uncertainty about the strength of the rebound. Much worse growth outcomes are possible and maybe even likely. This would follow if the pandemic and containment measures last longer, emerging and developing economies are even more severely hit, tight financial conditions persist, or if widespread scarring effects emerge due to firm closures and extended unemployment.

This crisis will need to be dealt with in two phases: a phase of containment and stabilization followed by the recovery phase. In both phases public health and economic policies have crucial roles to play. Quarantines, lockdowns, and social distancing are all critical for slowing transmission, giving the health care system time to handle the surge in demand for its services and buying time for researchers to try to develop therapies and a vaccine. These measures can help avoid an even more severe and protracted slump in activity and set the stage for economic recovery.

Increased health care spending is essential to ensure health care systems have adequate capacity and resources. Special dispensations for medical professionals—who are on the frontlines of combating the pandemic—should be considered, including, for example, education allowances for their families or generous survivor benefits.

While the economy is shut down, policymakers will need to ensure that people are able to meet their needs and that businesses can pick up once the acute phases of the pandemic pass. This requires substantial targeted fiscal, monetary, and financial measures to maintain the economic ties between workers and firms and lenders and borrowers, keeping intact the economic and financial infrastructure of society. For example, in emerging market and developing economies with large informal sectors, new digital technologies may be used to deliver targeted support. It is

encouraging that policymakers in many countries have risen to this unprecedented challenge by swiftly adopting a broad range of measures.

Broad-based stimulus and liquidity facilities to reduce systemic stress in the financial system can lift confidence and prevent an even deeper contraction in demand by limiting the amplification of the shock through the financial system and bolstering expectations for the eventual economic recovery. Here, too, the swift and significant actions by several central banks have been critical and have averted an even sharper drop in asset prices and confidence. Of particular importance has been the activation and establishment of swap lines between major central banks to provide international liquidity.

The economic landscape will be altered significantly for the duration of the crisis and possibly longer, with greater involvement of government and central banks in the economy.

Advanced economies with strong governance capacity, well-equipped health care systems, and the privilege of issuing reserve currencies are relatively better placed to weather this crisis. But several emerging market and developing economies without similar assets and confronting simultaneous health, economic, and financial crises will need help from advanced economy bilateral creditors and international financial institutions.

Multilateral cooperation will be key. In addition to sharing equipment and expertise to reinforce health care systems around the world, a global effort must ensure that when therapies and vaccines are developed for COVID-19 both rich and poor nations alike have immediate access. The international community will also need to step up financial assistance to many emerging market and developing economies. For those facing large debt repayments, debt moratoria and restructuring may need to be considered.

Finally, it is worth thinking about measures that could be adopted to prevent something like the pandemic from happening again. Improvements to the global public health infrastructure—greater and more automatic information exchange on unusual infections, earlier and more widespread deployment of testing, building global stockpiles of personal protective equipment, and putting in place protocols for no restrictions on trade in essential supplies—could enhance the security of both public health and the global economy.

There are many reasons for optimism, despite the dire circumstances. In countries with major outbreaks, the number of new cases has come down, after strong social distancing practices were put in place. The unprecedented pace of work on treatments and vaccines also promises hope. The swift and substantial economic policy actions taken in many countries will help shield people and firms, preventing even more severe economic pain and create the conditions for the recovery.

When the world economy last faced a crisis of this magnitude in the 1930s, the absence of a multilateral lender-of-last-resort forced countries to scramble for international liquidity, adopting futile mercantilist policies in that pursuit, which further worsened the global downturn. A crucial difference in the current crisis is we have a stronger global financial safety net—with the IMF at its center—that is already actively helping vulnerable countries.

Ten years ago, the IMF's member countries boosted the Fund's resources to assist financially constrained countries during the 2008–09 global financial crisis. The IMF is again actively engaged in supporting national-level policy efforts to limit the economic damage through its lending facilities, including rapid-disbursing emergency financing. And its members are again stepping up to further strengthen the IMF's resources in what looks to be an even bigger crisis than the one we experienced a decade ago. Such efforts will go a long way toward ensuring that the global economy regains its footing after the pandemic fades, workplaces and schools reopen, job creation picks up, and consumers return to public places—in short, ensuring that we can return to our economic routines and social interactions that we took for granted not so long ago.

Gita Gopinath
Economic Counsellor

EXECUTIVE SUMMARY

The COVID-19 pandemic is inflicting high and rising human costs worldwide. Protecting lives and allowing health care systems to cope have required isolation, lockdowns, and widespread closures to slow the spread of the virus. The health crisis is therefore having a severe impact on economic activity. As a result of the pandemic, the global economy is projected to contract sharply by 3 percent in 2020, much more than during the 2008–09 financial crisis (Table 1.1). In a baseline scenario, which assumes that the pandemic fades in the second half of 2020 and containment efforts can be gradually unwound, the global economy is projected to grow by 5.8 percent in 2021 as economic activity normalizes, helped by policy support.

There is extreme uncertainty around the global growth forecast. The economic fallout depends on factors that interact in ways that are hard to predict, including the pathway of the pandemic, the intensity and efficacy of containment efforts, the extent of supply disruptions, the repercussions of the dramatic tightening in global financial market conditions, shifts in spending patterns, behavioral changes (such as people avoiding shopping malls and public transportation), confidence effects, and volatile commodity prices. Many countries face a multi-layered crisis comprising a health shock, domestic economic disruptions, plummeting external demand, capital flow reversals, and a collapse in commodity prices. Risks of a worse outcome predominate.

Effective policies are essential to forestall worse outcomes. Necessary measures to reduce contagion and protect lives will take a short-term toll on economic activity but should also be seen as an important investment in long-term human and economic health. The immediate priority is to contain the fallout from the COVID-19 outbreak, especially by increasing health care expenditures to strengthen the capacity and resources of the health care sector while adopting measures that reduce contagion. Economic policies will also need to cushion the impact of the decline in activity on people, firms, and the financial system; reduce persistent scarring effects from the unavoidable severe slowdown; and ensure that the economic recovery can begin quickly once the pandemic fades.

Because the economic fallout reflects particularly acute shocks in specific sectors, policymakers will need to implement substantial targeted fiscal, monetary, and financial market measures to support affected households and businesses. Such actions will help maintain economic relationships throughout the shutdown and are essential to enable activity to gradually normalize once the pandemic abates and containment measures are lifted. The fiscal response in affected countries has been swift and sizable in many advanced economies (such as Australia, France, Germany, Italy, Japan, Spain, the United Kingdom, and the United States). Many emerging market and developing economies (such as China, Indonesia, and South Africa) have also begun providing or announcing significant fiscal support to heavily impacted sectors and workers. Fiscal measures will need to be scaled up if the stoppages to economic activity are persistent, or the pickup in activity as restrictions are lifted is too weak. Economies facing financing constraints to combat the pandemic and its effects may require external support. Broad-based fiscal stimulus can preempt a steeper decline in confidence, lift aggregate demand, and avert an even deeper downturn. But it would most likely be more effective once the outbreak fades and people are able to move about freely.

The significant actions of large central banks in recent weeks include monetary stimulus and liquidity facilities to reduce systemic stress. These actions have supported confidence and contribute to limiting the amplification of the shock, thus ensuring that the economy is better placed to recover. The synchronized actions can magnify their impact on individual economies and will also help generate the space for emerging market and developing economies to use monetary policy to respond to domestic cyclical conditions. Supervisors should also encourage

banks to renegotiate loans to distressed households and firms while maintaining a transparent assessment of credit risk.

Strong multilateral cooperation is essential to overcome the effects of the pandemic, including to help financially constrained countries facing twin health and funding shocks, and for channeling aid to countries with weak health care systems. Countries urgently need to work together to slow the spread of the virus and to develop a vaccine and therapies to counter the disease. Until such medical interventions become available, no country is safe from the pandemic (including a recurrence after the initial wave subsides) as long as transmission occurs elsewhere.

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CHAPTER 1

GLOBAL PROSPECTS AND POLICIES

The COVID-19 pandemic is inflicting high and rising human costs worldwide. Protecting lives and allowing health care systems to cope have required isolation, lockdowns, and widespread closures to slow the spread of the virus. The health crisis is therefore having a severe impact on economic activity. As a result of the pandemic, the global economy is projected to contract sharply by 3 percent in 2020, much more than during the 2008–09 financial crisis (Table 1.1). In a baseline scenario, which assumes that the pandemic fades in the second half of 2020 and containment efforts can be gradually unwound, the global economy is projected to grow by 5.8 percent in 2021 as economic activity normalizes, helped by policy support.

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The significant actions of large central banks in recent weeks include monetary stimulus and liquidity facilities to reduce systemic stress. These actions have supported confidence and contribute to limiting the amplification of the shock, thus ensuring that the economy is better placed to recover. The synchronized actions can magnify their impact on individual economies and will also help generate the space for emerging market and developing economies to use monetary policy to respond to domestic cyclical conditions. Supervisors should also encourage banks to renegotiate loans to distressed households and firms while maintaining a transparent assessment of credit risk.

Strong multilateral cooperation is essential to overcome the effects of the pandemic, including to help financially constrained countries facing twin health and funding shocks, and for channeling aid to countries with weak health care systems. Countries urgently need to work together to slow the spread of the virus and to develop a vaccine and therapies to counter the disease. Until such medical interventions become available, no country is safe from the pandemic (including a recurrence after the initial wave subsides) as long as transmission occurs elsewhere.

Key Considerations for the Forecast

The nature of the shock. The COVID-19 pandemic differs markedly from past triggers of downturns. Infections reduce labor supply. Quarantines, regional lockdowns, and social distancing—which are essential to contain the virus (see, for example, Ferguson, Ghani, and others 2020)—curtail mobility, with particularly acute effects on sectors that rely on social interactions (such as travel, hospitality, entertainment, and tourism). Workplace closures disrupt supply chains and lower productivity. Layoffs, income declines, fear of contagion, and heightened uncertainty make people spend less, triggering further business closures and job losses. There is a de facto shutdown of a significant portion of the economy. Health care expenditures necessarily rise sharply above what had been expected. These domestic disruptions spill over to trading partners through trade and global value chain linkages, adding to the overall macroeconomic effects.

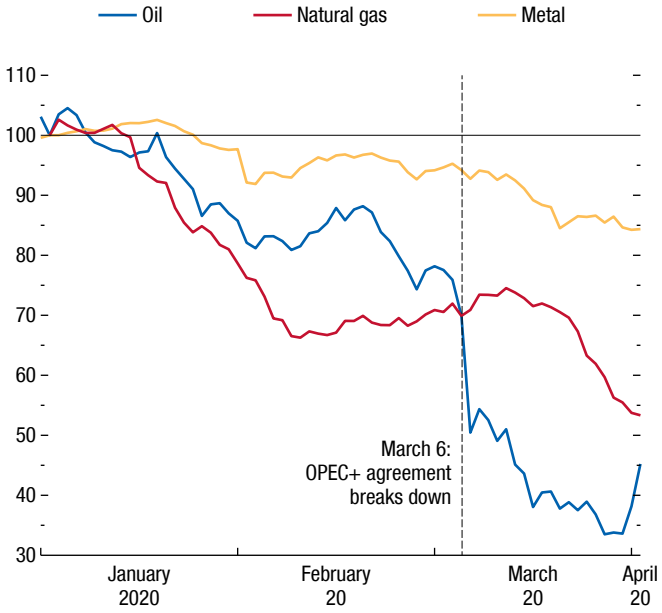
Amplification channels. The initial shock amplifies through channels familiar from past severe downturns and crises. Financial markets are sharply repricing with the increase in uncertainty and the sudden materialization of extensive disruptions to economic activity. The flight to safe assets and rush to liquidity have put upward pressure on borrowing costs, and credit has become more scarce, aggravating financial strains. Rising unemployment increases the risk of widespread defaults. Lenders—worried that consumers and firms will not be able to repay—hold back on extending credit. Asset fire sales may ensue as financial intermediaries liquidate their holdings to meet funding withdrawal requests from their investors, exacerbating the market turmoil. The effects can be further magnified through international financial linkages. In particular, countries reliant on external financing experience sudden stops and disorderly market conditions. Moreover, as weaker global demand drives down commodity prices, commodity exporters face pressure on their public finances and on real economic activity. These additional layers add to the direct economic fallout of the health crisis, and the full extent of disruptions to economic activity can be particularly severe as a result.

Early indications of severe economic fallout. The economic impact is already visible in the countries most affected by the outbreak. For example, in China, industrial production, retail sales, and fixed asset investment dropped dramatically in January and February. The extended Lunar New Year holidays, gradual reopening of nonessential businesses across the country, and low demand for services as a result of social distancing imply a significant loss of working days and a severe contraction in first-quarter economic activity. As more countries are forced to respond to the pandemic with stringent quarantine and containment efforts of the kind seen, for example, in China, Italy, and Spain, this will necessarily entail similar sharp economic activity slowdowns from closures of nonessential workplaces, travel restrictions, and behavioral changes. Initial jobless claims in the United States during the fourth week of March, for example, exceeded 6.6 million, compared with about 280,000 just two weeks before. And surveys of purchasing managers pointed to plummeting economic activity in March in the euro area, Japan, and the United States. However, up-front containment measures are essential to slow the spread of the virus and allow health care systems to cope and to help pave the way for an earlier and more robust resumption of economic activity. Uncertainty and reduced demand for services could be even worse in a scenario of greater spread without social distancing.

A sharp drop in commodity prices. The fast deterioration of the global economic outlook as the epidemic has spread and the breakdown of the OPEC+ (Organization of the Petroleum Exporting Countries, including Russia and other non-OPEC oil exporters) agreement among oil suppliers have weighed heavily on commodity prices (Figure 1.1; Commodity Special Feature). From mid-January to end-March, base metal prices fell by about 15 percent, natural gas prices declined by 38 percent, and crude oil prices dropped by about 65 percent (a fall of about $40 a barrel). Futures markets indicate that oil prices will remain below $45 a barrel through 2023, some 25 percent lower than the 2019 average price, reflecting persistently weak demand. These developments are expected to weigh heavily on oil exporters with undiversified revenues and exports—particularly on high-cost producers—and compound the shock from domestic infections, tighter global financial conditions, and weaker external demand. At the same time, lower oil prices will benefit oil-importing countries.

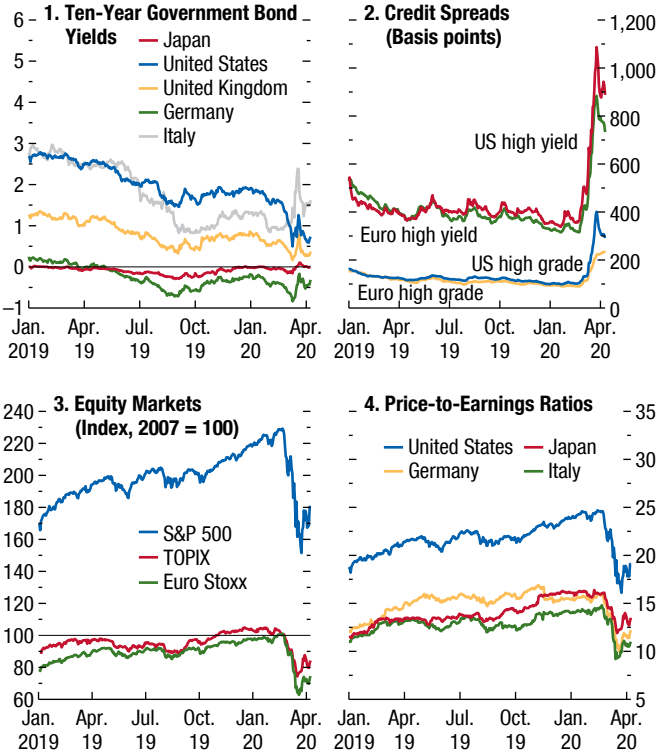
Significantly tighter financial conditions. Financial market sentiment has deteriorated since mid-February as concerns about the global spread of COVID-19 and its economic fallout have grown. The oil price plunge in early March took a further toll, exacerbating the decline in sentiment. As discussed in the April 2020

Figure 1.1. Commodity Prices
(January 2, 2020 = 100)



Sources: IMF, Primary Commodity Price System; and IMF staff calculations.
Note: OPEC+ = Organization of the Petroleum Exporting Countries, including Russia.

Figure 1.2. Advanced Economies: Monetary and Financial Market Conditions
(Percent, unless noted otherwise)



Sources: Bloomberg Finance L.P.; Haver Analytics; Thomson Reuters Datastream; and IMF staff calculations.
Note: S&P = Standard & Poor's; TOPIX = Tokyo Stock Price Index; US = United States. Data are through April 7, 2020.

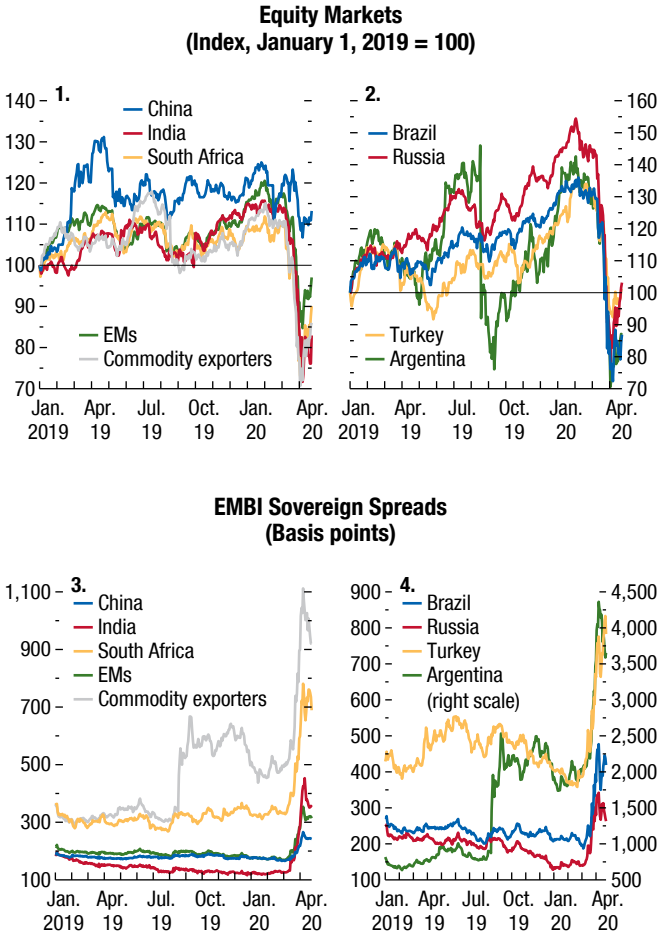
Global Financial Stability Report, financial conditions in advanced as well as emerging market economies are significantly tighter than at the time of the October 2019 *World Economic Outlook* (WEO) forecast. Equity markets have sold off dramatically; high-yield corporate and emerging market sovereign spreads have widened significantly (Figures 1.2 and 1.3); and portfolio flows to emerging market funds have reversed, particularly in the case of hard currency bonds and equities. Signs of dollar funding shortages have emerged amid the general rebalancing of portfolios toward cash and safe assets.

Currency movements have generally reflected these shifts in risk sentiment. The currencies of commodity exporters with flexible exchange rates among emerging market and advanced economies have depreciated sharply since the beginning of the year, while the US dollar has appreciated by some 8½ percent in real effective terms as of April 3, the yen by about 5 percent, and the euro by some 3 percent (Figure 1.4).

The rapidly worsening risk sentiment has prompted a series of central bank rate cuts, liquidity support actions, and, in a number of cases, large asset purchase programs, including from the US Federal Reserve, European Central Bank, Bank of England, Bank of Japan, Bank of Canada, and Reserve Bank of Australia, as well as from emerging market central banks in Brazil, China, India, Malaysia, Mexico, the Philippines, Saudi Arabia, South Africa, Thailand, and Turkey—which will help partially offset the tightening in financial conditions. Moreover, several central banks have activated bilateral swap lines to improve access to international liquidity across jurisdictions.[1]

[1]The Bank of Canada, the Bank of England, the Bank of Japan, the European Central Bank, the US Federal Reserve, and the Swiss National Bank announced a coordinated action on March 15, 2020, to enhance the provision of liquidity through the standing US-dollar-liquidity swap line arrangements. On March 19 the Federal Reserve established temporary US dollar swap lines with the Reserve Bank of Australia, Banco Central do Brasil, Danmarks Nationalbank, Bank of Korea, Banco de Mexico, Norges Bank, Reserve Bank of New Zealand, Monetary Authority of Singapore, and Sveriges Riksbank. On March 31 the Federal Reserve launched a temporary repurchase agreement facility to enable a wide range of central banks and monetary authorities to exchange US Treasury securities for US dollars.

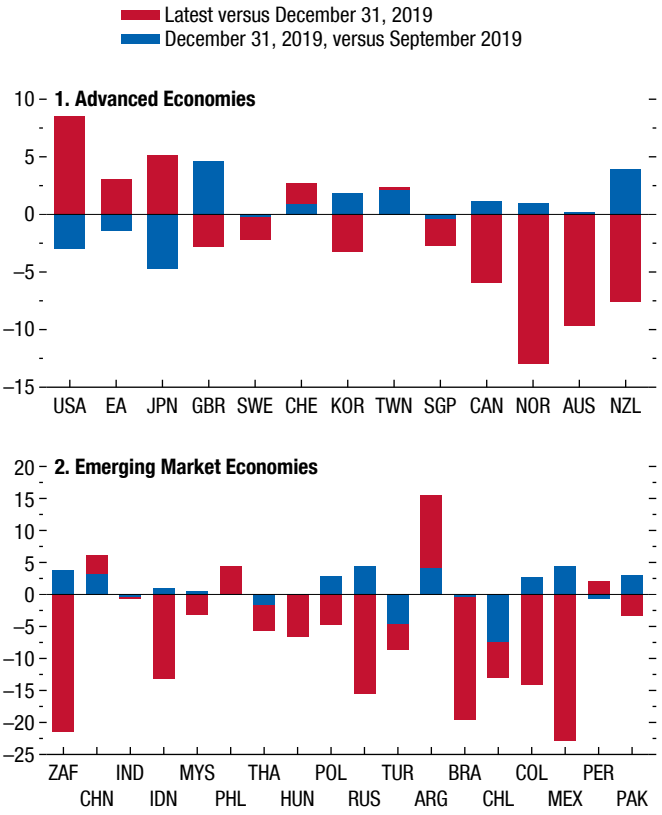
Figure 1.3. Emerging Market Economies: Equity Markets and Credit



Sources: Haver Analytics; Thomson Reuters Datastream; and IMF staff calculations.
Note: Commodity exporters = Argentina, Chile, Peru, Russia, South Africa; EMBI = J.P. Morgan Emerging Markets Bond Index; EMs = emerging market economies. Data are through April 7, 2020.

Figure 1.4. Real Effective Exchange Rate Changes, September 2019–April 2020

(Percent)



Source: IMF staff calculations.
Note: EA = euro area. Data labels use International Organization for Standardization (ISO) country codes. Latest data available are for April 3, 2020.

Nonetheless, the significant tightening of financial conditions will further dampen economic activity in the near term, adding to the direct macroeconomic fallout of the health crisis.

COVID-19 Pandemic Will Have a Severe Impact on Global Growth

There is extreme uncertainty around the global growth forecast because the economic fallout depends on uncertain factors that interact in ways hard to predict. These include, for example, the pathway of the pandemic, the progress in finding a vaccine and therapies, the intensity and efficacy of containment efforts, the extent of supply disruptions and productivity losses, the repercussions of the dramatic tightening in global financial market conditions, shifts in spending patterns, behavioral changes (such as people avoiding shopping malls and public transportation), confidence effects, and volatile commodity prices.

Baseline Assumptions

Pandemic. In the baseline scenario, the pandemic is assumed to fade in the second half of 2020, allowing for a gradual lifting of containment measures.

Duration of shutdown. Considering the spread of the virus to most countries as of the end of March 2020, the global growth forecast assumes that all countries experience disruptions to economic activity due to some combination of the above-mentioned factors.

The disruptions are assumed to be concentrated mostly in the second quarter of 2020 for almost all countries except China (where it is in the first quarter), with a gradual recovery thereafter, as it takes some time for production to ramp up after the shock. Countries experiencing severe epidemics are assumed to lose about 8 percent of working days in 2020 over the duration of containment efforts and subsequent gradual loosening of restrictions.[2] Other countries are also assumed to experience disruptions to economic activity related to containment measures and social distancing, which, on average, are assumed to entail a loss of about 5 percent of working days in 2020 over the period of shutdown and gradual reopening. These losses are compounded by those generated by tighter global financial conditions, weaker external demand, and terms-of-trade losses described below.

Financial conditions. The tight financial conditions for advanced and emerging market economies discussed above are expected to remain in place for the first half of the year. Consistent with the assumed path of the pandemic and gradual normalization in economic activity, financial conditions are expected to ease in the second half of 2020.

Commodity prices. Based on futures market pricing at the end of March 2020, the average petroleum spot prices per barrel are estimated at $35.60 in 2020 and $37.90 in 2021. For the years thereafter, oil futures curves show that prices are expected to increase toward $45 but stay below their average 2019 level ($61.40). Metals prices are expected to decrease 15.0 percent in 2020 and 5.6 percent in 2021. Food prices are projected to decrease 1.8 percent in 2020 and then increase 0.4 percent in 2021.

Global Economy in Recession in 2020

Global growth is projected at –3.0 percent in 2020, an outcome far worse than during the 2009 global financial crisis. The growth forecast is marked down by more than 6 percentage points relative to the October 2019 WEO and January 2020 *WEO Update* projections—an extraordinary revision over such a short period of time.

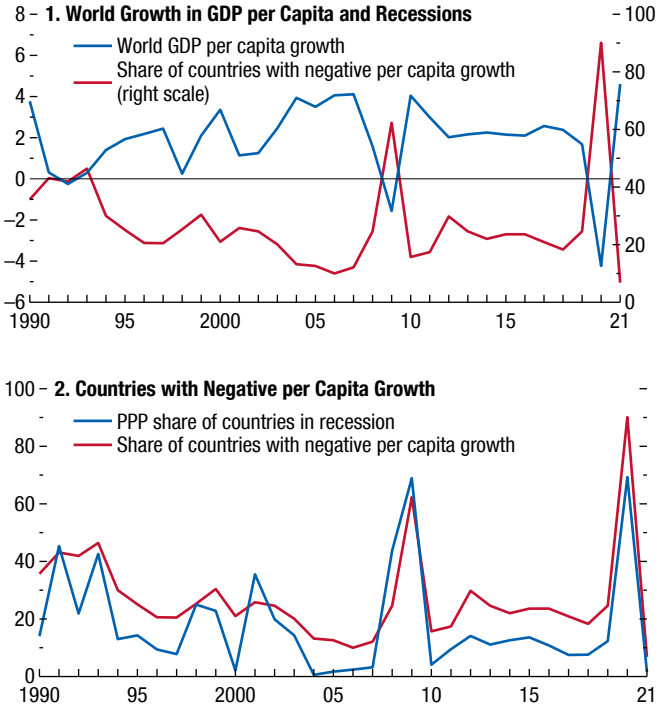
[2]The loss of working days is smaller than the number of days severe containment measures are in place, given that essential businesses continue to operate during the shutdown. The duration of containment efforts will vary across countries based on the intensity of the measures (for example, cancellation of public gatherings and school closures versus stay-at-home orders and lockdowns enforced with penalties).

Growth in the *advanced economy* group—where several economies are experiencing widespread outbreaks and deploying containment measures—is projected at –6.1 percent in 2020. Most economies in the group are forecast to contract this year, including the United States (–5.9 percent), Japan (–5.2 percent), the United Kingdom (–6.5 percent), Germany (–7.0 percent), France (–7.2 percent), Italy (–9.1 percent), and Spain (–8.0 percent). In parts of Europe, the outbreak has been as severe as in China's Hubei province. Although essential to contain the virus, lockdowns and restrictions on mobility are extracting a sizable toll on economic activity. Adverse confidence effects are likely to further weigh on economic prospects.

Among *emerging market and developing economies*, all countries face a health crisis, severe external demand shock, dramatic tightening in global financial conditions, and a plunge in commodity prices, which will have a severe impact on economic activity in commodity exporters. Overall, the group of emerging market and developing economies is projected to contract by –1.0 percent in 2020; excluding China, the growth rate for the group is expected to be –2.2 percent. Even in countries not experiencing widespread detected outbreaks as of the end of March (and therefore not yet deploying containment measures of the kind seen in places with outbreaks), the significant downward revision to the 2020 growth projection reflects large anticipated domestic disruptions to economic activity from COVID-19. The 2020 growth rate for the group excluding China is marked down 5.8 percentage points relative to the January WEO projection. As discussed below, growth would be even lower if more stringent containment measures are necessitated by a wider spread of the virus among these countries.

Emerging Asia is projected to be the only region with a positive growth rate in 2020 (1.0 percent), albeit more than 5 percentage points below its average in the previous decade. In China, indicators, such as industrial production, retail sales, and fixed asset investment, suggest that the contraction in economic activity in the first quarter could have been about 8 percent year over year. Even with a sharp rebound in the remainder of the year and sizable fiscal support, the economy is projected to grow at a subdued 1.2 percent in 2020. Several economies in the region are forecast to grow at modest rates, including India (1.9 percent) and Indonesia (0.5 percent), and others are forecast to experience large contractions (Thailand, –6.7 percent).

Figure 1.5. World Growth in GDP per Capita and Recessions
(Percent)



Source: IMF staff estimates.
Note: PPP = purchasing-power-parity.

Other regions are projected to experience severe slowdowns or outright contractions in economic activity, including Latin America (–5.2 percent)—with Brazil's growth forecast at –5.3 percent and Mexico's at –6.6 percent; emerging and developing Europe (–5.2 percent)—with Russia's economy projected to contract by –5.5 percent; the Middle East and Central Asia (–2.8 percent)—with Saudi Arabia's growth forecast at –2.3 percent, with non-oil GDP contracting by 4 percent, and most economies, including Iran, expected to contract; and sub-Saharan Africa (–1.6 percent)—with growth in Nigeria and South Africa expected at –3.4 percent and –5.8 percent, respectively. Following the dramatic decline in oil prices since the beginning of the year, near-term prospects for oil-exporting countries have deteriorated significantly: the growth rate for the group is projected to drop to –4.4 percent in 2020.

Figure 1.5 shows that a much larger fraction of countries is expected to experience negative per capita income growth in 2020 than at the time of the 2009 financial crisis. These countries account for a broadly similar purchasing-power-parity share of the world economy compared with the group that experienced negative per capita income growth in 2009.

Uncertain Recovery in 2021: Predicated on Pandemic Fading, Helped by Policy Support

Global growth is expected to rebound to 5.8 percent in 2021, well above trend, reflecting the normalization of economic activity from very low levels. The advanced economy group is forecast to grow at 4.5 percent, while growth for the emerging market and developing economy group is forecast at 6.6 percent. In comparison, in 2010 global growth rebounded to 5.4 percent from –0.1 percent in 2009.

The rebound in 2021 depends critically on the pandemic fading in the second half of 2020, allowing containment efforts to be gradually scaled back and restoring consumer and investor confidence. Significant economic policy actions have already been taken across the world, focused on accommodating public health care requirements, while limiting the amplification to economic activity and the financial system. The projected recovery assumes that these policy actions are effective in preventing widespread firm bankruptcies, extended job losses, and system-wide financial strains. Nonetheless, as Figure 1.6 shows, the level of GDP at the end of 2021 in both advanced and emerging market and developing economies is expected to remain below the pre-virus baseline (January 2020 WEO *Update*).

As with the size of the downturn, there is extreme uncertainty around the strength of the recovery. Some aspects that underpin the rebound may not materialize, and worse global growth outcomes are possible—for example, a deeper contraction in 2020 and a shallower recovery in 2021—depending on the pathway of the pandemic and the severity of the associated economic and financial consequences, as discussed in the next section.

Severe Risks of a Worse Outcome

Even after the severe downgrade to global growth, risks to the outlook are on the downside. The pandemic could prove more persistent than assumed in

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

(Percent change, unless noted otherwise)

		Projections		Difference from January 2020 WEO *Update*[1]		Difference from October 2019 WEO[1]	
	2019	2020	2021	2020	2021	2020	2021
World Output	**2.9**	**–3.0**	**5.8**	**–6.3**	**2.4**	**–6.4**	**2.2**
Advanced Economies	**1.7**	**–6.1**	**4.5**	**–7.7**	**2.9**	**–7.8**	**2.9**
United States	2.3	–5.9	4.7	–7.9	3.0	–8.0	3.0
Euro Area	1.2	–7.5	4.7	–8.8	3.3	–8.9	3.3
Germany	0.6	–7.0	5.2	–8.1	3.8	–8.2	3.8
France	1.3	–7.2	4.5	–8.5	3.2	–8.5	3.2
Italy	0.3	–9.1	4.8	–9.6	4.1	–9.6	4.0
Spain	2.0	–8.0	4.3	–9.6	2.7	–9.8	2.6
Japan	0.7	–5.2	3.0	–5.9	2.5	–5.7	2.5
United Kingdom	1.4	–6.5	4.0	–7.9	2.5	–7.9	2.5
Canada	1.6	–6.2	4.2	–8.0	2.4	–8.0	2.4
Other Advanced Economies[2]	1.7	–4.6	4.5	–6.5	2.1	–6.6	2.2
Emerging Market and Developing Economies	**3.7**	**–1.0**	**6.6**	**–5.4**	**2.0**	**–5.6**	**1.8**
Emerging and Developing Asia	5.5	1.0	8.5	–4.8	2.6	–5.0	2.3
China	6.1	1.2	9.2	–4.8	3.4	–4.6	3.3
India[3]	4.2	1.9	7.4	–3.9	0.9	–5.1	0.0
ASEAN-5[4]	4.8	–0.6	7.8	–5.4	2.7	–5.5	2.6
Emerging and Developing Europe	2.1	–5.2	4.2	–7.8	1.7	–7.7	1.7
Russia	1.3	–5.5	3.5	–7.4	1.5	–7.4	1.5
Latin America and the Caribbean	0.1	–5.2	3.4	–6.8	1.1	–7.0	1.0
Brazil	1.1	–5.3	2.9	–7.5	0.6	–7.3	0.5
Mexico	–0.1	–6.6	3.0	–7.6	1.4	–7.9	1.1
Middle East and Central Asia	1.2	–2.8	4.0	–5.6	0.8	–5.7	0.8
Saudi Arabia	0.3	–2.3	2.9	–4.2	0.7	–4.5	0.7
Sub-Saharan Africa	3.1	–1.6	4.1	–5.1	0.6	–5.2	0.4
Nigeria	2.2	–3.4	2.4	–5.9	–0.1	–5.9	–0.1
South Africa	0.2	–5.8	4.0	–6.6	3.0	–6.9	2.6
Memorandum							
European Union[5]	1.7	–7.1	4.8	–8.7	3.1	–8.8	3.1
Low-Income Developing Countries	5.1	0.4	5.6	–4.7	0.5	–4.7	0.4
Middle East and North Africa	0.3	–3.3	4.2	–5.9	1.2	–6.0	1.2
World Growth Based on Market Exchange Rates	2.4	–4.2	5.4	–6.9	2.6	–6.9	2.6
World Trade Volume (goods and services)	**0.9**	**–11.0**	**8.4**	**–13.9**	**4.7**	**–14.2**	**4.6**
Imports							
Advanced Economies	1.5	–11.5	7.5	–13.8	4.3	–14.2	4.2
Emerging Market and Developing Economies	–0.8	–8.2	9.1	–12.5	4.0	–12.5	4.0
Exports							
Advanced Economies	1.2	–12.8	7.4	–14.9	4.4	–15.3	4.3
Emerging Market and Developing Economies	0.8	–9.6	11.0	–13.7	6.8	–13.7	6.6
Commodity Prices (US dollars)							
Oil[6]	–10.2	–42.0	6.3	–37.7	11.0	–35.8	10.9
Nonfuel (average based on world commodity import weights)	0.8	–1.1	–0.6	–2.8	–1.2	–2.8	–1.9
Consumer Prices							
Advanced Economies	1.4	0.5	1.5	–1.2	–0.4	–1.3	–0.3
Emerging Market and Developing Economies[7]	5.0	4.6	4.5	0.0	0.0	–0.2	0.0
London Interbank Offered Rate (percent)							
On US Dollar Deposits (six month)	2.3	0.7	0.6	–1.2	–1.3	–1.3	–1.5
On Euro Deposits (three month)	–0.4	–0.4	–0.4	0.0	0.0	0.2	0.2
On Japanese Yen Deposits (six month)	0.0	–0.1	–0.1	0.0	–0.1	0.0	0.1

Source: IMF staff.

Note: Real effective exchange rates are assumed to remain constant at the levels prevailing during February 17–March 16, 2020. 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 2020 *WEO Update*, and October 2019 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.

Table 1.1 ***(continued)***
(Percent change, unless noted otherwise)

	Year over Year				Q4 over Q4[8]			
			Projections				Projections	
	2018	2019	2020	2021	2018	2019	2020	2021
World Output	**3.6**	**2.9**	**–3.0**	**5.8**	**3.3**	**2.7**	**–1.4**	**4.9**
Advanced Economies	**2.2**	**1.7**	**–6.1**	**4.5**	**1.8**	**1.5**	**–5.2**	**4.4**
United States	2.9	2.3	–5.9	4.7	2.5	2.3	–5.4	4.9
Euro Area	1.9	1.2	–7.5	4.7	1.2	1.0	–5.9	3.6
Germany	1.5	0.6	–7.0	5.2	0.6	0.5	–5.2	3.6
France	1.7	1.3	–7.2	4.5	1.2	0.9	–5.0	2.7
Italy	0.8	0.3	–9.1	4.8	0.0	0.1	–7.2	3.9
Spain	2.4	2.0	–8.0	4.3	2.1	1.8	–7.0	3.7
Japan	0.3	0.7	–5.2	3.0	–0.2	–0.7	–3.2	3.4
United Kingdom	1.3	1.4	–6.5	4.0	1.4	1.1	–5.3	3.8
Canada	2.0	1.6	–6.2	4.2	1.8	1.5	–5.4	4.0
Other Advanced Economies[2]	2.6	1.7	–4.6	4.5	2.3	2.0	–4.6	5.5
Emerging Market and Developing Economies	**4.5**	**3.7**	**–1.0**	**6.6**	**4.5**	**3.7**	**1.6**	**5.2**
Emerging and Developing Asia	6.3	5.5	1.0	8.5	6.1	4.7	4.8	5.0
China	6.7	6.1	1.2	9.2	6.6	6.0	4.9	5.1
India[3]	6.1	4.2	1.9	7.4	5.8	2.0	7.4	4.0
ASEAN-5[4]	5.3	4.8	–0.6	7.8	5.1	4.5	1.1	6.0
Emerging and Developing Europe	3.2	2.1	–5.2	4.2	. . .	. . .	. . .	. . .
Russia	2.5	1.3	–5.5	3.5	2.9	2.3	–6.5	5.4
Latin America and the Caribbean	1.1	0.1	–5.2	3.4	0.2	–0.1	–5.6	4.8
Brazil	1.3	1.1	–5.3	2.9	1.3	1.7	–5.8	3.6
Mexico	2.1	–0.1	–6.6	3.0	1.5	–0.4	–7.4	5.7
Middle East and Central Asia	1.8	1.2	–2.8	4.0	. . .	. . .	. . .	. . .
Saudi Arabia	2.4	0.3	–2.3	2.9	4.3	–0.3	–0.5	1.3
Sub-Saharan Africa	3.3	3.1	–1.6	4.1	. . .	. . .	. . .	. . .
Nigeria	1.9	2.2	–3.4	2.4	. . .	. . .	. . .	. . .
South Africa	0.8	0.2	–5.8	4.0	0.2	–0.6	–7.2	9.6
Memorandum								
European Union[5]	2.3	1.7	–7.1	4.8	1.7	1.4	–5.9	4.2
Low-Income Developing Countries	5.1	5.1	0.4	5.6	. . .	. . .	. . .	. . .
Middle East and North Africa	1.0	0.3	–3.3	4.2	. . .	. . .	. . .	. . .
World Growth Based on Market Exchange Rates	3.1	2.4	–4.2	5.4	2.7	2.3	–2.9	4.7
World Trade Volume (goods and services)	**3.8**	**0.9**	**–11.0**	**8.4**	**. . .**	**. . .**	**. . .**	**. . .**
Imports								. . .
Advanced Economies	3.3	1.5	–11.5	7.5	. . .	. . .	. . .	. . .
Emerging Market and Developing Economies	5.1	–0.8	–8.2	9.1	. . .	. . .	. . .	. . .
Exports								
Advanced Economies	3.3	1.2	–12.8	7.4	. . .	. . .	. . .	. . .
Emerging Market and Developing Economies	4.1	0.8	–9.6	11.0	. . .	. . .	. . .	. . .
Commodity Prices (US dollars)								
Oil[6]	29.4	–10.2	–42.0	6.3	9.5	–6.1	–42.2	12.4
Nonfuel (average based on world commodity import weights)	1.3	0.8	–1.1	–0.6	–2.3	4.9	–3.1	0.9
Consumer Prices								
Advanced Economies	2.0	1.4	0.5	1.5	1.9	1.4	0.3	1.8
Emerging Market and Developing Economies[7]	4.8	5.0	4.6	4.5	4.2	4.9	3.1	4.0
London Interbank Offered Rate (percent)								
On US Dollar Deposits (six month)	2.5	2.3	0.7	0.6	. . .	. . .	. . .	. . .
On Euro Deposits (three month)	–0.3	–0.4	–0.4	–0.4	. . .	. . .	. . .	. . .
On Japanese Yen Deposits (six month)	0.0	0.0	–0.1	–0.1	. . .	. . .	. . .	. . .

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

[5]Beginning with the April 2020 WEO, the United Kingdom is excluded from the European Union group. Difference based on European Union excluding the United Kingdom.

[6]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 $61.39 in 2019; the assumed price, based on futures markets, is $35.61 in 2020 and $37.87 in 2021.

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

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

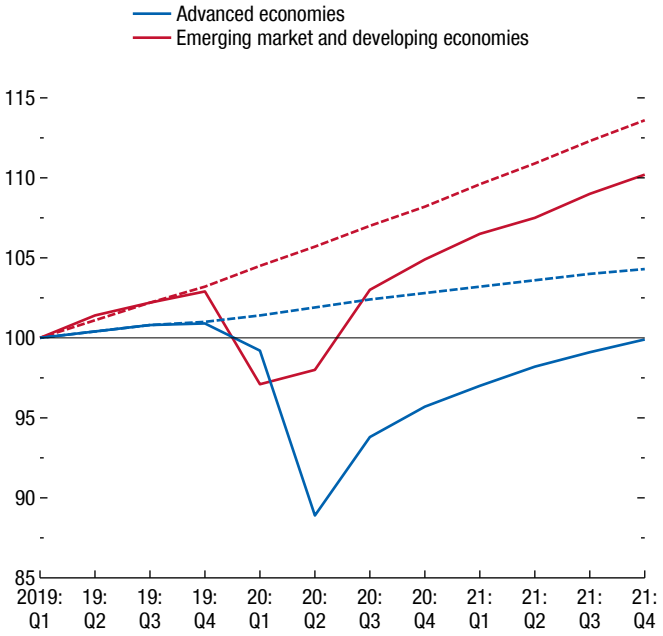
the baseline. Moreover, the effects of the health crisis on economic activity and financial markets could turn out to be stronger and longer lasting, testing the limits of central banks to backstop the financial system and further raising the fiscal burden of the shock. Of course, if a therapy or a vaccine is found earlier than expected, social distancing measures can be removed and the rebound may occur faster than anticipated.

As of early April 2020 the path of the COVID-19 pandemic remains uncertain. Strong containment efforts in place to slow the spread of the virus may need to remain in force for longer than the first half of the year if the pandemic proves to be more persistent than assumed in the WEO baseline. Once containment efforts are lifted and people start moving about more freely, the virus could again spread rapidly from residual localized clusters. Moreover, places that successfully bring down domestic community spread could be vulnerable to renewed infections from imported cases. In such instances, public health measures will need to be ramped up again, leading to a longer downturn than in the baseline forecast. And, although the disease has been most concentrated in advanced economies, fresh outbreaks in large emerging market or developing economies could further hamper any recovery, and the staggered nature of outbreaks could imply longer-lasting disruptions to travel.

The recovery of the global economy could be weaker than expected after the spread of the virus has slowed for a host of other reasons. These include lingering uncertainty about contagion, confidence failing to improve, and establishment closures and structural shifts in firm and household behavior, leading to more lasting supply chain disruptions and weakness in aggregate demand. Scars left by reduced investment and bankruptcies may run more extensively through the economy (as occurred, for example, in previous deep downturns—see Chapter 4 of the October 2009 WEO and Chapter 2 of the October 2018 WEO). Depending on the duration, global business confidence could be severely affected, leading to weaker investment and growth than projected in the baseline. Related to the uncertainty around COVID-19, an extended risk-off episode in financial markets and tightening of financial conditions could cause deeper and longer-lasting downturns in a number of countries.

The Scenario Box later in this chapter provides illustrative examples that combine these aspects.

Figure 1.6. Quarterly World GDP
(2019:Q1 = 100; dashed lines indicate estimates from January 2020 World Economic Outlook Update)



Source: IMF staff estimates.

Three alternative scenarios are considered. The first assumes a more protracted duration of the pandemic and necessary containment measures remaining in place for about 50 percent longer than in the baseline in all countries. The second features a recurrence of a milder outbreak in 2021. The third considers both a protracted pandemic and longer containment effort in 2020 as well as a recurrence in 2021.

The scenarios depart from the baseline in several important aspects: the magnitude of the direct impact of measures to contain the spread of the virus, the tightening in financial conditions and the pace at which they ease, and the scarring resulting from the economic dislocation during the shutdown. As the Scenario Box shows, global GDP is estimated to deviate significantly from the baseline across the scenarios, ranging from 3 percent below baseline in 2020 in the first case (protracted pandemic in 2020) to 8 percent below baseline in 2021 in the third case (protracted pandemic in 2020 and recurrence in 2021). In all scenarios, output recovers only gradually and remains below the baseline throughout the medium term.

Policy Priorities

Securing Adequate Resources for the Health Care System

With the world facing a dramatic health and economic crisis in 2020, the policy response needs to be commensurate with the challenge. Effective policies are essential to forestall worse outcomes. As a first priority, resources should be made available for health care systems to cope with the surging need for their services. This means expanding public spending on additional testing, rehiring retired medical professionals, purchasing personal protective equipment and ventilators, and expanding isolation wards in hospitals. Trade restrictions on medical and health products should be avoided to help ensure that they are able to go to where they are most critical. International aid to provide support to countries with limited health care system capacity and resources will be needed to help them prepare for and weather the pandemic.

Shared Economic Policy Objectives across Countries, but Emerging Market and Developing Economies Relatively More Constrained

Beyond strengthening health care systems, policies will need to limit the propagation of the health crisis to economic activity by shielding people and firms affected by necessary containment measures, minimizing persistent scarring effects from the unavoidable severe slowdown, and ensuring that the economic recovery can begin quickly once the pandemic fades. This will require sizable targeted policies complemented by broader stimulus at the national level.

Advanced economies with relatively stronger health care capacity, better access to international liquidity (in some cases by virtue of issuing reserve currencies), and comparatively lower borrowing costs will be better equipped to combat the health crisis and meet the large financing needs of supportive policies. In the euro area, where many countries are particularly hard-hit by outbreaks, meaningful European support targeted at these countries should supplement their national efforts, which would help meet financing needs arising from the very large and purely exogenous common shock.

In *emerging market and developing economies*, the objectives of policy are much the same, but resources to achieve them are more constrained, both by more limited health system capacities and tightening borrowing constraints (see also the April 2020 *Fiscal Monitor*). The increased demand for safe-haven assets and tighter financial conditions have pushed up spreads for many emerging market and developing economies, which, in tandem with already-elevated borrowing levels in some places, may constrain the scope for fiscal stimulus. To accommodate increased demands for public health and related essential expenditures, some countries may need to reprioritize existing spending while safeguarding other key priorities, such as support to vulnerable populations. Automatic stabilizers, though they may be small in developing economies, should be allowed to operate. Even so, some emerging market and developing economies may soon be overwhelmed by crisis costs. External support for them will be crucial. Strong multilateral cooperation is therefore essential, including to help financially constrained countries facing twin health and funding shocks.

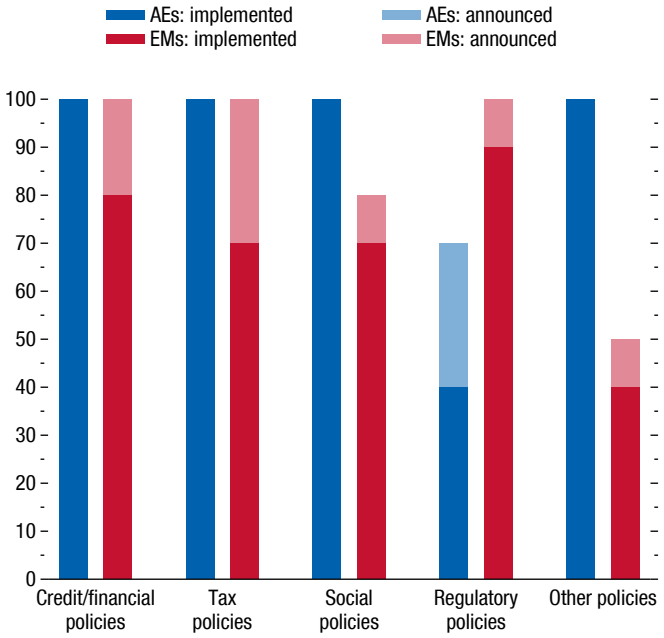
Limiting the Amplification of the Health Shock to Economic Activity

Because the economic fallout reflects particularly acute shocks in specific sectors, policymakers will need to implement substantial targeted fiscal, monetary, and financial market measures to help affected households and businesses. Advanced as well as emerging market and developing economies have already moved forward on such measures (Figure 1.7; IMF Policy Tracker on responses to COVID-19). Such actions will help maintain economic relationships through the shutdown and enable economic activity to begin normalizing once the pandemic fades.

Sizable targeted fiscal measures. The objective of fiscal policy should be twofold: to cushion the impact on the most-exposed households and businesses, and to preserve economic relationships (particularly by reducing firm closures) for the postcrisis era. In doing this, specific policies should be large, timely, temporary, and targeted.

The fiscal response in affected countries has been swift and sizable in many advanced economies (such as Australia, France, Germany, Italy, Japan, Spain, the United Kingdom, and the United States). Many emerging market and developing economies (such as China, Indonesia, and South Africa) have also begun providing or announcing significant fiscal support to heavily impacted sectors and workers. Fiscal measures will need to be scaled up if the stoppages to economic activity are persistent, or the pickup in activity as restrictions are lifted is too weak.

Figure 1.7. G20+: Economic Policy Responses to COVID-19
(Percent of countries)



Source: IMF staff calculations.
Note: G20+ refers to the Group of Twenty countries, including Spain, which is a permanent invitee. Measures as recorded as of April 1, 2020. Credit/financial policies include government guarantees, loans to businesses/households from government entities, forbearance (including deferral of payments and loan reprofiling), and easing of credit regulation; tax policies include tax cuts/waivers/deductions and extensions of payment deadlines; social policies include unemployment benefits, sick leave assistance, cash transfers, and vouchers/in-kind support; regulatory policies include price controls, employment, and trade restrictions; other policies include public investments and firm subsidies. "Implemented" counts the number of countries where at least one measure from the relevant category has been implemented; "announced" counts the number of countries where measures from the relevant category have been announced but not yet implemented. AEs = advanced economies; EMs = emerging market economies.

In countries with large informal sectors—often emerging market and developing economies—existing support programs should be expanded and new programs introduced where feasible. Further development of digital payments systems, which have seen rapid growth in many emerging market and developing economies, may provide an opportunity to improve the delivery of targeted transfers to the informally employed. New digital technologies can be used to process applications for income support and deliver direct transfers to identified individuals or households (for instance, India, Kenya, Rwanda, and Uganda are using such technologies to improve transfers to eligible recipients). Efforts to widen access to electronic and mobile platforms are likely to further enhance the impact of other policies to lessen the effects of the downturn. In countries without the infrastructure to deliver direct transfers, subsidies to essential services, such as utilities, are a possible alternative.

Dampening the impact of the shock on the most-exposed households and businesses should rely heavily on temporary and targeted policies, including cash transfers, wage subsidies, tax relief, and extension or postponement of debt repayments. Many countries have already implemented large and timely measures of this sort (see also the April 2020 *Fiscal Monitor*). For example, China and Italy have temporarily waived tax, social security, mortgage, and rental payments for the most-affected areas and sectors; Japan has announced cash handouts to affected households and firms and deferral of payment of tax and social security premiums for one year; Canada has increased cash transfers, implemented wage subsidies, and deferred federal tax and student loan payments; Germany and Spain have introduced temporary interest-free tax deferrals, suspended enforcement of some debt contracts, and put in place targeted cash transfers for the self-employed and small and medium-sized enterprises; India has announced new in-kind (food and cooking gas) and cash transfers to poorer households; Botswana and South Africa have implemented tax relief measures and announced targeted support to households through cash transfers or wage subsidies; and Thailand is accelerating excess value-added tax refunds.

Where paid sick and family leave are not standard benefits, governments should consider funding them to allow unwell workers or their caregivers to stay home without fear of losing their jobs during the pandemic. Canada, for example, has implemented a benefit for workers without paid sick leave who are quarantined or have to take care of children home from closed schools. Japan enhanced paid leave and compensation to working parents affected by the school closure. Countries with short-time work programs in place could temporarily strengthen their attractiveness, as was the case during the global financial crisis. For laid-off workers, unemployment insurance could be temporarily enhanced by relaxing eligibility and, if the downturn turns out to last longer than expected, by extending benefit duration combined with higher spending on active labor market policies. For instance, Italy has broadened the wage supplementation fund to provide income support to laid-off workers. Furthermore, as unemployment rates rise, hiring subsidies should also be considered.

Policies that help preserve viable firms will reduce bankruptcies and the scarring effects of firm closures, ensuring a swifter normalization of economic activity once the medical emergency fades. Small and medium-sized enterprises in supply chains hit hard by production shutdowns are particularly at risk. Temporary and targeted policies, such as tax relief and wage subsidies, have an important role to play in achieving this goal. Again, many countries have already implemented large and timely measures of this sort. For example, Italy has extended tax deadlines for companies in affected areas; Indonesia is providing tax cuts to the highly impacted tourism sector and to local manufacturers; Spain has expanded eligibility for unemployment benefits and exempted impacted firms that maintain employment from social contributions; Japan has enhanced subsidies to firms that maintain employment while operations are scaled down; Denmark will subsidize heavily impacted firms, paying 75 percent of wages for workers facing layoffs; the United Kingdom has announced 80 percent payment of furloughed workers' monthly salary up to a ceiling; Russia has introduced tax deferrals (excluding value-added taxes) for companies negatively affected by COVID-19; and Korea has introduced wage subsidies for small merchants and increased allowances for home care and job seekers. Similarly, Germany and France have eased and expanded firms' access to subsidized short-time work programs to preserve jobs and workers' incomes.

Provision of liquidity and credit guarantees. Central banks should provide ample liquidity to banks and nonbank finance companies, particularly to those lending to small and medium-sized enterprises, which may be less prepared to withstand a sharp disruption. Several central banks (including the European Central Bank, US Federal Reserve, Bank of England, Bank of Canada, and Central Bank of the Republic of Turkey) have already moved to launch or activate targeted lending facilities, for example, to financial intermediaries that fund corporate commercial paper. Governments could offer temporary and targeted credit guarantees or direct loans for the near-term liquidity needs of these firms—although, to avoid fiscal risks, such policies should be temporary and transparently reported. For example, Korea and Japan have expanded lending for business operations and loan guarantees for affected small and medium-sized enterprises; Philippines has introduced a new microfinancing loan package for micro, small, and medium-sized enterprises; and Germany, Italy, and Spain have offered loan guarantees for firms.

Loan restructuring. As noted in the April 2020 *Global Financial Stability Report*, supervisors could also encourage banks to renegotiate loan terms for distressed borrowers, without lowering loan classification and provisioning standards. In China, for instance, creditors are encouraged to temporarily defer loan and interest payments with no penalty for eligible small and medium-sized enterprises. The People's Bank of China has also increased the quota of relending and rediscounting facilities to support manufacturers of medical supplies and daily necessities as well as micro, small, and medium-sized firms at lower interest rates. More generally, banks should absorb the cost of restructuring loans by drawing on their capital conservation buffer or, where activated, by releasing their countercyclical capital buffer. Bank asset quality should be closely monitored to determine whether fiscal support (equity injections, for instance) is required, particularly if the downturn persists.

Broader stimulus. Central banks in advanced and emerging market economies have responded aggressively to the sudden stop in real activity and the rapidly tightening financial conditions. Beyond conventional interest rate cuts, several central banks have significantly expanded asset purchase programs (for instance, the European Central Bank's €750 billion Pandemic Emergency Purchase Program to buy private and public securities; the Federal Reserve's purchases of US Treasury debt and mortgage-backed securities, as needed, to ensure smooth market functioning as well as, for the first time, corporate bonds up to $300 billion; the Bank of Canada's purchases of banker's acceptances, provincial money market securities, commercial paper, government securities, and mortgage bonds; and the Bank of Japan's scaled-up purchases of government and corporate bonds, commercial paper, and exchange-traded funds). These synchronized actions across countries can magnify their impact on individual economies and will also help generate the space for emerging market and developing economies to use monetary policy to respond to domestic cyclical conditions. The recently activated central bank swap lines will improve access to international liquidity. Extending swap lines to additional emerging market central banks could further limit financial strains in countries facing external funding shocks.

Unlike during other deep downturns, such actions may have a relatively limited impact on spending

while mobility restrictions and lockdowns are in place. Nevertheless, they play a critical role in containing the amplification of the shock and ensuring economic activity is better placed to recover when containment measures can be gradually lifted. By limiting the rise in borrowing costs, they ease debt service burdens and protect cash flow for sovereigns, households, and businesses that continue to operate, helping reduce further job losses.

Similarly, broad-based fiscal stimulus where financing constraints permit (such as public infrastructure investment or across-the-board tax cuts) can preempt a steeper decline in confidence, help lift aggregate demand, limit the propagation of the shock by reducing bankruptcies, and avert an even-deeper downturn. But it would most likely be more effective in stimulating spending after the outbreak recedes, containment efforts are scaled back, and people can move about freely. Policymakers should continue coordinating their broader responses internationally to magnify the impact of individual country actions.

External sector policies. Countries with flexible exchange rates should allow them to adjust as needed, intervening under disorderly market conditions to limit financial stress, particularly where there are large balance sheet mismatches and unhedged foreign currency liabilities. For countries facing sudden and destabilizing reversals of external financing, temporary capital flow measures on outflows could be used, provided they do not substitute for warranted policy actions.

Multilateral Cooperation to Assist Constrained Countries

Countries urgently need to work together to slow the spread of the virus and to develop a vaccine and therapies to counter the disease. Until such medical interventions become universally available, no country is safe from the pandemic (including a recurrence after the initial wave subsides) as long as transmission occurs elsewhere. Taming the pandemic therefore requires significant multilateral cooperation, including avoiding trade restrictions (particularly on medicines and other essential supplies) and especially to help financially constrained countries with limited health care capacity, by providing them equipment and medical expertise financed through grants and zero-interest emergency loans (April 2020 *Fiscal Monitor*).

Countries confronting the twin crises of health and external funding shocks—for example, those reliant on external financing, or commodity exporters dealing with the plunge in commodity prices—may additionally need bilateral or multilateral assistance to ensure that health care spending is not compromised in their difficult adjustment process. The IMF, with $1 trillion in available resources, is actively supporting vulnerable countries through various lending facilities. The recent doubling of access limits of the IMF's emergency financing facilities will allow the IMF to meet an expected demand of $100 billion in emergency financing through the Rapid Credit Facility and the Rapid Financing Instrument, of which the former is only for low-income countries. The Catastrophe Containment and Relief Trust can currently provide about $500 million in grant-based debt service relief, including the recent $185 million pledge by the United Kingdom and $100 million provided by Japan as immediately available resources. Official bilateral creditors have been called upon by the IMF managing director and the World Bank Group president to suspend debt repayment from International Development Association countries (that is, those with gross national income per capita below $1,175 in 2020) that request forbearance. This would help with their immediate liquidity needs to address the challenges of the pandemic.

Policies for the Recovery Phase

Once the pandemic abates and containment measures are lifted, the policy focus will need to shift to rapidly moving to recovery while scaling back special targeted measures deployed during the shutdown and ensuring debt overhangs do not weigh on economic activity. This will require efforts at the national level and continued strong multilateral cooperation. There is still substantial uncertainty on how long it will take for economic activity to normalize, and the policy challenges will be much more severe in a scenario with more protracted dislocation from the pandemic.

Securing a swift recovery. The lifting of containment measures is likely to be gradual, and even after containment measures are unwound, economic activity might take a while to normalize. Uncertainty about contagion could lead to persistent voluntary social distancing and subdued consumer demand for services. Firms may only slowly start hiring workers and expanding payroll because they remain unsure about the demand for their output and about securing parts and components, and if they worry about attrition of workers' skills

following a spell of unemployment. Clear and effective communication about the state of the pandemic and the decline of new infections will be essential. As discussed above, broad monetary and fiscal stimulus where space permits—coordinated internationally to maximize impact—would be most effective to boost spending in the recovery phase. Hiring subsidies may need to be an important component of the fiscal strategy to encourage firms to hire unemployed workers. Worker retraining programs and active labor market policies would help ease the matching of unemployed workers to vacancies. More generally, strong policy frameworks and ensuring that inflation expectations remain well anchored will be essential through a recovery period likely to feature a range of inflation outcomes (in some countries, supply chain disruptions and shortages can lead to prolonged price increases and trigger expectations of rising inflation; in others, persistently weak demand may lead to drastically lower inflation expectations and worries about entrenched debt-deflation spirals).

Scaling back targeted measures. The temporary and targeted fiscal and financial sector measures that help maintain economic relationships through the shutdown will need to be unwound as the underlying restrictions are gradually lifted and the recovery is firmly under way—a process that may be protracted. This will help free up fiscal resources that can be channeled toward boosting demand. This includes removing credit guarantees for firms affected by the shutdown, rolling back wage subsidies and reduced worktime programs, and unwinding equity stakes in corporations.

Balance sheet repair, debt restructuring. Recoveries from past crises have often been slowed by impaired balance sheets and debt overhangs. Supervisors and regulators should encourage early and proactive recognition of nonperforming loans. A strategy that facilitates effective resolution of distressed debt should include enhanced regulatory oversight, steps to strengthen the insolvency and debt enforcement framework, and measures to facilitate the development of a distressed debt market. Bankruptcy courts as well as out-of-court restructuring mechanisms with independent restructuring experts will need to move swiftly to assess valuations and apportion losses across banks, investors, and firms. Importantly, fundamentally unviable firms will need to be dissolved to avoid persistent resource misallocation, with the welfare costs of liquidation absorbed by the broader social safety net (unemployment benefits, retraining, and assistance with job search through employment agencies).

Strong multilateral cooperation. The recovery will also require strong multilateral cooperation to complement national policy efforts. This means reducing tariff and nontariff barriers that impede cross-border trade and global supply chains as well as scaling back capital flow measures as global financial sentiment recovers. Financially constrained countries will need continued multilateral assistance, including access to concessionary financing, grants, and debt relief. Multilateral efforts should also be directed to improving global health care infrastructure and pandemic preparedness (for example, early and automatic exchange of information on unusual infections, global stockpiles of personal protective equipment, and clear protocols on social distancing and on cross-border transfers of essential medical supplies).

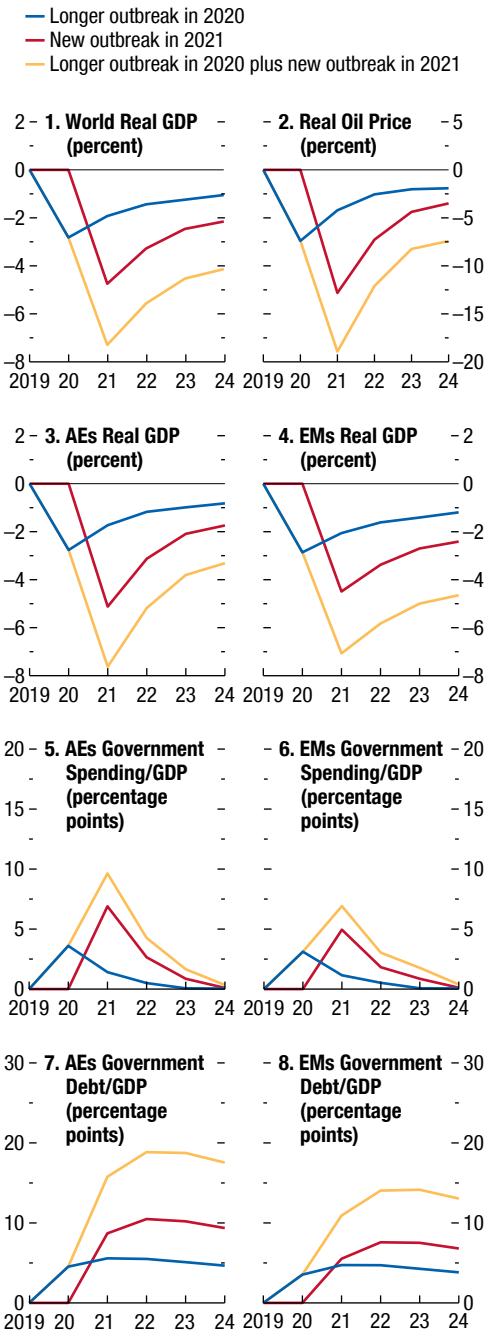
Scenario Box. Alternative Evolutions in the Fight against COVID-19

The IMF's G20 Model and a detailed sectoral-based analysis are used here to estimate the impact of three potential alternative outcomes for the evolution of the global fight against COVID-19. The first alternative estimates the impact of the fight against the spread of the virus in 2020 taking roughly 50 percent longer than assumed in the baseline. The second alternative considers the impact of a second, but milder, outbreak occurring in 2021. The third alternative estimates the potential impact of both the outbreak taking longer to contain in 2020 and a second outbreak occurring in 2021. All three scenarios contain four common elements: the direct impact of measures to contain the spread of the virus; tightening in financial conditions; discretionary policy measures to support incomes and ease financial conditions; and scarring resulting from the economic dislocation that policy measures are unable to fully offset.

The first scenario assumes that, in all countries, the measures to contain the spread of the virus in 2020 last roughly 50 percent longer than assumed in the baseline. In addition, financial conditions tighten further, with sovereign risk premiums rising by an average of 25 basis points in emerging market economies, and corporate risk premiums rising by an average of 75 basis points in emerging market economies and 50 basis points in advanced economies. Within advanced and emerging market economy groups, differentiation is based on relative creditworthiness. It is assumed that in advanced economies, monetary policy will prevent sovereign risk premiums from rising. In terms of discretionary policy, fiscal spending is also assumed to respond to the decline in output roughly twice as strongly as it would under typical business cycle fluctuations in economic activity. Because there is very limited room for conventional monetary policy in the baseline, advanced economies are also assumed to implement unconventional measures to contain increases in long-term interest rates. Despite these exceptional discretionary policy actions, it is assumed that there will be some longer-lived damage realized in 2021 in the form of capital destruction, a temporary slowing in productivity growth, and a temporary increase in trend unemployment. For advanced economies, 1 percent of the capital stock is assumed to be lost through bankruptcies, productivity growth is assumed to slow by ¼ percentage point, and trend unemployment is assumed to rise by ½ percentage point. In emerging market economies, more limited

The authors of this box are Keiko Honjo and Susanna Mursula.

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



Source: IMF, G20 Model simulations.
Note: AEs = advanced economies; EMs = emerging market economies.

Scenario Box *(continued)*

fiscal capacity to maintain incomes is assumed to result in scarring that is 50 percent higher than in advanced economies.

The second scenario assumes that there is a second outbreak of the virus in 2021 that is roughly two-thirds as severe as in the baseline. Financial conditions are assumed to tighten by twice as much as they do in the first scenario. Because of the larger impact on economic activity, the scarring, which materializes in 2022, is assumed to be roughly twice as large as in the first scenario.

The third scenario assumes that it takes longer to contain the outbreak in 2020 and that there is a second outbreak in 2021. Because of the larger impact of the combined scenarios on economic activity, it is assumed that there is a nonlinear response of financial markets and scarring. Financial conditions tighten by a further 50 percent, and scarring from the second outbreak increases by 50 percent.

When it takes longer than expected to contain the outbreak (blue line in Scenario Figure 1), global output is 3 percent lower than in the baseline in 2020. Subsequently, output recovers toward the baseline gradually and remains roughly 1 percent below the baseline by the end of the *World Economic Outlook* horizon. The initial decline in economic activity is broadly similar for advanced and emerging market economies. This reflects the fact that, although many of the service sectors most affected by the virus are less important in emerging market economies, tighter financial conditions and more limited fiscal space in emerging market economies amplify the impact. In the medium term, output in emerging market economies is further below the baseline because the limited fiscal space leads to more scarring. If there is a second outbreak in 2021 (red line in Scenario Figure 1), global output is almost 5 percent below the baseline in 2021. Again, advanced and emerging market economies suffer roughly equally initially, with the effects of increased scarring in emerging market economies registering in the medium term. When it both takes longer than expected to contain the outbreak in 2020 and there is a second outbreak in 2021 (yellow line in Scenario Figure 1), global output is almost 8 percent below the baseline in 2021. The potential nonlinearities in financial conditions and scarring lead to output roughly 1 percent further below the baseline in the medium term than a simple linear combination of the two separate scenarios would imply.

There is an important dimension along which the combined scenario could be underestimating the negative impact of these two potential developments should they both arise. The prospect of additional increases in public debt above a baseline that already sees notably higher public debt could spook markets. This increase in sovereign borrowing costs, or simply fear of it materializing, could prevent many countries from providing the income support assumed here. This would lead to even worse outcomes and additional scarring, which would in turn further worsen public balance sheets.

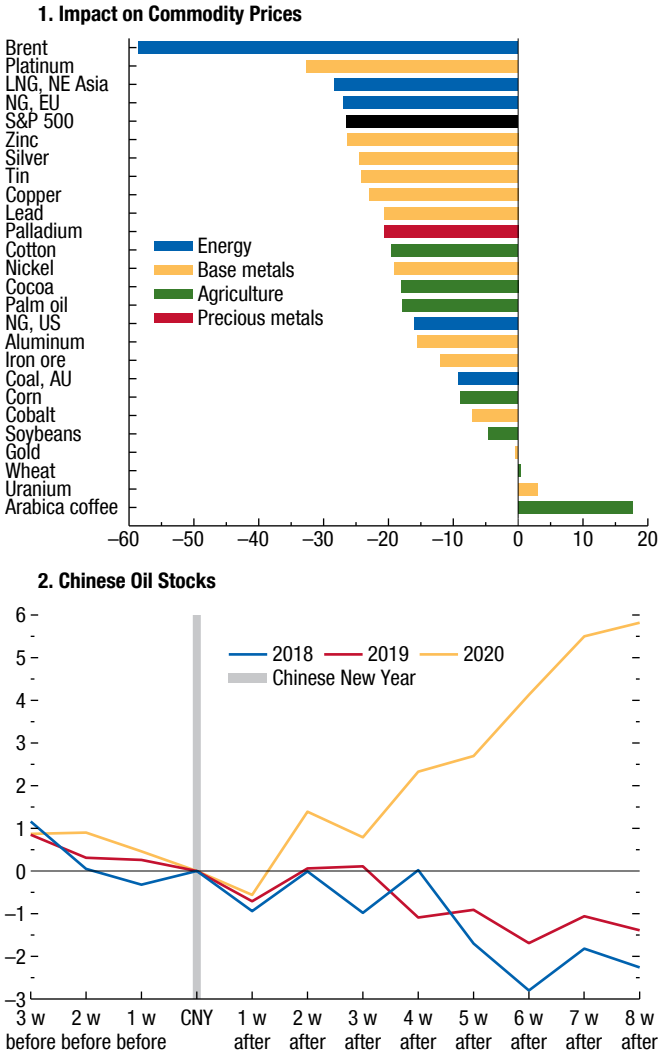
Special Feature: Commodity Market Developments and Forecasts

Commodity prices have decreased sharply since the release of the October 2019 *World Economic Outlook* (WEO), hit hard by the COVID-19 outbreak in late January. This reversed a previous upward trend supported, in part, by better economic prospects. Since the outbreak, energy and metal prices have fallen sharply as measures to contain the pandemic—first in China, then worldwide—substantially reduced travel and dented global industrial activity.[1] Oil prices collapsed further in March as the OPEC+ coalition broke down, unable to reach agreement on how to react to the weak oil demand outlook.[2] The price impact has varied significantly across commodities, depending on the specific end-use sectors and regions affected by the outbreak and on the storability and supply elasticity of the commodity (Figure 1.SF.1, panel 1, and Figure 1.1). Flight to safety has supported gold prices. The outbreak has reduced demand for some agricultural raw materials and animal feed; price support was, however, provided by cereals (such as wheat) following consumer stockpiling in regions affected by COVID-19.

Energy Prices Plummeted

Oil prices declined 7.3 percent between August 2019 and February 2020, falling from $57.60 to $53.40, before further declining by 39.6 percent in March to $32.30 as the COVID-19 outbreak abruptly reversed a positive trend as containment measures directly hit the transportation sector, which accounts for more than 60 percent of oil demand.[3] Confronting a weak demand environment, the OPEC+ coalition broke down on March 6, 2020, leading to the worst one-day price drop in the oil market since 1991. After trading close to $20 toward the end of March, oil prices recovered somewhat in early April as the OPEC+ coalition resumed talks.

Figure 1.SF.1. Impact of the COVID-19 Outbreak
(Percent)



Sources: Argus; Bloomberg L.P.; Thomson Reuters Datastream; URSA Space Systems; and IMF staff calculations.
Note: Panel 1 represents selected commodity price movements between January 17, 2020 (pre-outbreak), and February 7, 2020. Panel 2 represents the percentage point change in inventory fill as a share of inventory capacity, which is indexed to when the Chinese New Year began in each year. CNY = Chinese New Year; Coal, AU = coal, Australia; LNG, NE Asia = liquefied natural gas, northeast Asia; NG, EU = natural gas, Europe; NG, US = natural gas, United States; w = weeks.

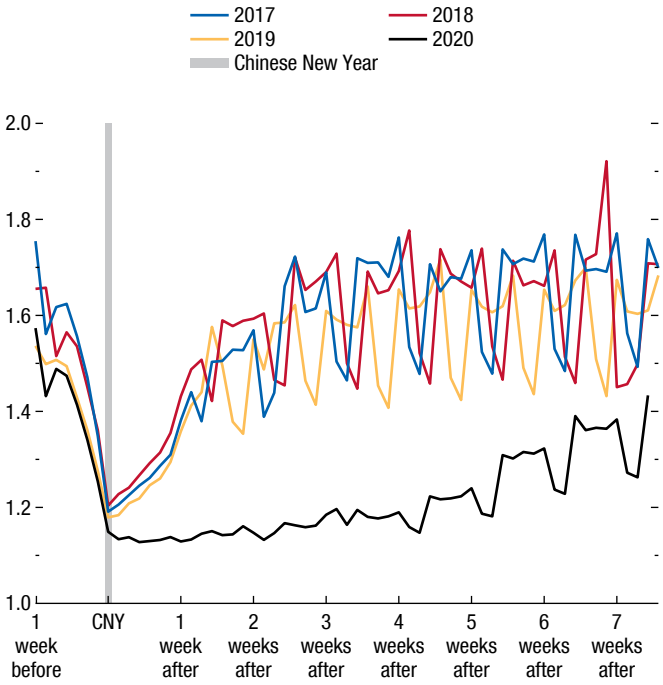
The authors of this special feature are Christian Bogmans, Lama Kiyasseh, Akito Matsumoto, Andrea Pescatori (team leader), and Julia Xueliang Wang, with research assistance from Lama Kiyasseh and Claire Mengyi Li.

[1]The IMF's Primary Commodities Price Index decreased by 1.5 percent between August 2019 and February 2020, the reference periods for the October 2019 WEO and the April 2020 WEO, respectively (Figure 1.SF.1, panel 1), driven by energy and base metals, which fell by 6.7 percent and 5.5 percent, respectively, while food prices increased by 3.3 percent. Most of the decline in commodity prices occurred in March, outside the reference period.

[2]OPEC is the Organization of the Petroleum Exporting Countries; OPEC+ includes Russia and other non-OPEC oil exporters.

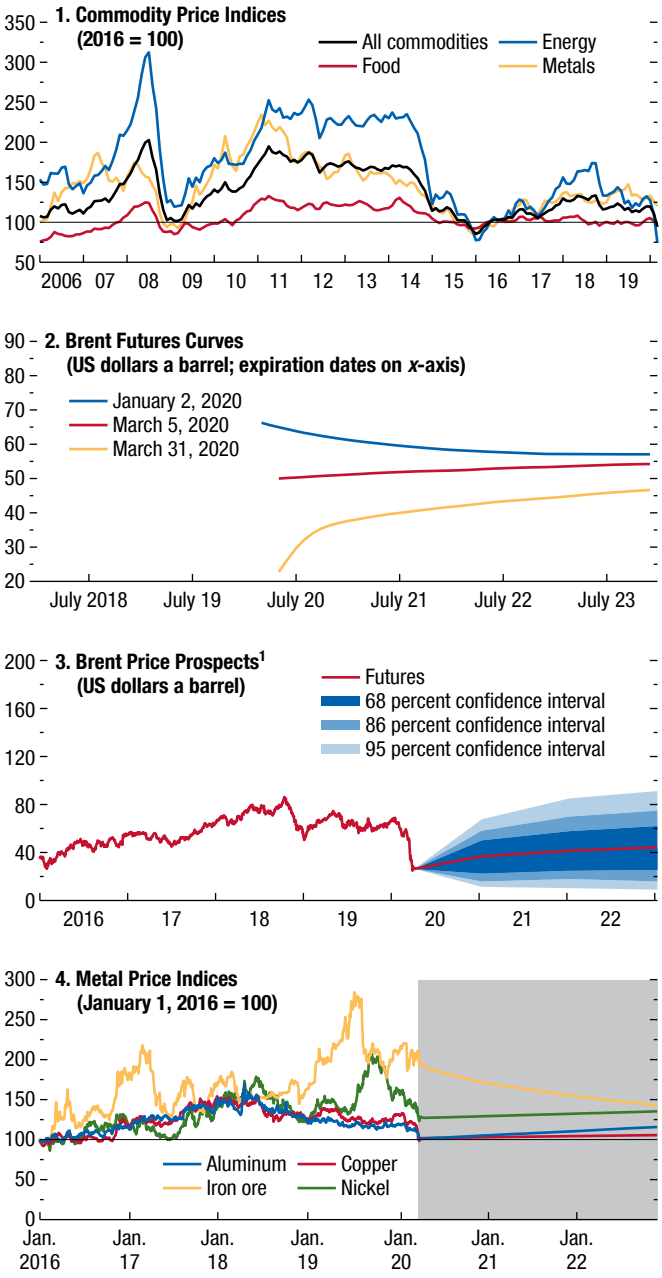
[3]"Oil price" in this document refers to the IMF average petroleum spot price, which is based on UK Brent, Dubai Fateh, and West Texas Intermediate, equally weighted, unless specified otherwise.

Figure 1.SF.2. China Transport Congestion Index
(100 cities, average)



Sources: Wind; and IMF staff calculations.
Note: CNY = Chinese New Year.

Figure 1.SF.3. Commodity Market Developments



Sources: Bloomberg Finance L.P.; IMF, Primary Commodity Price System; Thomson Reuters Datastream; and IMF staff estimates.
[1]Derived from prices of futures options on March 26, 2020.

International and domestic travel restrictions throughout the world and a sharp reduction in road traffic (Figure 1.SF.2) are expected to lead to an unprecedented decline in oil demand in 2020—mostly driven by a collapse in second-quarter oil consumption that could exceed 10 million barrels a day (that is, about 10 percent of global daily oil production). The adjustment would be reflected, first, by a sharp accumulation in oil stocks and voluntary production cuts and, then, in the second half of the year, by a reduction in oil output, especially by price-elastic shale oil and other high-cost producers. The steep upward-sloping oil forward curve suggests a fast reduction in storage capacity (Figure 1.SF.1, panel 2, and Figure 1.SF.3, panel 2).

In the natural gas market, COVID-19 containment policies introduced in late January in China strongly reduced demand for natural gas, leading some Chinese liquefied natural gas (LNG) buyers to halt their LNG imports as storage tanks filled. As a result, Asian LNG spot prices fell below a record low of $3.00 per million British thermal units in February. Prices recovered slightly in March as Chinese activity slowly resumed, but European natural gas prices declined as the pandemic moved to Europe.

As of March 27, oil futures contracts indicate rising Brent prices close to $45 over the next five years. (Figure 1.SF.3, panel 2). Baseline assumptions, also

based on futures prices, suggest average annual prices of $34.80 a barrel in 2020—a decrease of 43.3 percent from the 2019 average—and $36.40 a barrel in 2021 for the IMF's average petroleum spot prices. Uncertainty is very elevated, given the unpredictable course of the pandemic (Figure 1.SF.3, panel 3). Risks are tilted to the downside in the very near term, as storage may fill up locally. Medium-term risks are balanced. Upside risks to prices include faster containment of the COVID-19 pandemic and a strengthening of the OPEC+ deal. The biggest downside risk is a sharper slowdown in global economic activity from the pandemic. Other downside risks include a collapse of the OPEC+ coalition and a stronger-than-expected resilience of US shale oil production to the lower price environment.

Metal Prices Decline Mitigated by Storability, Upside Risks to Food Prices

Base metal prices declined by 5.5 percent between August 2019 and February 2020 and by an additional 9.1 percent in March, reversing a positive trend that ended in mid-January (Figure 1.SF.3, panel 1, and Figure 1.1). The shutdown of Chinese factories in February (China accounts for about half of major metals global consumption) and, later, in Europe and in the United States, has weighed heavily on the demand for industrial metals. Since the outbreak, metal stocks at warehouses approved by major metal exchanges have increased notably, buffering the impact of lower demand on spot prices and shifting the futures curve down significantly.

The IMF annual base metals price index is projected to decrease by 10.2 percent in 2020 and by a further 4.2 percent in 2021 on expectations of a sharp decline in global industrial activity. A further and more prolonged slowdown in metal-intensive sectors' economic activity remains the most significant downside risk for metal prices, while supply stoppages present an upside.

The IMF's food and beverage price index increased slightly, by 0.1 percent between the WEO reference periods, driven by cereals, oranges, seafood, and arabica coffee, which recorded substantial price increases, while the prices of meat, tea, wool, and cotton declined. Buoyed by strong global demand, tighter supply conditions, and news of the US–China Phase 1 trade deal, prices of many foods and beverages rose substantially until January, but the COVID-19 pandemic reversed this trend, especially for the prices of agricultural raw materials, such as cotton and wool. The recent oil price decline has put downward pressure on prices of palm oil, soy oil, sugar, and corn, and the demand outlook for biodiesel and ethanol has worsened considerably. More recently, consumer stockpiling in regions affected by COVID-19 has provided support for prices of wheat, rice, orange juice, and arabica coffee.

Food prices are projected to decrease by 2.6 percent in 2020 and increase by 0.4 percent in 2021. Supply chain disruptions, possibly due to trade restrictions or border delays, food security concerns in regions affected by COVID-19, and export restrictions in large food exporters are significant sources of upside risk for food prices.

Annex Table 1.1.1. European Economies: Real GDP, Consumer Prices, Current Account Balance, and Unemployment

(Annual percent change, unless noted otherwise)

	Real GDP			Consumer Prices[1]			Current Account Balance[2]			Unemployment[3]		
		Projections			Projections			Projections			Projections	
	2019	2020	2021	2019	2020	2021	2019	2020	2021	2019	2020	2021
Europe	**1.6**	**–6.6**	**4.5**	**3.0**	**2.0**	**2.4**	**2.3**	**1.6**	**1.8**	**. . .**	**. . .**	**. . .**
Advanced Europe	**1.3**	**–7.3**	**4.7**	**1.3**	**0.5**	**1.1**	**2.5**	**2.0**	**2.2**	**6.6**	**9.2**	**7.9**
Euro Area[4,5]	1.2	–7.5	4.7	1.2	0.2	1.0	2.7	2.6	2.7	7.6	10.4	8.9
Germany	0.6	–7.0	5.2	1.3	0.3	1.2	7.1	6.6	6.7	3.2	3.9	3.5
France	1.3	–7.2	4.5	1.3	0.3	0.7	–0.8	–0.7	–0.6	8.5	10.4	10.4
Italy	0.3	–9.1	4.8	0.6	0.2	0.7	3.0	3.1	3.0	10.0	12.7	10.5
Spain	2.0	–8.0	4.3	0.7	–0.3	0.7	2.0	2.2	2.4	14.1	20.8	17.5
Netherlands	1.8	–7.5	3.0	2.7	0.5	1.2	10.9	9.0	9.4	3.4	6.5	5.0
Belgium	1.4	–6.9	4.6	1.2	0.3	1.1	–1.2	–0.7	–1.1	5.4	7.3	6.8
Austria	1.6	–7.0	4.5	1.5	0.4	1.7	2.6	1.9	2.0	4.5	5.5	5.0
Ireland	5.5	–6.8	6.3	0.9	0.4	1.7	–9.5	6.3	5.3	5.0	12.1	7.9
Portugal	2.2	–8.0	5.0	0.3	–0.2	1.4	–0.1	0.3	–0.4	6.5	13.9	8.7
Greece	1.9	–10.0	5.1	0.5	–0.5	1.0	–2.1	–6.5	–3.4	17.3	22.3	19.0
Finland	1.0	–6.0	3.1	1.1	0.9	1.7	–0.1	–3.5	–3.0	6.7	8.3	8.4
Slovak Republic	2.3	–6.2	5.0	2.8	1.1	1.4	–3.2	–3.0	–2.4	5.8	8.0	7.4
Lithuania	3.9	–8.1	8.2	2.2	–0.3	1.7	4.3	6.0	4.5	6.3	8.9	8.1
Slovenia	2.4	–8.0	5.4	1.6	0.4	1.4	6.6	0.8	3.2	4.6	9.0	6.0
Luxembourg	2.3	–4.9	4.8	1.7	0.7	1.5	4.5	4.0	4.4	5.4	7.7	6.8
Latvia	2.2	–8.6	8.3	2.7	–0.3	3.0	–0.5	–2.2	–1.5	6.3	8.0	6.3
Estonia	4.3	–7.5	7.9	2.3	1.5	2.0	1.7	–2.7	–1.9	4.4	6.0	4.7
Cyprus	3.2	–6.5	5.6	0.6	0.7	1.0	–6.7	–8.3	–5.6	7.1	8.8	7.4
Malta	4.4	–2.8	7.0	1.5	0.6	1.9	8.4	3.3	6.1	3.4	5.0	4.4
United Kingdom	1.4	–6.5	4.0	1.8	1.2	1.5	–3.8	–4.4	–4.5	3.8	4.8	4.4
Switzerland	0.9	–6.0	3.8	0.4	–0.4	0.6	12.2	7.2	8.8	2.3	2.7	2.6
Sweden	1.2	–6.8	5.2	1.7	0.5	1.5	3.9	2.2	4.0	6.8	10.1	8.9
Czech Republic	2.6	–6.5	7.5	2.9	2.1	2.0	0.0	–2.1	–0.9	2.0	7.5	6.0
Norway	1.2	–6.3	2.9	2.2	2.4	2.2	4.0	–1.3	0.1	3.7	13.0	7.0
Denmark	2.4	–6.5	6.0	0.7	0.7	1.2	7.9	4.8	5.3	5.0	6.5	6.0
Iceland	1.9	–7.2	6.0	3.0	2.3	2.5	5.8	2.1	3.4	3.6	8.0	7.0
San Marino	1.1	–12.2	5.4	1.0	0.3	1.5	0.7	–4.5	–1.4	7.7	10.3	8.6
Emerging and Developing Europe[6]	**2.1**	**–5.2**	**4.2**	**6.5**	**5.1**	**5.0**	**1.4**	**–0.4**	**–0.5**	**. . .**	**. . .**	**. . .**
Russia	1.3	–5.5	3.5	4.5	3.1	3.0	3.8	0.7	0.6	4.6	4.9	4.8
Turkey	0.9	–5.0	5.0	15.2	12.0	12.0	1.1	0.4	–0.2	13.7	17.2	15.6
Poland	4.1	–4.6	4.2	2.3	3.2	2.6	0.5	0.2	0.1	3.3	9.9	8.0
Romania	4.1	–5.0	3.9	3.8	2.2	1.5	–4.7	–5.5	–4.7	3.9	10.1	6.0
Ukraine[7]	3.2	–7.7	3.6	7.9	4.5	7.2	–0.7	–2.0	–2.4	8.5	10.1	9.3
Hungary	4.9	–3.1	4.2	3.4	3.3	3.2	–0.8	–0.1	–0.6	3.4	5.4	4.0
Belarus[7]	1.2	–6.0	3.5	5.6	5.6	5.6	–1.8	–2.9	–2.5	0.3	2.3	1.8
Bulgaria[5]	3.4	–4.0	6.0	2.5	1.0	1.9	4.0	1.7	0.6	4.2	8.0	4.5
Serbia	4.2	–3.0	7.5	1.9	1.4	1.9	–6.9	–6.1	–5.5	10.9	13.4	13.0
Croatia	2.9	–9.0	4.9	0.8	1.3	1.2	2.9	–4.0	–1.5	7.8	11.5	8.0

Source: IMF staff.

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

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

[2]Percent of GDP.

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

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

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

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

[7]See country-specific notes for Belarus and Ukraine in the "Country Notes" section of the Statistical Appendix.

Annex Table 1.1.2. Asian and Pacific Economies: Real GDP, Consumer Prices, Current Account Balance, and Unemployment

(Annual percent change, unless noted otherwise)

	Real GDP			Consumer Prices[1]			Current Account Balance[2]			Unemployment[3]		
		Projections			Projections			Projections			Projections	
	2019	2020	2021	2019	2020	2021	2019	2020	2021	2019	2020	2021
Asia	**4.6**	**0.0**	**7.6**	**2.7**	**2.5**	**2.5**	**1.8**	**1.0**	**1.2**	**. . .**	**. . .**	**. . .**
Advanced Asia	**1.2**	**–4.5**	**3.8**	**0.7**	**0.5**	**0.8**	**4.3**	**2.9**	**3.0**	**3.1**	**4.1**	**3.7**
Japan	0.7	–5.2	3.0	0.5	0.2	0.4	3.6	1.7	1.9	2.4	3.0	2.3
Korea	2.0	–1.2	3.4	0.4	0.3	0.4	3.7	4.9	4.8	3.8	4.5	4.5
Australia	1.8	–6.7	6.1	1.6	1.4	1.8	0.5	–0.6	–1.8	5.2	7.6	8.9
Taiwan Province of China	2.7	–4.0	3.5	0.5	0.5	1.5	10.5	8.2	8.3	3.8	4.4	4.0
Singapore	0.7	–3.5	3.0	0.6	–0.2	0.5	17.0	14.8	15.7	2.3	2.5	2.4
Hong Kong SAR	–1.2	–4.8	3.9	2.9	2.0	2.5	6.2	6.0	5.0	3.0	4.5	3.9
New Zealand	2.2	–7.2	5.9	1.6	1.2	1.4	–3.0	–4.5	–3.2	4.1	9.2	6.8
Macao SAR	–4.7	–29.6	32.0	2.8	2.0	2.3	34.8	13.1	30.0	1.7	2.0	1.8
Emerging and Developing Asia	**5.5**	**1.0**	**8.5**	**3.2**	**3.0**	**2.9**	**0.6**	**0.1**	**0.5**	**. . .**	**. . .**	**. . .**
China	6.1	1.2	9.2	2.9	3.0	2.6	1.0	0.5	1.0	3.6	4.3	3.8
India[4]	4.2	1.9	7.4	4.5	3.3	3.6	–1.1	–0.6	–1.4	. . .	. . .	. . .
ASEAN-5	**4.8**	**–0.6**	**7.8**	**2.1**	**1.8**	**2.7**	**1.2**	**–0.5**	**0.1**	**. . .**	**. . .**	**. . .**
Indonesia	5.0	0.5	8.2	2.8	2.9	2.9	–2.7	–3.2	–2.7	5.3	7.5	6.0
Thailand	2.4	–6.7	6.1	0.7	–1.1	0.6	6.9	5.2	5.6	1.1	1.1	1.1
Malaysia	4.3	–1.7	9.0	0.7	0.1	2.8	3.3	–0.1	1.7	3.3	4.9	3.4
Philippines	5.9	0.6	7.6	2.5	1.7	2.9	–0.1	–2.3	–2.2	5.1	6.2	5.3
Vietnam	7.0	2.7	7.0	2.8	3.2	3.9	4.0	0.7	1.0	2.2	. . .	. . .
Other Emerging and Developing Asia[5]	**6.3**	**1.2**	**7.5**	**5.6**	**5.3**	**5.3**	**–2.6**	**–3.7**	**–2.3**	**. . .**	**. . .**	**. . .**
Memorandum												
Emerging Asia[6]	**5.4**	**1.0**	**8.5**	**3.2**	**2.9**	**2.8**	**0.7**	**0.3**	**0.6**	**. . .**	**. . .**	**. . .**

Source: IMF staff.

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

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

[2]Percent of GDP.

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

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

[5]Other Emerging and Developing Asia comprises Bangladesh, Bhutan, Brunei Darussalam, Cambodia, Fiji, Kiribati, Lao P.D.R., Maldives, Marshall Islands, Micronesia, Mongolia, Myanmar, Nauru, Nepal, Palau, Papua New Guinea, Samoa, Solomon Islands, Sri Lanka, Timor-Leste, Tonga, Tuvalu, and Vanuatu.

[6]Emerging Asia comprises the ASEAN-5 (Indonesia, Malaysia, Philippines, Thailand, Vietnam) economies, China, and India.

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

(Annual percent change, unless noted otherwise)

	Real GDP			Consumer Prices[1]			Current Account Balance[2]			Unemployment[3]		
		Projections			Projections			Projections			Projections	
	2019	2020	2021	2019	2020	2021	2019	2020	2021	2019	2020	2021
North America	**2.0**	**–6.0**	**4.5**	**2.0**	**0.8**	**2.2**	**–2.2**	**–2.6**	**–2.6**	**. . .**	**. . .**	**. . .**
United States	2.3	–5.9	4.7	1.8	0.6	2.2	–2.3	–2.6	–2.8	3.7	10.4	9.1
Canada	1.6	–6.2	4.2	1.9	0.6	1.3	–2.0	–3.7	–2.3	5.7	7.5	7.2
Mexico	–0.1	–6.6	3.0	3.6	2.7	2.8	–0.2	–0.3	–0.4	3.3	5.3	3.5
Puerto Rico[4]	2.0	–6.0	1.5	0.7	–1.5	0.6	. . .	. . .	. . .	8.5	13.0	12.5
South America[5]	**–0.1**	**–5.0**	**3.4**	**9.1**	**8.1**	**7.5**	**–2.3**	**–1.6**	**–1.9**	**. . .**	**. . .**	**. . .**
Brazil	1.1	–5.3	2.9	3.7	3.6	3.3	–2.7	–1.8	–2.3	11.9	14.7	13.5
Argentina	–2.2	–5.7	4.4	53.5	. . .	. . .	–0.8	. . .	. . .	9.8	10.9	10.1
Colombia	3.3	–2.4	3.7	3.5	3.5	3.2	–4.3	–4.7	–4.2	10.5	12.2	11.9
Chile	1.1	–4.5	5.3	2.3	3.4	2.9	–3.9	–0.9	–1.8	7.3	9.7	8.9
Peru	2.2	–4.5	5.2	2.1	1.7	1.8	–1.4	–0.9	–1.0	6.6	7.1	7.3
Venezuela	–35.0	–15.0	–5.0	19,906	15,000	15,000	9.8	2.4	3.4	. . .	. . .	. . .
Ecuador	0.1	–6.3	3.9	0.3	0.0	1.2	–0.4	–5.7	–3.6	3.8	6.5	5.9
Paraguay	0.2	–1.0	4.0	2.8	2.9	3.2	–1.0	–2.2	–1.0	7.2	7.1	6.4
Bolivia	2.8	–2.9	2.9	1.8	2.3	4.4	–3.2	–4.6	–4.9	4.0	8.0	4.0
Uruguay	0.2	–3.0	5.0	7.9	8.8	7.9	0.2	–2.5	–3.1	9.4	10.5	8.1
Central America[6]	**2.4**	**–3.0**	**4.1**	**2.2**	**1.3**	**1.7**	**–1.4**	**–2.6**	**–2.3**	**. . .**	**. . .**	**. . .**
Caribbean[7]	**3.3**	**–2.8**	**4.0**	**2.8**	**4.0**	**4.3**	**–0.6**	**–6.5**	**–3.8**	**. . .**	**. . .**	**. . .**
Memorandum												
Latin America and the Caribbean[8]	0.1	–5.2	3.4	7.1	6.2	5.9	–1.7	–1.5	–1.6	. . .	. . .	. . .
Eastern Caribbean Currency Union[9]	3.7	–7.6	6.1	0.9	0.8	1.7	–8.9	–21.4	–14.2	. . .	. . .	. . .

Source: IMF staff.

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. Aggregates exclude Venezuela but include Argentina from 2017 onward. 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]Puerto Rico is a territory of the United States but its statistical data are maintained on a separate and independent basis.

[5]Includes Guyana and Suriname. See country-specific notes for Argentina and Venezuela in the "Country Notes" section of the Statistical Appendix.

[6]Central America comprises Belize, Costa Rica, El Salvador, Guatemala, Honduras, Nicaragua, and Panama.

[7]The Caribbean comprises Antigua and Barbuda, Aruba, The Bahamas, Barbados, Dominica, Dominican Republic, Grenada, Haiti, Jamaica, St. Kitts and Nevis, St. Lucia, St. Vincent and the Grenadines, and Trinidad and Tobago.

[8]Latin America and the Caribbean comprises Mexico and economies from the Caribbean, Central America, and South America. See country-specific notes for Argentina and Venezuela in the "Country Notes" section of the Statistical Appendix.

[9]Eastern Caribbean Currency Union comprises Antigua and Barbuda, Dominica, Grenada, St. Kitts and Nevis, St. Lucia, and St. Vincent and the Grenadines as well as Anguilla and Montserrat, which are not IMF members.

Annex Table 1.1.4. Middle Eastern and Central Asian Economies: Real GDP, Consumer Prices, Current Account Balance, and Unemployment

(Annual percent change, unless noted otherwise)

	Real GDP			Consumer Prices[1]			Current Account Balance[2]			Unemployment[3]		
		Projections			Projections			Projections			Projections	
	2019	2020	2021	2019	2020	2021	2019	2020	2021	2019	2020	2021
Middle East and Central Asia	**1.2**	**–2.8**	**4.0**	**8.5**	**8.4**	**8.7**	**0.4**	**–5.7**	**–4.6**	**. . .**	**. . .**	**. . .**
Oil Exporters[4]	**–0.2**	**–3.9**	**4.6**	**7.5**	**7.6**	**8.1**	**2.4**	**–5.8**	**–4.5**	**. . .**	**. . .**	**. . .**
Saudi Arabia	0.3	–2.3	2.9	–1.2	0.9	2.0	6.3	–3.1	–3.4	. . .	. . .	. . .
Iran	–7.6	–6.0	3.1	41.1	34.2	33.5	–0.1	–4.1	–3.4	13.6	16.3	16.7
United Arab Emirates	1.3	–3.5	3.3	–1.9	–1.0	1.5	7.4	1.5	4.1	. . .	. . .	. . .
Iraq	3.9	–4.7	7.2	–0.2	0.8	1.0	–1.2	–21.7	–14.1	. . .	. . .	. . .
Algeria	0.7	–5.2	6.2	2.0	3.5	3.7	–9.6	–18.3	–17.1	11.4	15.1	13.9
Kazakhstan	4.5	–2.5	4.1	5.2	6.9	6.8	–3.6	–6.8	–5.5	4.8	7.8	5.8
Qatar	0.1	–4.3	5.0	–0.6	–1.2	2.4	2.4	–1.9	–1.8	. . .	. . .	. . .
Kuwait	0.7	–1.1	3.4	1.1	0.5	2.3	8.9	–10.2	–7.8	. . .	. . .	. . .
Oman	0.5	–2.8	3.0	0.1	1.0	3.4	–5.2	–14.2	–11.1	. . .	. . .	. . .
Azerbaijan	2.3	–2.2	0.7	2.6	3.3	3.2	9.2	–8.2	–3.7	5.0	5.0	5.0
Turkmenistan	6.3	1.8	6.4	5.1	8.0	6.0	5.1	–1.4	–0.4	. . .	. . .	. . .
Oil Importers[5]	**3.7**	**–0.8**	**2.9**	**10.4**	**9.9**	**9.7**	**–5.5**	**–5.4**	**–4.7**	**. . .**	**. . .**	**. . .**
Egypt	5.6	2.0	2.8	13.9	5.9	8.2	–3.6	–4.3	–4.5	8.6	10.3	11.6
Pakistan	3.3	–1.5	2.0	6.7	11.1	8.0	–5.0	–1.7	–2.4	4.1	4.5	5.1
Morocco	2.2	–3.7	4.8	0.0	0.3	1.3	–4.1	–7.8	–4.3	9.2	12.5	10.5
Uzbekistan	5.6	1.8	7.0	14.5	12.6	10.6	–5.6	–9.4	–6.4	. . .	. . .	. . .
Sudan	–2.5	–7.2	–3.0	51.0	81.3	91.1	–14.9	–15.2	–11.8	22.1	25.0	22.0
Tunisia	1.0	–4.3	4.1	6.7	6.2	4.9	–8.8	–7.5	–8.1	14.9	. . .	. . .
Jordan	2.0	–3.7	3.7	0.3	0.2	1.6	–2.8	–5.8	–5.3	19.1	. . .	. . .
Lebanon	–6.5	–12.0	. . .	2.9	17.0	. . .	–20.6	–12.6	. . .	. . .	. . .	. . .
Afghanistan	3.0	–3.0	4.5	2.3	4.7	4.5	8.6	4.9	5.8	. . .	. . .	. . .
Georgia	5.1	–4.0	3.0	4.9	4.6	3.7	–5.1	–10.5	–6.9	11.6	. . .	. . .
Tajikistan	7.5	1.0	5.5	7.8	8.1	6.9	–3.3	–7.7	–4.5	. . .	. . .	. . .
Armenia	7.6	–1.5	4.8	1.4	0.8	2.0	–8.2	–8.6	–7.2	17.7	19.0	18.4
Kyrgyz Republic	4.5	–4.0	8.0	1.1	10.6	7.2	–9.1	–16.6	–11.0	6.6	6.6	6.6
Memorandum												
Caucasus and Central Asia	4.8	–1.0	4.7	6.8	7.7	6.9	–1.6	–7.2	–5.0	. . .	. . .	. . .
Middle East, North Africa, Afghanistan, and Pakistan	0.7	–3.1	3.9	8.7	8.5	8.9	0.6	–5.5	–4.5	. . .	. . .	. . .
Middle East and North Africa	0.3	–3.3	4.2	9.0	8.2	9.1	1.0	–6.0	–4.8	. . .	. . .	. . .
Israel[6]	3.5	–6.3	5.0	0.8	–1.9	0.5	3.5	3.5	3.2	3.8	12.0	7.6
Maghreb[7]	1.9	–6.2	9.3	2.2	3.5	3.8	–6.8	–12.6	–11.0	. . .	. . .	. . .
Mashreq[8]	4.7	1.0	2.6	12.4	6.0	8.0	–5.8	–5.4	–5.2	. . .	. . .	. . .

Source: IMF staff.

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

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

[2]Percent of GDP.

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

[4]Includes Bahrain, Libya, and Yemen.

[5]Includes Djibouti, Mauritania, and Somalia. Excludes Syria because of the uncertain political situation.

[6]Israel, which is not a member of the economic region, is included for reasons of geography but is not included in the regional aggregates.

[7]The Maghreb comprises Algeria, Libya, Mauritania, Morocco, and Tunisia.

[8]The Mashreq comprises Egypt, Jordan, and Lebanon. Syria is excluded because of the uncertain political situation.

Annex Table 1.1.5. Sub-Saharan African Economies: Real GDP, Consumer Prices, Current Account Balance, and Unemployment

(Annual percent change, unless noted otherwise)

	Real GDP			Consumer Prices[1]			Current Account Balance[2]			Unemployment[3]		
		Projections			Projections			Projections			Projections	
	2019	2020	2021	2019	2020	2021	2019	2020	2021	2019	2020	2021
Sub-Saharan Africa	**3.1**	**–1.6**	**4.1**	**8.4**	**9.3**	**7.6**	**–4.0**	**–4.7**	**–4.2**	**. . .**	**. . .**	**. . .**
Oil Exporters[4]	**1.7**	**–2.9**	**2.5**	**11.7**	**13.3**	**12.9**	**–2.5**	**–4.1**	**–2.9**	**. . .**	**. . .**	**. . .**
Nigeria	2.2	–3.4	2.4	11.4	13.4	12.4	–3.8	–3.3	–2.5	. . .	. . .	. . .
Angola	–1.5	–1.4	2.6	17.1	20.7	22.3	2.9	–6.7	–3.0	. . .	. . .	. . .
Gabon	3.4	–1.2	3.6	2.0	3.0	3.0	–0.8	–8.4	–6.1	. . .	. . .	. . .
Republic of Congo	–0.9	–2.3	3.4	2.2	2.1	2.6	8.4	–1.2	–2.8	. . .	. . .	. . .
Chad	3.0	–0.2	6.1	–1.0	2.2	2.9	–4.9	–12.9	–10.1	. . .	. . .	. . .
Middle-Income Countries[5]	**2.3**	**–3.0**	**4.9**	**4.1**	**3.8**	**4.1**	**–3.2**	**–2.1**	**–2.6**	**. . .**	**. . .**	**. . .**
South Africa	0.2	–5.8	4.0	4.1	2.4	3.2	–3.0	0.2	–1.3	28.7	35.3	34.1
Ghana	6.1	1.5	5.9	7.2	9.7	8.5	–2.7	–4.5	–3.0	. . .	. . .	. . .
Côte d'Ivoire	6.9	2.7	8.7	0.8	1.2	1.4	–2.7	–3.3	–2.5	. . .	. . .	. . .
Cameroon	3.7	–1.2	4.1	2.5	2.8	2.3	–3.7	–5.7	–4.8	. . .	. . .	. . .
Zambia	1.5	–3.5	2.3	9.8	13.4	12.1	1.0	–2.0	–2.6	. . .	. . .	. . .
Senegal	5.3	3.0	5.5	1.0	2.0	1.9	–9.1	–11.3	–11.4	. . .	. . .	. . .
Low-Income Countries[6]	**5.6**	**1.6**	**4.9**	**9.7**	**11.2**	**5.8**	**–6.7**	**–8.0**	**–7.5**	**. . .**	**. . .**	**. . .**
Ethiopia	9.0	3.2	4.3	15.8	15.4	9.1	–5.3	–5.3	–4.6	. . .	. . .	. . .
Kenya	5.6	1.0	6.1	5.2	5.1	5.0	–4.5	–4.6	–4.4	. . .	. . .	. . .
Tanzania	6.3	2.0	4.6	3.4	3.9	4.3	–3.2	–3.8	–3.8	. . .	. . .	. . .
Uganda	4.9	3.5	4.3	2.9	3.9	4.8	–9.5	–9.7	–8.1	. . .	. . .	. . .
Democratic Republic of the Congo	4.4	–2.2	3.5	4.8	11.0	10.5	–4.2	–5.4	–4.1	. . .	. . .	. . .
Mali	5.1	1.5	4.1	–0.6	0.6	1.5	–4.2	–3.7	–3.9	. . .	. . .	. . .
Madagascar	4.8	0.4	5.0	5.6	5.5	6.5	–2.5	–2.9	–3.0	. . .	. . .	. . .

Source: IMF staff.

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

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

[2]Percent of GDP.

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

[4]Includes Equatorial Guinea and South Sudan.

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

[6]Includes Benin, Burkina Faso, Burundi, the Central African Republic, Comoros, Eritrea, The Gambia, Guinea, Guinea-Bissau, Liberia, Malawi, Mali, Mozambique, Niger, Rwanda, São Tomé and Príncipe, Sierra Leone, Togo, and Zimbabwe.

Annex Table 1.1.6. Summary of World Real per Capita Output

(Annual percent change; in international currency at purchasing power parity)

	Average									Projections	
	2002–11	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
World	**2.6**	**2.0**	**2.2**	**2.3**	**2.2**	**2.1**	**2.6**	**2.4**	**1.7**	**–4.2**	**4.6**
Advanced Economies	**1.1**	**0.7**	**0.9**	**1.6**	**1.8**	**1.2**	**2.1**	**1.8**	**1.3**	**–6.5**	**4.1**
United States	0.9	1.5	1.2	1.8	2.2	0.9	1.7	2.4	1.8	–6.4	4.1
Euro Area[1]	0.7	–1.2	–0.5	1.2	1.8	1.7	2.4	1.8	1.1	–7.7	4.6
Germany	1.2	0.2	0.2	1.8	0.9	1.4	2.1	1.2	0.3	–7.0	5.2
France	0.6	–0.2	0.1	0.4	0.7	0.8	2.0	1.6	1.2	–7.4	4.2
Italy	–0.3	–3.3	–2.4	–0.5	0.8	1.5	1.8	1.0	0.5	–8.9	5.0
Spain	0.3	–3.0	–1.1	1.7	3.9	3.1	2.9	2.3	1.9	–8.4	3.8
Japan	0.5	1.7	2.2	0.5	1.3	0.5	2.3	0.5	0.9	–4.8	3.4
United Kingdom	0.8	0.8	1.5	1.8	1.5	1.1	1.3	0.7	0.8	–7.0	3.5
Canada	1.0	0.7	1.3	1.8	–0.1	0.0	1.9	0.6	0.2	–7.5	3.1
Other Advanced Economies[2]	2.8	1.3	1.7	2.2	1.5	1.7	2.4	1.9	1.1	–5.3	3.8
Emerging Market and Developing Economies	**4.8**	**3.6**	**3.6**	**3.2**	**2.8**	**3.1**	**3.3**	**3.2**	**2.3**	**–2.4**	**5.3**
Emerging and Developing Asia	7.4	5.9	5.9	5.8	5.8	5.8	5.7	5.4	4.6	0.2	7.6
China	10.1	7.4	7.3	6.7	6.4	6.2	6.4	6.3	5.8	0.9	8.9
India[3]	6.1	4.1	5.0	6.0	6.6	6.9	5.7	4.7	2.9	0.5	6.0
ASEAN-5[4]	3.9	4.7	3.7	3.4	3.6	3.9	4.2	4.2	3.8	–1.7	6.7
Emerging and Developing Europe	4.7	2.7	2.7	1.6	0.6	1.5	3.8	3.1	1.9	–5.4	4.0
Russia	5.0	3.5	1.5	–1.1	–2.1	0.1	1.7	2.6	1.4	–5.4	3.6
Latin America and the Caribbean	2.2	1.7	1.7	0.1	–0.9	–1.9	0.2	0.1	–1.2	–6.0	2.5
Brazil	2.8	1.0	2.1	–0.3	–4.4	–4.1	0.5	0.5	0.3	–5.9	2.2
Mexico	0.4	2.2	0.0	1.5	2.0	1.7	0.9	1.0	–1.2	–7.6	2.0
Middle East and Central Asia	2.6	0.9	0.5	0.5	0.4	2.8	–0.2	–0.2	–0.9	–4.9	2.0
Saudi Arabia	1.4	2.5	0.0	2.5	1.7	–0.6	–3.3	0.0	–1.6	–4.2	0.9
Sub-Saharan Africa	2.9	1.5	2.4	2.4	0.5	–1.3	0.3	0.6	0.3	–4.1	1.5
Nigeria	5.9	1.5	2.6	3.5	0.0	–4.2	–1.8	–0.7	–0.4	–5.8	–0.2
South Africa	2.2	0.7	0.9	0.3	–0.3	–1.1	–0.1	–0.7	–1.3	–7.2	2.4
Memorandum											
European Union[5]	1.2	–0.9	–0.2	1.5	2.2	2.0	2.7	2.2	1.6	–7.3	4.7
Low-Income Developing Countries	3.8	1.8	3.6	3.8	2.1	1.4	2.5	2.8	2.8	–1.8	3.3
Middle East and North Africa	2.6	0.2	–0.3	–0.2	0.0	3.1	–1.2	–1.2	–1.8	–5.4	2.0

Source: IMF staff.

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

[1]Data calculated as the sum of individual euro area countries.

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

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

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

[5]Beginning with the April 2020 *World Economic Outlook*, the United Kingdom is excluded from the European Union group.

CHAPTER 2

COUNTERING FUTURE RECESSIONS IN ADVANCED ECONOMIES: CYCLICAL POLICIES IN AN ERA OF LOW RATES AND HIGH DEBT

More than a decade after the global financial crisis, the world is struggling with the health and economic effects of a profound new crisis caused by the COVID-19 pandemic. Advanced economies entered this crisis with interest rates at historical lows and public debts, on average, higher than they had been over the past 60 years. They will come out from the crisis with even higher public debts. Drawing on analysis completed before the emergence of the pandemic, this chapter examines policymakers' options to respond to adverse shocks and build resilience when rates are low and debts high. Even when rates are low, central banks still have wide scope to use unconventional monetary policy tools to support the economy, although questions remain about side effects on future financial stability and threats to central bank independence with their use. When monetary policy is constrained, countercyclical fiscal policy needs to play a larger role. The analysis shows that, prior to the current crisis and over the past few years, declining interest rates relative to growth modestly reduced the average rise in debt ratios in advanced economies compared with earlier projections. Evidence suggests that fiscal stimulus using public spending is particularly potent when there is economic slack—as would be the case after the pandemic recedes—and rates are low while monetary policy is accommodative. Analysis shows that newly proposed measures for rules-based fiscal stimulus—stimulus automatically triggered by deteriorating macroeconomic indicators—can be highly effective in countering a downturn in such an environment. To ensure a prompt and effective response to adverse shocks in such conditions, policymakers should consider increasing the sensitivity of traditional automatic stabilizers and adopting rules-based fiscal stimulus measures.

Introduction

In responding to the COVID-19 pandemic, policymakers in advanced economies have initiated extraordinary discretionary fiscal and monetary policy support measures, in many cases larger than those undertaken in reaction to the global financial crisis in 2008 (see Chapter 1 of the April 2020 *World Economic Outlook* (WEO)). As the pandemic is still unfolding and uncertainties about its path are high, even larger measures may be forthcoming over the next months.

In 2008 at the onset of the global financial crisis, advanced economy central banks reduced policy rates by an average 3 percentage points, somewhat greater than the cuts made during earlier recessions (Figure 2.1). The average government at that time provided expansionary fiscal stimulus, with primary balances to GDP declining by about 4 percentage points, markedly more than during previous recessions.[1] In parallel, central banks deployed more unconventional monetary policy tools, including forward guidance (public communication by the central bank about the likely future path of monetary policy and its objectives and intentions), large-scale financial asset purchases (quantitative and credit easing), and negative interest rates. These monetary and fiscal efforts are widely acknowledged to have averted a deeper slump.[2]

More than 10 years after the global financial crisis, advanced economies are in a new economic crisis caused by the pandemic, with policy rates considerably lower and public debt levels higher than they have been over the previous 60 years (Figure 2.2, panels 1 and 2). Given the historical size of monetary and fiscal policy actions after a recession starts and prevailing low rates and high debts, some observers have raised questions about monetary and fiscal policymakers' scope to stimulate their economies in the event of further adverse shocks.[3]

Against this backdrop, this chapter examines measures that policymakers can deploy to build resilience

The authors of this chapter are Michal Andrle, Philip Barrett, John Bluedorn (co-lead), Francesca Caselli, and Wenjie Chen (co-lead), with support from Christopher Johns, Adrian Robles Villamil, and Shan Wang. The chapter also benefited from discussions with Yuriy Gorodnichenko, Jay Shambaugh, and from comments by January 2020 internal seminar participants and reviewers.

[1]Unlike the change in short-term policy rates, the change in the ratio of the primary fiscal balance to GDP is a mix of deliberate policy responses (whether discretionary or automatic) and the GDP decline from the recession. Alternative indicators that attempt to isolate the fiscal policy response are available, but do not cover as wide a sample of countries nor go back as far in time.

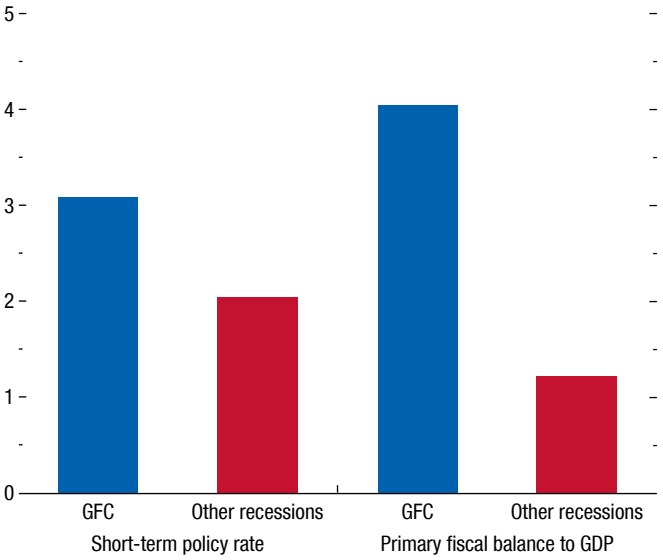
[2]See Chapter 2 of the October 2018 WEO.

[3]See Carney (2020), Summers (2020), and Yellen (2020), among others.

Figure 2.1. Monetary and Fiscal Responses to Crises and Recessions in Advanced Economies since 1960

(Percentage point decline in indicated policy variable)

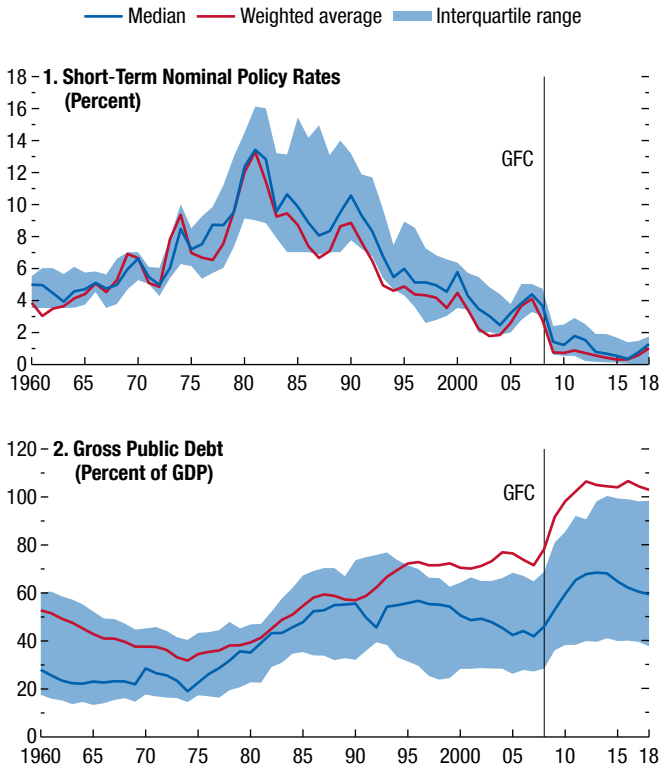
In response to the global financial crisis, central banks reduced policy rates by about one-third more, and the primary fiscal balance declined by about three times more than during other recessions.



Sources: Bank for International Settlements; Haver Analytics; IMF, *International Financial Statistics*; Mauro and others (2015); national sources; World Bank; and IMF staff calculations.
Note: The change in the indicated policy variable is dated to the year before a recession starts to the year after it ends. Recessions are defined to be years of negative output growth. All estimates are statistically significantly different from zero, and estimates for the GFC and other recessions are statistically significantly different from each other at the 10 percent level. GFC = global financial crisis associated recession (start in 2007–09).

Figure 2.2. Policy Rates and Public Debt in Advanced Economies

Reflecting long-term trends and the aftermath of the global financial crisis, the average advanced economy policy rate is near its lowest level since 1960 while average public debt to GDP is near its historical highs.



Sources: Bank for International Settlements; Haver Analytics; IMF Historical Public Debt Database; IMF, *International Financial Statistics*; Mauro and others (2015); national sources; and IMF staff calculations.
Note: The sample includes 35 advanced economies. For panel 1, when a country joins the euro area, it drops out. The euro area policy rate (set by the European Central Bank) enters in 1999, replacing the policy rates for euro area member states as they join. The weighted average uses nominal US dollar GDP weights. Time coverage across countries is unbalanced. GFC = global financial crisis (2008).

to shocks and counter future recessions in an era of low rates and high public debt. Drawing upon the literature and new analysis, it addresses the following questions:

- *Monetary policy*: Given low rates in many advanced economies, how can monetary policy best respond to adverse shocks?
- *Fiscal policy*: In view of historically high levels of debt in many advanced economies, to what extent have interest rate declines in recent years affected governments' capacities to borrow and provide fiscal support—their fiscal space as captured by public debt to GDP? Which fiscal stimulus measures appear to be most effective and how does their effectiveness differ with the degrees of economic slack and monetary accommodation? Could enhancements to existing automatic stabilizers and the adoption of rules-based fiscal stimulus—automatic fiscal stimulus triggered by the deterioration of macroeconomic indicators—help dampen economic fluctuations?

The main findings of the chapter are:

- Although the decline in rates in many economies has limited the scope for conventional interest rate cuts to counter a recession, further monetary accommodation is eminently possible using unconventional tools. However, relying on monetary policy alone for additional countercyclical actions

in this environment carries risks, with concerns about possible future side effects on financial stability and potential threats to central bank independence. Monetary policy can support fiscal stimulus in a recession by maintaining an accommodative stance.

- Earlier unanticipated declines in interest rates relative to growth have modestly reduced the rise in the public debt-to-GDP ratio compared to what was expected in many economies. These unexpected changes in interest rate–growth differentials have played a role roughly equal to unexpected developments in primary fiscal balances in explaining unexpected changes in debt. Low interest rate–growth differentials are likely to persist on average, but there are still risks that the interest rate–growth differential can change quickly for a given country, worsening their debt dynamics.
- The evidence suggests that public spending (investment and consumption) is the most potent fiscal instrument, generating large output effects with multipliers greater than one. Fiscal stimulus is especially powerful when the economy has slack and monetary policy is accommodative—circumstances that characterize a demand-driven downturn and will likely be relevant after the pandemic recedes. Discretionary fiscal measures have helped counter shocks in the past, but often come with a delay.
- Analysis shows that newly proposed rules-based fiscal stimulus measures—stimulus automatically triggered by deteriorations in macroeconomic indicators—could be highly effective in countering a downturn when interest rates are at their effective lower bound and discretionary fiscal policy lags are long. Such measures implement a fiscal stimulus according to a predetermined rule in response to a downturn, as captured by the behavior of a macroeconomic outcome variable, such as the unemployment rate rising. Compared to a scenario without rules-based fiscal stimulus, the adverse output and debt-to-GDP effects are smaller. Model simulations suggest that the stabilization achieved by adopting rules-based fiscal stimulus comes close to that when monetary policy actions are unconstrained.

Taken together, the findings suggest that, to ensure a prompt and adequate response to future adverse shocks—in particular, typical aggregate demand shocks—and improve the economy's resilience, policymakers should enhance fiscal policy's automaticity.[4] Designing and adopting new fiscal tools—like rules-based fiscal stimulus measures—and improving existing automatic stabilizers may take time and will require political agreement. In the context of the current crisis, putting them in place now could help insure against future shocks derailing or slowing the eventual recovery. Establishing sufficient automatic stabilizers and rules-based fiscal stimulus in advance of adverse future shocks will reduce the risks that contemporaneous political hurdles and implementation lags inhibit timely and effective fiscal stimulus.

There are some important caveats to this advice that argue for caution in extrapolating too broadly. The model simulations are constructed around historical aggregate demand shocks, which are different from the current pandemic shock in many ways. The economic shock from the pandemic is unprecedented in modern times, both in its magnitude and its nature (see Chapter 1 of the April 2020 WEO for a detailed discussion of the unique economic characteristics of the pandemic shock). The model does not incorporate possible sovereign risk feedbacks. It assumes that the economy is on sound fiscal footing, without any risk to the government's ability to borrow in financial markets. The analysis of how declines in the interest rate–growth differential impact fiscal constraints is conservative, only taking account of its consequences for borrowing costs relative to GDP, conditional on keeping the ratio of debt to GDP stable over the near term. It does not attempt to assess the implications of negative and persistent interest rate–growth differentials for long-term debt sustainability, which could suggest even greater scope for borrowing.[5] But countries that are facing high risks of a fiscal crisis may well encounter additional constraints on their actions.[6]

[4]See Chapter 2 of the April 2020 *Fiscal Monitor* for a broader discussion of how economies can better prepare for future downturns by following an IDEAS strategy: (1) establishing a pipeline of appraised investment projects, (2) formulating in advance discretionary measures to deploy quickly, and (3) enhancing traditional automatic stabilizers.

[5]See Barrett (2018), Blanchard (2019), Eichenbaum (2019), and Garín and others (2019), among others, for a recent discussion.

[6]See Bianchi, Ottonello, and Presno (2019); Mauro and Zhou (2020); and Moreno Badia and others (2020) for a discussion and cases where risks of a turn in market sentiment against a sovereign can limit their actions.

The chapter begins with a summary and discussion of the existing literature on monetary policy options when interest rates are close to the effective lower bound, noting their effectiveness but also some of their potential side effects and risks. The next section turns to fiscal policy, examining the potential implications of the evolution of $r - g$ these past few years for countries' fiscal borrowing constraints. Then, the chapter looks at the evidence on the potency of fiscal stimulus, examining how it varies by instrument, economic slack, and monetary policy's reaction. The penultimate section presents the findings from a model-based analysis of newly proposed rules-based fiscal stimulus to offset adverse shocks and stabilize the economy. The chapter concludes with a summary of the main takeaways and policy implications.

Monetary Policy Options When Interest Rates Are Low

As shown in Figure 2.2, panel 1, apart from a few episodes, interest rates in advanced economies have been heading downward for many years, with this trend accelerating after the global financial crisis. This pattern accords with views that the natural rate of interest (the interest rate consistent with stable inflation and full employment) has declined.[7] Varying perspectives on the underpinnings of this decline exist, ranging from structural deficiencies in aggregate demand (secular stagnation) to more supply-side factors, such as slowing long-term productivity growth or the long-lived effects of debt overhang following a deep recession.[8] More recently, in response to the pandemic, central banks in advanced economies have cut interest rates even further.[9] Low rates, and the associated limits on monetary easing through conventional interest cuts, may be a fact of life for the foreseeable future. Responding to these constraints, monetary policymakers in advanced economies have turned to "new" or unconventional monetary policy tools to achieve further easing, using forward guidance, large-scale asset purchase programs, and negative interest rates on bank reserves.[10]

During and after the global financial crisis, forward guidance reinforced central banks' accommodative stances by shaping expectations about interest rates and other monetary policy measures.[11] This departed from central banks' past communication styles by directly signaling their willingness to pursue extraordinary policy actions or to keep interest rates at a specific level for an extended period of time. The success of this strategy depends on the market's perceptions of the central bank's credibility in following through on their announcements. On one hand, central banks can choose to be more general in their communication, without making explicit commitments about specific policy actions. On the other hand, they can choose to be explicit with data or state-contingent commitments to maintain an announced policy path. There are trade-offs between these styles. The first allows policymakers room to maneuver if there are surprises, but at the risk that the market does not firmly believe their commitment. The second can influence market expectations substantially and reduce uncertainty, but at the cost of diminished flexibility to surprises. Forward guidance will continue to grapple with these trade-offs. Several studies find forward guidance to be effective in reducing borrowing costs and stimulating loan growth when rates are low, although the range of effect estimates is wide.[12]

With large-scale asset purchases, the central bank can still provide monetary stimulus by supporting long-term bond prices and lowering long-term yields, even if the short-term policy rate is near or at zero.[13]

[7]See Laubach and Williams (2003); Chapter 3 of the April 2014 WEO; Furman (2016); Holston, Laubach, and Williams (2017); Yellen (2018); and Rachel and Summers (2019); among others, for discussion and evidence on how the natural rate of interest in many economies has drifted down.

[8]See Summers (2013), Teulings and Baldwin (2014), and Rogoff (2015).

[9]Jordà, Singh, and Taylor (2020) documents that pandemics can depress the natural rate of interest for many decades after the pandemic has passed.

[10]Bernanke (2020) refers to unconventional monetary policy tools simply as "new," given that there is sufficient experience for them to be considered an ordinary part of the central bank toolkit. This section draws exclusively on the large existing literature on unconventional monetary policy and its effectiveness. Recent overviews include Bayoumi and others (2014); Borio and Zabai (2016); Dell'Ariccia, Rabanal, and Sandri (2018); BIS (2019a; 2019b); and Sims and Xu (2019).

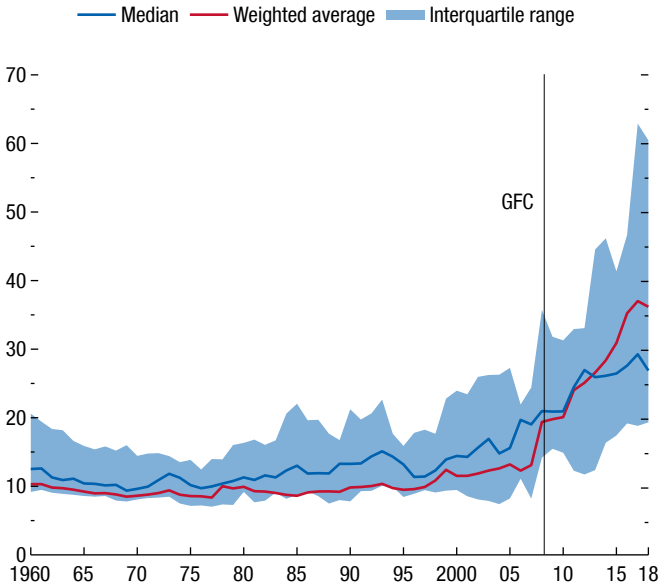
[11]See Moessner, Jansen, and de Haan (2017) for a review of the theory and practice of forward guidance.

[12]See He (2010), Campbell and others (2012), Kool and Thornton (2012), Woodford (2013), Filardo and Hofmann (2014), Charbonneau and Rennison (2015), Coenen and others (2017), Andrade and Ferroni (2018), Swanson (2018), and Moessner and Rungcharoenkitkul (2019), among others. It is important to highlight that it is inherently difficult to identify the exact impact of forward guidance due to its typically joint implementation with other unconventional monetary policy measures.

[13]See Borio and Zabai (2016) and BIS (2019a, 2019b) for more detailed descriptions of the implementation of large-scale asset purchases. See Gambacorta, Hofmann, and Peersman (2014) for empirical evidence on the effectiveness of quantitative easing.

Figure 2.3. Central Bank Balance Sheets
(Percent of GDP)

The size of central bank balance sheets increased significantly since the global financial crisis with the implementation of large-scale asset purchase programs.



Sources: European Central Bank; Ferguson, Schaab, and Schularick (2015); Haver Analytics; and IMF staff calculations.
Note: The central bank balance sheet is central bank total assets as a share of nominal GDP. After a country joins the euro area, it no longer enters separately from the euro area as a whole, reflecting the euro area's unified monetary policy from 1999 onwards. The euro area central bank balance sheet to GDP is Eurosystem total assets to total euro area GDP. The weighted average uses nominal US dollar GDP weights. Time coverage across countries is unbalanced. GFC = global financial crisis (2008).

Asset purchases were used extensively by advanced economies during and after the global financial crisis, leading to a marked increase in the size of central bank balance sheets over recent years (Figure 2.3). In the current pandemic, central banks in several advanced economies have launched new large-scale asset purchase programs. The Federal Reserve is buying US Treasury debt and mortgage-backed securities as needed to ensure smooth market functioning. The European Central Bank commenced a new €750 billion temporary public and private securities purchase program. The literature suggests that similar measures eased financial conditions and helped boost output and inflation across many economies during and after the global financial crisis, although a fair amount of uncertainty around these estimates remains. Model-based evidence using counterfactual simulations on the US economy shows that large-scale asset purchases alleviated the fall in annualized real GDP growth by almost 6 percentage points in the first quarter of 2009. Estimates for the United Kingdom point to a similar picture over the same period, with annualized output growth being higher by about 5 percentage points due to the Bank of England's gilt purchases on long-term yield spreads.[14] The purchase of large quantities of government bonds may also play a signaling role, convincing markets that the central bank is committed to a loose policy stance.[15] Some economists have highlighted undesirable secondary consequences that could follow from further large-scale asset purchases, including greater central bank balance sheet asset quality risks and threats to central bank independence arising from perceptions that it constitutes monetary financing.[16]

Negative interest rate policies have hitherto taken the form of relatively small interest rate charges on commercial banks' reserve holdings at the central bank in a few advanced economies.[17] The overall assessment has been that they have reinforced central banks' accommodative stance in economies where they have been implemented without marked harmful effects (Box 2.1).[18] However, it is possible that pushing rates even more negative or keeping them negative for longer could have sufficiently detrimental effects on bank profitability and, in turn, lead to lower lending and tighter financial conditions.[19] Recent empirical literature studying the impacts on Europe and Japan generally finds that lending volumes have increased and lending rates have fallen, providing aggregate demand support, while banks have modified their behavior to reduce the impact of negative rates on their profitability.[20] For policymakers to pursue even lower

[14]See Baumeister and Benati (2013) and Borio and Zabai (2016) for an overview of empirical estimates of the impacts of large-scale asset purchases on output.

[15]See Bauer and Rudebusch (2014) and Coenen and others (2017) on the interaction between forward guidance and large-scale asset purchases.

[16]See Dudley (2013) and Orphanides (2018). In addition to asset quality concerns, risks could arise from stretched asset price valuations.

[17]At the time of publication, there have been no further rate cuts in advanced economies with negative interest rates nor adoption of negative rates by those economies that are not currently using them.

[18]Chapter 4 of the April 2020 *Global Financial Stability Report* (GFSR) analyzes the impact of the lower-for-longer environment on bank profitability, including through a forward-looking scenario analysis.

[19]See BIS (2019a); Brunnermeier and Koby (2019); Eggertsson, Juelsrud, and Wold (2019); and Box 2.1 for a discussion of this theoretical possibility.

[20]See Basten and Mariathasan (2018); Demiralp, Eisenschmidt, and Vlassopoulos (2019); Eisenschmidt and Smets (2019); and Lopez, Rose, and Spiegel (2020).

negative interest rates in the future, a variety of legal, regulatory, and tax law changes could be required.

Given that policy rates are already very low in many advanced economies and unlikely to return to their pre-global financial crisis levels for a prolonged period, policymakers will need to rely more than before on these new monetary policy tools to counter future downturns. While there is broad agreement that unconventional monetary policy tools were effective in helping to stimulate the economy during the Great Recession, there is debate over their efficacy going forward and possible side effects, including increased financial risk-taking in the future. Strengthening macroprudential policies and preemptively implementing them could help deal with any potential financial sector vulnerabilities.[21] Nonetheless, these new monetary policy tools are still useful in easing financial conditions in a downturn. But it is important to avoid overreliance on them and to ensure that fiscal policy plays an appropriate role in stabilizing the economy. Monetary policy can support fiscal stimulus in a recession by remaining accommodative and keeping interest rates low. The next section looks at the scope for fiscal policymakers to stimulate in the low rate environment.

Fiscal Space, Public Debt, and Low Interest Rates

When considering a more expansionary fiscal stance, a government has to evaluate the trade-offs between actions today versus possible needs for stimulus in the future, given its available and expected fiscal resources. This means that fiscal policymakers' actions in responding to an adverse shock will be partly a function of their ability to raise spending or lower taxes relative to a preexisting baseline without endangering market access and debt sustainability—their fiscal space.[22] Fiscal space depends on a multitude of factors, including a country's macroeconomic context (domestic and external conditions and structural gaps), market perceptions and sentiment, and the dynamics of the public debt-to-GDP ratio.[23]

Although there is no unique indicator or set of indicators that fully captures a country's fiscal space, the public debt-to-GDP ratio is a key observable related to a country's ability to borrow from the market and its capacity to act countercyclically in a downturn. The literature suggests that countries with higher ratios of public debt to GDP prior to a crisis or downturn tend to have less countercyclical fiscal policies and worse outcomes.[24] Romer and Romer (2019) finds that fiscal policymakers in advanced economies are more reluctant to stimulate after an adverse shock when initial public debt-to-GDP ratios are higher. This reflects concerns about potential rises in risk premiums (and hence borrowing costs) and loss of market access, as well as a more general reduced willingness to act on the part of policymakers. Moreover, other work also points to monetary policy accommodation being less effective when public debt to GDP is high.[25]

In view of historically high levels of debt in many advanced economies, to what extent have interest rate declines in recent years affected governments' capacities to borrow and provide fiscal support? While lower interest rates imply lower interest payments on new government debt, they are not enough on their own to justify higher borrowing. It is also important to simultaneously assess how a government's ability to raise revenue to service the debt is evolving, which will be a function of the economy's size. Both the interest rate on debt and nominal growth—in particular, their difference—matter for the dynamics of an economy's public debt-to-GDP ratio.[26]

As an illustration of these effects, the chapter examines how debt dynamics evolved compared with forecasts since late 2015 through 2018—a period

[21]See recent debates by Bernanke (2020), Rogoff (2020), and Summers (2020). See Chapter 1 of the October 2019 GFSR on how macroprudential policy can mitigate financial stability risks from rates being "low for long." For an emerging market perspective, see Chapter 3 of the April 2020 WEO on how macroprudential regulation can stabilize GDP growth in the face of adverse global financial shocks.

[22]See IMF (2016, 2018) for a definition of fiscal space and a discussion of the various aspects and considerations driving its assessment by country. The quantification of a country's fiscal space makes no judgment on whether or not it should be used or further built up in a given situation. See also Debrun and others (2019) for a discussion on how to think about the sustainability of a country's debt.

[23]For country-specific, multi-dimensional assessments of fiscal space, please refer to IMF Country Reports. It is important to note that fiscal space assessments do not generally take into account the possibility of official financing. Typically, official financing may be an option for countries unable to access market financing, when fiscal space (as described here) is exhausted. For such countries, access to official financing may be more important than fiscal space in driving their ability to provide fiscal support.

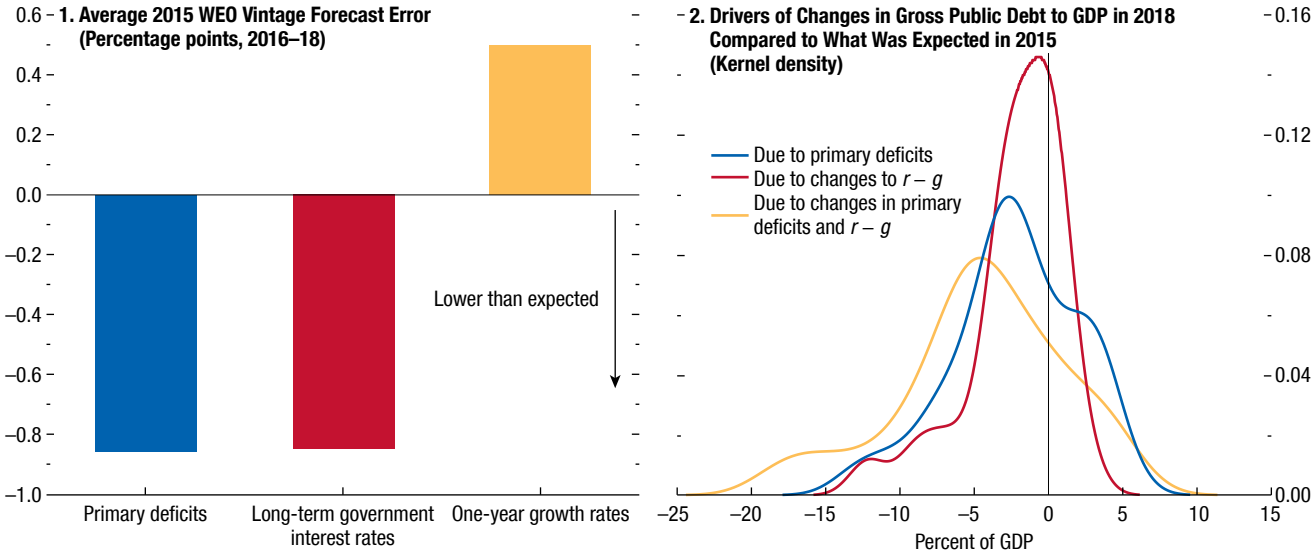
[24]See Jordà, Schularick, and Taylor (2016) and Romer and Romer (2018).

[25]See De Luigi and Huber (2018), which finds that expansionary monetary policy helps stabilize in a downturn, but less so when the economy is in a high public debt-to-GDP regime.

[26]See Online Annex 2.2 for the equation of motion describing the dynamics of the public debt-to-GDP ratio and its relationship to the paths of interest rates and nominal growth. All annexes are available at http://www.imf.org/en/Publications/WEO.

Figure 2.4. Sources of Unexpected Changes to Public Debt

Overall, lower $r - g$ has helped slow debt growth since 2016, but changes in primary deficits have played a larger role in debt dynamics.



Source: IMF staff estimates.
Note: The forecast error for each indicated variable in panel 1 is calculated as the average across the annual differences between actual outturn and forecast from the October 2015 WEO vintage over 2016–18. Panel 2 shows the density distributions of impacts on 2018 debt ratios (in percentage points) of changes to fiscal factors relative to their 2015 forecasts. The exercise takes as given that the expected medium-term ratio of public debt to GDP is stable. The October 2015 WEO projections are used as the starting point from which to take expectations, given that they incorporate the expected effects of the large-scale asset purchase programs undertaken prior to that date in advanced economies (including the European Central Bank's public sector purchase program). See BIS (2019a). The 2018 end point for the changes shown reflects the latest available final data across the sample. See Online Annex 2.2 for further details on data and the calculations.
$r - g$ = interest rate–growth differential; WEO = *World Economic Outlook*.

during which interest rates were on a declining path and growth recovering.[27] Interest rates and primary deficits were, on average, lower than expected since late 2015, while nominal growth was higher (Figure 2.4, panel 1).[28] Taken together, these unanticipated changes have pushed down the average debt-to-GDP ratio over 2016–18 below what was expected at the end of 2015, potentially increasing the amount of borrowing governments could undertake while keeping expected medium-term debt unchanged (Figure 2.4, panel 2).[29] Overall, a lower interest rate–growth differential helped slow debt growth since 2015, playing a roughly equal role in debt dynamics to changes in primary deficits.[30] The median unexpected decline in debt coming

[27]The October 2015 WEO projections are the starting point from which expectations are taken, given that they incorporate the expected effects of the large-scale asset purchase programs undertaken prior to that date in advanced economies (including the European Central Bank's public sector purchase program). See BIS (2019a) for details on the starting dates of the large-scale asset purchase programs across advanced economies in response to the global financial crisis. The 2018 end point for the changes shown reflects the latest available final data across the sample. See Online Annex 2.2 for a discussion of the robustness of the findings to the starting date.

[28]The correlation between unexpected changes in the primary deficit-to-GDP ratio and the unexpected change in nominal growth is weakly negative but not statistically significant. The sign of the relationship is consistent with positive growth surprises lowering the primary deficit-to-GDP ratio, possibly through increased revenues.

[29]Alternative forecast vintages yield similar findings. See Online Annex 2.2 for further details. The exercise is similar in spirit to that in Deutsche Bundesbank (2017) for euro area economies.

[30]The share of explained deviations in unexpected debt changes from unexpected interest rate–growth differential ($r - g$) changes is about 50 percent, based on the economic importance measures in Sterck (2019). In principle, the unexpected changes in debt due to $r - g$ and that due to the primary deficit-to-GDP ratio could be related. For example, a decline in $r - g$ arising from surprisingly higher growth may be associated with a decrease in the primary deficit-to-GDP ratio, reflecting improved tax revenue performance and a larger denominator. The accounting decomposition exhibited here does not attempt to attribute such comovements between $r - g$ and the primary deficit-to-GDP ratio to one or the other. However, analysis indicates that their correlation is essentially zero, suggesting that the rough shares provide a broadly accurate picture of the contributions of $r - g$ and the primary deficit-to-GDP ratio to unexpected debt changes. See Online Annex 2.2 for further details.

from lower interest rate–growth differentials is about 1 percent of GDP, while that from lower primary deficits is about 2 percent of GDP. However, for some countries (about one-third of advanced economies), debt outturns were worse than expected, with interest rate–growth differentials rising or primary deficits increasing more than anticipated.

An important caveat is that this backward-looking exercise focuses simply on the accounting contributions of unexpected falls in interest rate–growth differentials and the primary deficit to GDP since 2015 to the unexpected change in the debt-to-GDP ratio over the same period. Given that countries could choose to use the savings from unexpected and persistent falls in interest rate–growth differentials to undertake additional borrowing, some countries may have seen little reduction in their expected debt paths and little increase in their fiscal space.[31] Moreover, although the impact of small changes in the interest rate–growth differential may eventually be large, a meaningful impact may take a while to materialize, simply because countries often repay their debts over many years.

Even if lower interest rate–growth differentials do create additional borrowing capacity, countries with high debt levels may remain exposed to sharp increases in spreads, including during rollover crises.[32] For instance, sudden increases in risk premia—even if temporary—can cause public debt to GDP to grow sharply. This could include unanticipated negative events that prompt shifts in investor sentiment toward safe-haven assets—as has recently occurred under the pandemic—which can push up spreads unexpectedly for some countries. The exact implications of a lower interest rate–growth differential for a country's scope for fiscal stimulus depend on country-specific circumstances, but these estimates suggest that the decline in interest rates relative to nominal growth has improved the dynamics of public debt-to-GDP in the average advanced economy.

[31]Furthermore, as noted in footnote 28, this accounting decomposition neglects the possible comovement between unexpected changes in debt due to $r - g$ and to the primary deficit, which could either magnify or attenuate the unexpected decline in the debt-to-GDP ratio. See Garín and others (2019) for a model exhibiting such comovement and discussion of its possible consequences for debt dynamics.

[32]See Cole and Kehoe (2000) and Aguiar and others (2016) for more on the drivers of rollover crises and the potential for multiple equilibria. See also Mauro and Zhou (2020) for evidence suggesting an association between a high debt-to-GDP ratio and rollover crises, independent of initial interest rate–growth differentials.

The scope for fiscal support in future downturns depends on the persistence of interest rate–growth differentials, as countries' debts are repaid over many years. Growth and inflation surprises (highly likely with the pandemic shock across many countries) are associated with changes in the interest rate–growth differential, but are also transitory.[33] Other analysis suggests that the common component of the interest rate–growth differential across advanced economies is highly persistent, reinforcing the view that lower financing costs are likely to continue (Box 2.2). That said, it is important for fiscal policymakers to use wisely whatever fiscal space they have in responding to a recession, considering the instruments available and the context. This is the topic of the next section.

Fiscal Multipliers, by Instrument and Context

What is the best way for fiscal policymakers to deliver stimulus to lift aggregate demand—spending increases or tax cuts? How do fiscal policy's effects depend on the state of economy and the response of monetary policy? Fiscal multipliers—how much real output changes for an increase in fiscal stimulus—provide answers to these questions. Some theories of the business cycle and recent empirical research suggest that fiscal policy has larger effects during recessions and periods of economic slack.[34] Other studies point to powerful effects of fiscal stimulus when nominal interest rates are at the effective lower bound or monetary policy is accommodating.[35]

The size of multipliers varies by fiscal instrument—how stimulus is delivered. A meta-analysis of the vast literature on fiscal multipliers points to average estimates for public spending on goods and services (government purchases) of about 1, with that for public investment slightly higher than that for public consumption, although there is a large degree of variability (Figure 2.5). Multiplier estimates from taxes and transfers are about one-quarter that size, on average. Overall, the evidence suggests that public spending on goods and services is more effective.

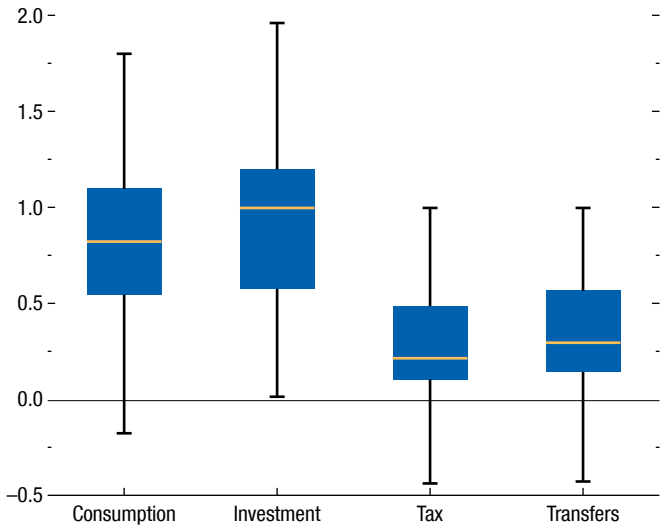
[33]See Online Annex 2.2.

[34]See Auerbach and Gorodnichenko (2012b); Baum, Poplawski-Ribeiro, and Weber (2012); DeLong and Summers (2012); Cottarelli, Gerson, and Senhadji (2014); Fazzari, Morley, and Panovska (2015); and Whalen and Reichling (2015).

[35]See Almunia and others (2010); Christiano, Eichenbaum, and Rebelo (2011); Blanchard and Leigh (2013); and Chodorow-Reich (2019).

Figure 2.5. Fiscal Multipliers: One-Year Horizon
(Units of real output)

Average fiscal multipliers for public spending from the literature are about 1, with that for public investment slightly higher than that for public consumption. Average multiplier estimates for taxes and transfers are about one-quarter that size.



Source: Gechert and Rannenberg (2018).
Note: The chart reports the median (gold line), the 25th and 75th percentiles (lower and upper boundaries of the blue box) and the extremes (lower and upper whiskers) of the distribution of fiscal multiplier estimates from the literature. The multiplier is defined to be the change in real output for a unit change in the indicated fiscal instrument.

Why might this be the case? Theoretically, multipliers would be higher when the fiscal stimulus feeds fully through to aggregate demand, as is the case with public spending on goods and services or via cash transfers to households with high propensities to consume out of current income.[36] Multipliers would also be expected to be larger when leakages from the economy are low (that is, the economy is more closed), when there is economic slack, or when monetary policy is accommodative (that is, when interest rates do not rise in response to fiscal stimulus). The empirical evidence on higher multipliers during recessions and under various monetary policy stances has, however, been mixed.[37]

Other country-specific characteristics can also impact the size of the multiplier. For instance, the public debt-to-GDP ratio at the time of the stimulus might affect the size of the multipliers through expectations of fiscal adjustments in the near future or sustainability concerns that could raise interest rates.[38]

Combining the recent estimation methodology proposed by Ramey and Zubairy (2018) and the identification scheme based on forecast errors in public spending from Auerbach and Gorodnichenko (2012a, 2012b, 2013, 2017), new estimates on the cumulative fiscal multiplier under economic slack and accommodative monetary policy suggest that fiscal policy is indeed powerful in these circumstances.[39] The baseline multiplier from public spending on goods and services estimated using this approach is about 1, on average, across horizons—broadly in line with the literature (Figure 2.6, panel 1). As expected, the picture changes once economic conditions are considered. If the unemployment rate in a country is above its average, the one-year fiscal multiplier rises to above 1.5, while it falls below 1 if the unemployment rate is below its average (Figure 2.6, panel 2). The statistically significant difference between these two multipliers bolsters the idea that fiscal policy effectiveness depends on the tightness of the labor market. In contrast, there is no strong evidence that the multiplier differs across the business cycle phase as captured by output growth (expansions versus recessions).[40]

When interest rates are low and close to their effective lower bound, the fiscal multiplier is above 2 and statistically significantly different from the multiplier when interest rates are far from the effective lower bound (Figure 2.6, panel 3). In other words, fiscal stimulus is extremely effective when monetary policy does not lean against it. These estimates are robust to alternative definitions of accommodative monetary policy. For instance, fiscal stimulus is more potent under a fixed exchange rate regime or currency union when monetary policy does not allow interest rates to rise or is unresponsive to the local fiscal impulse. Moreover, the multiplier estimated over the period since the

[36]See Jappelli and Pistaferri (2014) for a discussion and empirical evidence on how the marginal propensity to consume varies with household characteristics and its implications for fiscal policy. Public spending through targeted transfers to households with higher marginal propensities to consume generates higher fiscal multipliers than transfers to other households. See also McKay and Reis (2016).

[37]Differences across studies likely reflect differences in sample, identification, and estimation approaches. See Online Annex 2.3 for further discussion.

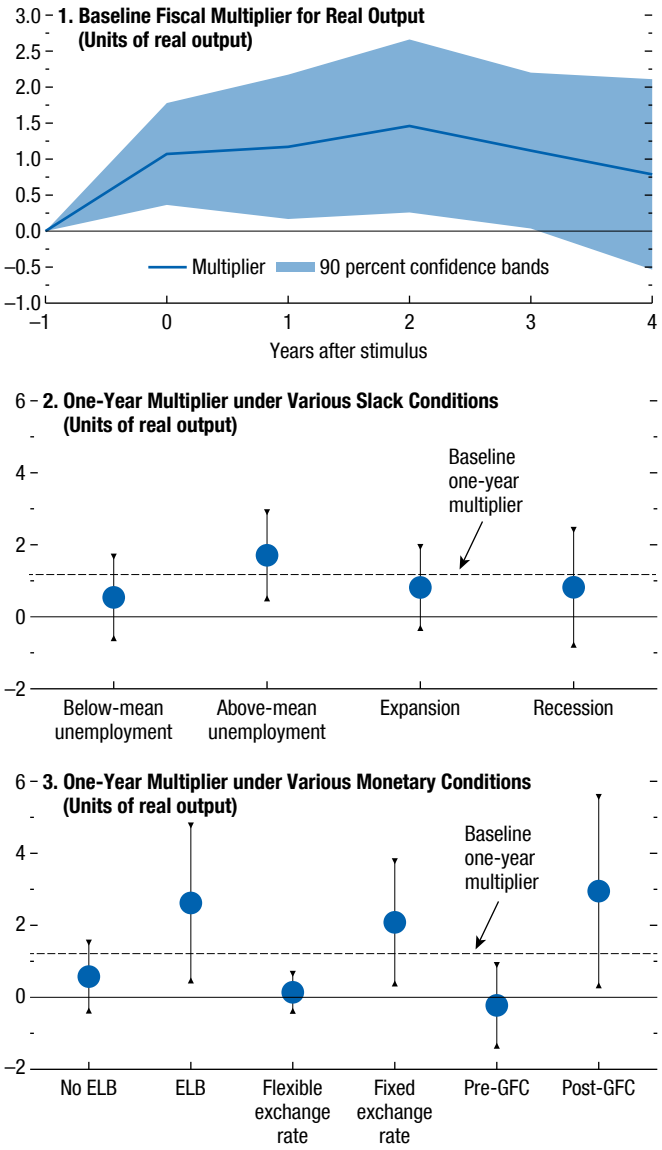
[38]See Corsetti, Meier, and Müller (2012); Ilzetzki, Mendoza, and Végh (2013); and Auerbach and Gorodnichenko (2017). See Online Annex 2.3 for further discussion.

[39]The shock to public spending on goods and services is computed as the real-time forecast errors of public consumption spending growth relative to GDP. See Online Annex 2.3 for further details.

[40]Expansions and recessions are defined as years of positive or negative growth, respectively.

Figure 2.6. Fiscal Multipliers

Fiscal multipliers are larger during periods of slack and when monetary policy supports fiscal stimulus—exactly the conditions that would apply were a downturn to occur when policy rates are so low.



Sources: Bank for International Settlements; Haver Analytics; Ilzetzki, Reinhart, and Rogoff (2019); IMF, *International Financial Statistics*; national sources; Organisation for Economic Co-operation and Development Economic Outlook; and IMF staff calculations.
Note: Panel 1 shows the response of real output over time to a unit public spending shock in year $t = 0$. The public spending shock is equivalent to a 1 percent of GDP increase in public consumption. Shaded area denotes the 90 percent confidence band. In panels 2 and 3, blue dots show the point estimates for the one-year multiplier under the indicated economic conditions (alternative slack or monetary conditions). Black whiskers show the 90 percent confidence interval around the estimate. The effective lower bound is considered to be binding when short-term policy rates are below 0.75 percentage points. Below- and above-mean employment are defined by country relative to their own experience. See Online Annex 2.3 for further details on the definitions of the economic conditions and on the model specification and estimation. ELB = effective lower bound on interest rates; GFC = global financial crisis.

global financial crisis—which is marked by low interest rates across most advanced economies—is higher than during the precrisis period and close to that estimated at the effective lower bound.[41] Taken together, the results suggest that the fiscal multiplier is larger during periods of labor market slack and when monetary policy is supportive of fiscal stimulus—exactly the conditions that would apply were a demand-driven downturn to occur when policy rates are so low. In the midst of the current pandemic shock, economic slack is likely less than standard metrics (such as the unemployment rate) would imply, because production possibilities are constrained while the disease is actively spreading. As the pandemic recedes, economic slack will increase, and fiscal multipliers will be larger. As noted, evidence from the existing literature suggests that public spending, especially in the form of shovel-ready and productive public investment, could be extremely powerful in stimulating the economy.

Discretionary fiscal measures, appropriately tailored to the specific circumstances and the nature of the negative shock that materializes, can offer powerful countercyclical support, particularly if the political willingness to act promptly and in a targeted fashion is high. Recently, many advanced economies have undertaken quick, sizable, and targeted discretionary fiscal actions to offset the effects of the unusual pandemic shock. In the past, action has sometimes been delayed because it requires political agreement as a precondition, which can be difficult to achieve.[42] Moreover, even if discretionary support measures are adopted promptly, implementation lags may hamper their delivery. For example, discretionary fiscal responses to the global financial crisis took several months to be announced, let alone adopted and implemented.[43] Putting in place institutions that automatically undertake fiscal stimulus to counter an adverse shock can potentially enhance the effectiveness and timeliness of the stabilizing response.

Traditional automatic stabilizers—such as the progressivity of the tax code, the unemployment insurance system, or the means-tested social safety net—are

[41]There is a large degree of overlap between the sample defined by the effective lower bound and that by the period since the global financial crisis. Among advanced economies, only Japan and the United States had extremely low rates before 2008 (Miyamoto, Nguyen, and Sergeyev 2018; Ramey and Zubairy 2018).

[42]For a prominent, early example of this argument, see Friedman (1948).

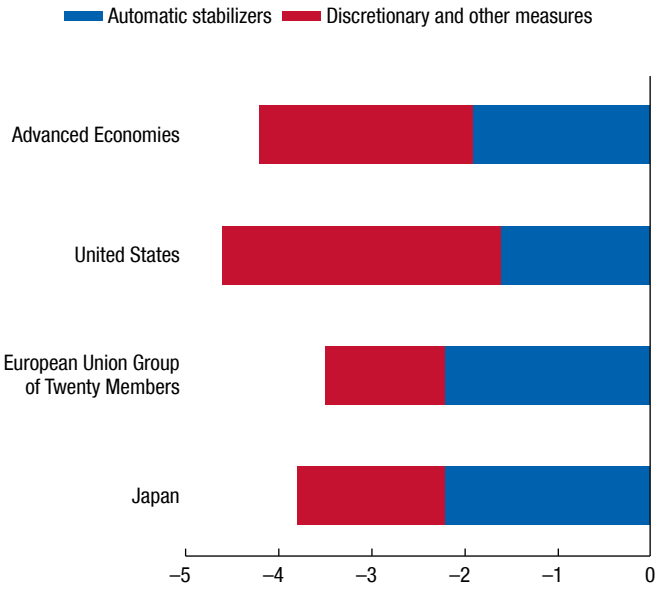
[43]See IMF (2013) for a breakdown of the lags for Group of Twenty countries.

mechanisms already built into government budgets that increase spending or decrease taxes automatically when the economy slows and then reverse when it turns around.[44] Because they do not require political action before being activated, established automatic stabilizers can respond swiftly to shocks and help stabilize the economy. The temporary and predictable nature of their stimulus also makes them appealing, enabling households and firms to incorporate them into their planning.

How much countries rely on discretionary measures versus automatic stabilizers varies widely, and using one does not preclude use of the other. The response to the global financial crisis involved a mix (Figure 2.7). Macroeconomic stabilization, though, has typically not been the primary aim in the design of traditional automatic stabilizers, which are more focused on social protection goals or equity considerations.[45] Recent proposals for new kinds of automatic stabilizers attempt to address stabilization objectives directly, explicitly linking the automatic activation of spending and tax measures to the state of the economy through a macroeconomic trigger, such as a rise in the unemployment rate.[46] The effectiveness and associated fiscal costs of rules-based fiscal stimulus to respond to a downturn are explored in the next section.

Figure 2.7. Average Overall Fiscal Balance Change from 2007 to 2008–10
(Percent of GDP)

The response to the global financial crisis involved a mix of automatic stabilizers and discretionary fiscal responses, but the latter took a while to be adopted and implemented.



Source: IMF (2009).
Note: Other measures include noncrisis-related spending or revenue measures (such as changes in defense spending), as well as the impact of nondiscretionary effects on revenues beyond the normal cycle.

Enhancing Stabilization with Rules-Based Fiscal Stimulus

To explore and evaluate the performance of rules-based fiscal stimulus, the chapter uses the IMF's workhorse G20MOD model calibrated for a representative advanced economy, adapted to allow for the possibility that the economy is at the effective lower bound of interest rates for a prolonged period of time, which is highly relevant to today's circumstances.[47] The model abstracts from sovereign risk concerns, focusing firmly on how policies can facilitate business cycle stabilization. The rules-based fiscal stimulus provides stimulus in response to rises in the unemployment rate above its natural level, which then unwinds as the rate comes down over time.[48] For the illustration here, it is roughly calibrated to the benchmark rule proposed by Sahm (2019)—one-half percentage point rise in the unemployment rate above its natural rate generates fiscal transfers targeted to liquidity-constrained (poorer) households equivalent to about 0.7 percent of GDP.[49]

[44]See Chapter 2 of the April 2020 *Fiscal Monitor* for a detailed discussion of traditional automatic stabilizers across countries and ways to strengthen their stabilizing properties.

[45]See Baunsgaard and Symansky (2009).

[46]For example, Sahm (2019) proposes direct payments to individuals as an automatic stabilizer at the onset of a recession. Eichenbaum (2019) argues for setting up a more general system of asymmetric, automatic stabilizers based on selected macroeconomic indicators hitting prespecified targets. Blanchard and Summers (2020) advocates such stabilizing fiscal policies, describing them as semiautomatic stabilizers.

[47]See Online Annex 2.4, Andrle and others (2015a), and Andrle and Hunt (forthcoming) for more details about the model structure, how it incorporates more realistic nonlinearities into the simulations, and its calibration.

[48]In other words, the stimulus measures are temporary, lasting only so long as the trigger is operating. For a detailed discussion of considerations in the selection of macroeconomic triggers, see Sahm (2019).

[49]See Online Annex 2.4 for further details of the design of the rules-based fiscal stimulus in the context of the model. In the model, liquidity-constrained households are unable to borrow and save, using all of their income for consumption (that is, they have a high marginal propensity to consume). Consequently, income transfers to them have more powerful expansionary effects on aggregate demand than those to households who might opt to save the additional income.

In addition to generating macroeconomic stimulus, a transfers-based instrument acts as a form of income insurance to the targeted population.

The model results suggest that a rules-based fiscal stimulus could be extremely powerful in countering a downturn, particularly when interest rates are stuck at the effective lower bound and monetary policy is constrained. Moreover, rules-based fiscal stimulus helps shape household and business expectations by promising a robust countercyclical response. This reduces uncertainty and lessens any drops in consumption and investment after adverse shocks.

Figure 2.8 compares the dynamic responses of a representative advanced economy to a typical negative aggregate demand shock under various types of monetary policy stance and fiscal policy reactions. If the economy is far from the effective lower bound on interest rates, and monetary policy can operate fully, then real GDP follows the path of the blue line, dropping about 1.5 percent and then gradually converging to its trend path (Figure 2.8, panel 1). However, if the economy is at the effective lower bound, and monetary policy is unable to provide support on its own, then there is a large and persistent drop in GDP of almost 5 percent to such a shock (red line). In both cases, traditional automatic stabilizers are included and calibrated to their current sensitivity.[50] If the rules-based fiscal stimulus were operating, the drop in real GDP at the effective lower bound from the adverse demand shock is markedly smaller and actually close to the case where the economy is away from the effective lower bound and monetary policy is able to respond fully (gold line).[51]

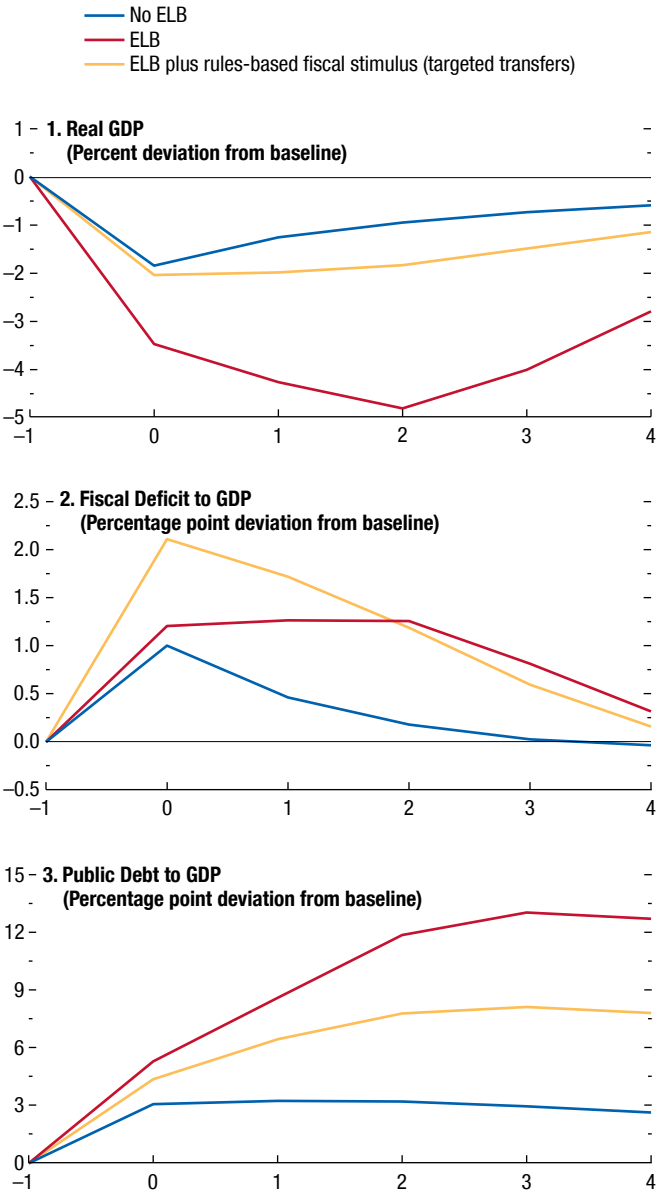
Importantly, this finding emerges without making any specific assumptions about fiscal multipliers. Instead, it arises as a natural consequence of the model structure and its deep parameters, calibrated to ensure consistency with empirical evidence on business cycle properties and microeconomic behavior. The implied fiscal multiplier from the model is about 1.2 when the economy is at the effective lower bound, while it is about 0.6 when the economy is away from the effective lower bound. Both parameter values are within the confidence bands of the

[50]The cyclical sensitivity of traditional automatic stabilizers is taken from Girouard and André (2005) and Price, Dang, and Botev (2015). See Online Annex 2.4 for further details.

[51]Increasing the sensitivity of existing automatic stabilizers alone does improve stabilization, but not to the same degree. See Online Annex 2.4 for a comparison of scenarios. See also Chapter 2 of the April 2020 *Fiscal Monitor* on ways to enhance the functioning of existing automatic stabilizers.

Figure 2.8. Responses of Economic Outcomes to a Negative Demand Shock

A rules-based fiscal stimulus could be extremely powerful in countering a downturn when interest rates are stuck at the effective lower bound and monetary policy is constrained. Debt-to-GDP dynamics are better with a rules-based fiscal stimulus than without when interest rates are at the effective lower bound. The prudent action at the effective lower bound is then to have a prompt and vigorous countercyclical fiscal response to a negative demand shock.



Source: IMF staff estimates.
Note: Targeted transfers go to liquidity-constrained households. See Online Annex 2.4 for further details on the model and analysis. *x*-axis represents number of years after shock. ELB = effective lower bound on interest rates.

empirical estimates described in the previous section. If anything, the implied fiscal multiplier from the model at the effective lower bound is conservative.

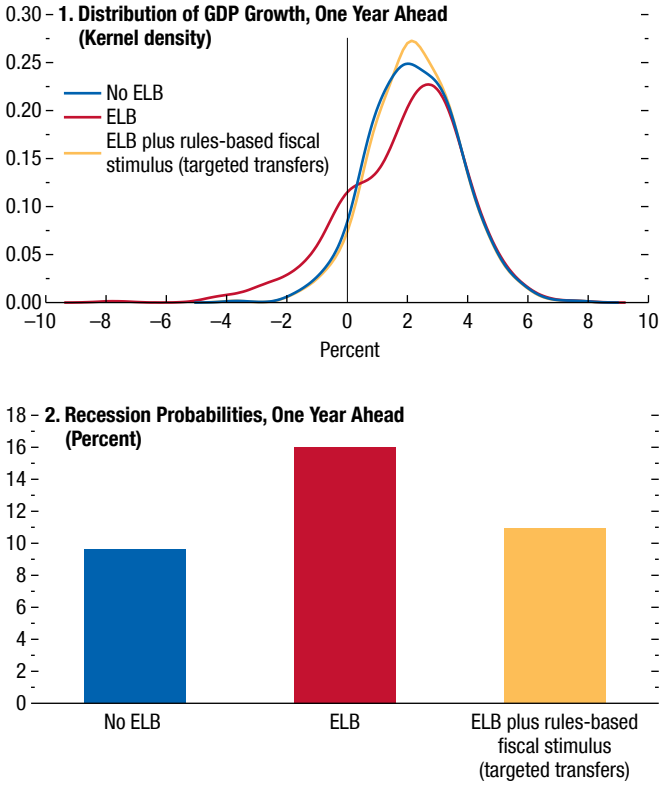
Nonetheless, the stabilization achieved by the rules-based fiscal stimulus does not come for free (Figure 2.8, panels 2 and 3). The smallest rises in the fiscal deficit-to-GDP and public debt-to-GDP ratios are achieved when the economy is away from the effective lower bound and monetary policy reacts to offset the negative shock (blue line). Yet, the difference in the responses at the effective lower bound between the cases with and without the rules-based fiscal stimulus operating is stark (gold and red lines). The deficit-to-GDP ratio at the effective lower bound rises more with a rules-based fiscal stimulus than without, reflecting the immediate increase in spending from the rules-based measures over and above that from the usual automatic stabilizers. This additional stimulus, though, improves the real GDP and price level paths such that the path of the debt-to-GDP ratio is lower than it would be without the stimulus.[52] In other words, fiscal costs as a share of output are lower if the economy has measures in place for a rules-based fiscal stimulus than if it does not when interest rates are at the effective lower bound. A prompt and large countercyclical fiscal response to a negative demand shock at the effective lower bound puts the debt-to-GDP ratio on a lower path than if it were not undertaken.

Moreover, the implementation of rules-based fiscal stimulus when the effective lower bound is binding also reduces the likelihood of recessions compared to not having it in place. Taking the historical experience of demand shocks, the chapter builds up the distribution of GDP growth under alternative automatic stabilizers to evaluate how they might impact the likelihood of a recession in a representative economy. The blue distribution (Figure 2.9, panel 1) shows the benchmark case, where the economy is away from the effective lower bound and monetary policymakers are able to respond fully. In this case, the probability of recession is about 10 percent (Figure 2.9, panel 2). When the effective lower bound binds periodically, though—as shown by the red distribution—there is a large left tail skew, representing greater chances of negative growth.

[52]Note that the rules-based fiscal stimulus helps stabilize real output, which also helps avoid a significant decline in inflation from an adverse shock. Together, the improved paths of real output and the price level contribute to more favorable dynamics of the debt-to-GDP ratio (given that nominal GDP is higher). See Online Annex 2.4 for further details.

Figure 2.9. Recession Likelihoods under Alternative Cyclical Policy Tools

When the effective lower bound binds regularly, an economy with a rules-based fiscal stimulus has a lower likelihood of recessions compared to that without.



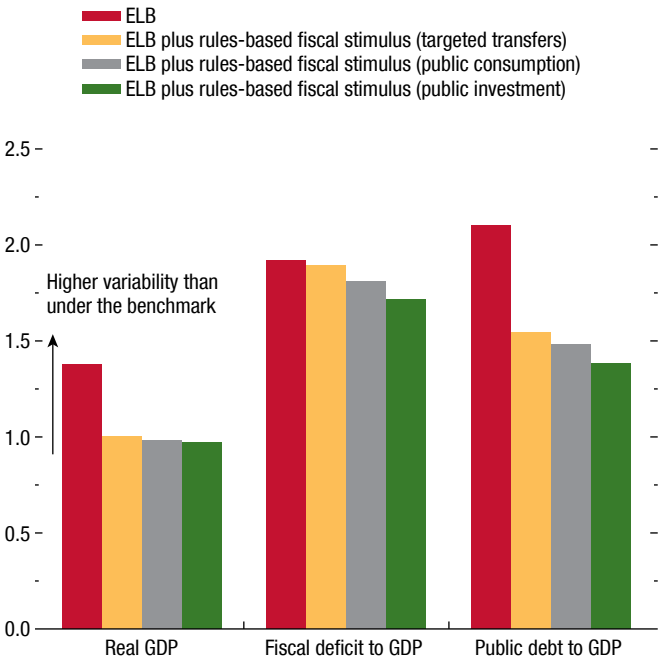
Source: IMF staff estimates.
Note: Targeted transfers go to liquidity-constrained households. Stochastic simulations are used to generate the distribution of output under the indicated scenario. The simulations draw from demand shock distributions centered at the baseline growth projection. Panel 1 takes demand shocks from the normal distribution calibrated to the empirical variance of the shocks. Panel 2 takes demand shocks from the empirical distribution. A recession is defined as a year with negative annual growth. See Online Annex 2.4 for further details on the stochastic simulation methods employed. ELB = effective lower bound on interest rates.

The probability of a recession in this case rises by over one-half to about 16 percent. However, if the economy had rules-based fiscal stimulus measures in place (the gold distribution), the distribution of GDP growth is much closer to that when the economy does not hit the effective lower bound—the left tail shrinks and the probability of a recession drops to about 11 percent, almost at that of the benchmark case.

The rules-based fiscal stimulus examined so far increases public spending through targeted transfers to liquidity-constrained households. However, alternative instruments could be considered. Consistent with the

Figure 2.10. Economic Fluctuations under Alternative Spending Instruments for Rules-Based Fiscal Stimulus
(Relative variability to the benchmark of unconstrained monetary policy)

Economic fluctuations are always lower with a rules-based fiscal stimulus—regardless of the spending instrument—than without when the effective lower bound binds regularly. Shovel-ready, useful public investment spending generates slightly lower variabilities of real GDP, public debt, and deficits than other instruments.



Source: IMF staff estimates.
Note: Relative variability is the ratio of the variance of the indicated variable to that under the benchmark scenario where the ELB does not bind regularly and monetary policy operates fully. Targeted transfers go to liquidity-constrained households. Stochastic simulations are used to generate the variability of output, the deficit, and debt under alternative rules-based fiscal stimulus instruments. See Online Annex 2.4 for further details on the model and stochastic simulation methods. ELB = effective lower bound on interest rates.

empirical evidence on fiscal multipliers, it appears that a rules-based stimulus using public investment could lead to lower variabilities of real GDP, public debt, and deficits than that using targeted transfers (Figure 2.10). Similarly, public consumption as the spending instrument also performs better than targeted transfers, but less well than public investment. It is important to note that public investment spending in the model is shovel-ready, efficiently delivered, and raises potential output—requirements that may be difficult to fulfill in practice. In general, though, economic fluctuations are always lower with rules-based fiscal stimulus measures in place—regardless of the spending instrument—than without.

When it comes to the practical implementation of enhancements to automatic stabilizers in an economy, many specific design choices—which the chapter has abstracted from—will matter:

- The macroeconomic trigger for the rules-based fiscal stimulus in the model simulations is based on deviations from the natural rate of unemployment, which can be difficult to measure in real-time. Sahm (2019) advocates for the 12-month moving average of the unemployment rate for the United States, but which exact trigger (and its measurement) works best may well vary by economy.
- Identifying liquidity-constrained households to target for transfers—the public spending instrument considered as the baseline for the rule—may be tough to do. Instead, easier-to-observe income variables could be used to identify qualifying households. This could have the benefit of ameliorating any rises in inequality in recessions, which tend to hit the poor harder.[53]
- Alternative spending instruments for the rules-based fiscal stimulus could be considered, which could help governments achieve other goals while also stabilizing the economy. For example, if it were possible to establish a priority list of needed public investments, then those projects could be brought online more quickly in a downturn, boosting long-term prospects.[54]
- Measures to increase the cyclical sensitivity of traditional automatic stabilizers will also help. But they would need to take careful account of any disincentive effects they may entail, as described in Chapter 2 of the April 2020 *Fiscal Monitor*.
- In general, country-specific characteristics and circumstances should guide the design choices for any rules-based fiscal stimulus, including the macroeconomic trigger variables (aligned with the business cycle) and instrument selection (based on country-specific needs and what delivers high multipliers).

[53]See Boushey and others (2019) for evidence from the United States on how recessions disproportionately impact disadvantaged groups.

[54]See Chapter 2 of the April 2020 *Fiscal Monitor* for a discussion of how to improve the efficiency of public investment and formulate a pipeline of appraised projects. Such investments could be green, supporting governments' climate change mitigation and adaptation objectives. See OECD, UN, and WBG (2018) for a discussion of the economic transformation and associated investments required to address climate challenges.

Summary and Concluding Remarks

Since the 1980s policy rates have gradually trended down and public debts up in advanced economies. The deep shocks of the global financial crisis and subsequent Great Recession called for concerted and strong expansionary monetary and fiscal responses, exacerbating these trends. Most recently, in responding to the COVID-19 pandemic, policymakers in advanced economies have initiated extraordinary discretionary fiscal and monetary policy support measures, which will further reinforce the prevalence of low interest rates and the upward trend in public debt. With average policy rates lower and public debts higher than they have been over the past 60 years, even before the pandemic, there are concerns about policymakers' ability to effectively respond to future downturns.

Against this background, this chapter asked how policymakers can best prepare for and counter future recessions. Even though rates are close to zero in many advanced economies, unconventional or "new" monetary policy tools remain available to central banks and can deliver further stimulus, if needed. However, there is unease in some quarters about their more intensive use, with concerns about their effectiveness going forward, side effects, and potential threats to central bank independence.

Attention then turned to how fiscal policy can best counter adverse shocks and ensure that there is not an excessive reliance on monetary policy for macroeconomic stabilization. While it is true that public debts are higher, the analysis suggests that greater abilities to service debt—as captured by the low or even negative interest rate–growth differentials—are improving countries' debt dynamics. Moreover, based on its past behavior, a low average interest rate–growth differential seems likely to persist. That said, country-specific vulnerabilities to shifts in market sentiment remain important considerations in determining fiscal space and deciding how expansionary fiscal policy can be in response to a downturn.

The choice of fiscal instrument and the macroeconomic context influence the effectiveness of fiscal stimulus against adverse shocks. Findings from the literature and new analysis point to public spending—investment, consumption, or transfers targeted to liquidity-constrained households—as the most effective in stabilizing output. In the case of transfers targeted to vulnerable populations, they also implicitly provide income insurance against adverse macroeconomic shocks. The findings also suggest that economic slack and interest rates near the effective lower bound make fiscal stimulus even more powerful, strengthening arguments for its use to counter future downturns where these conditions would exist.

Given historical delays in the implementation of discretionary fiscal support measures, there is a case for enhancing traditional automatic stabilizers and adopting rules-based fiscal stimulus measures to build economic resilience. The current shock has negatively impacted the economy with unrivaled speed and depth. The political will for action has rapidly coalesced, with governments adopting a number of support measures. However, the extraordinary size and speed of the shock have also complicated the timely delivery of support. A model-based analysis of a rules-based fiscal stimulus that automatically and temporarily increases public spending in response to rises in unemployment suggests that it could be a powerful stabilization tool, particularly when interest rates are at the effective lower bound and monetary policy is accommodative. Even though fiscal stimulus comes at a cost (deficits and debt rise), the rise in the public debt-to-GDP ratio is lower with a strong countercyclical fiscal response than it is without. In other words, the prudent action at the effective lower bound is to respond immediately and forcefully to an adverse shock with stimulus. Moreover, the likelihood of recessions when the economy is near the effective lower bound is lower when measures for a rules-based fiscal stimulus are in place. Unlike purely discretionary policy measures, rules-based fiscal stimulus helps shape household and business expectations before a shock occurs by promising a strong countercyclical fiscal response when monetary policy is constrained. This reduces uncertainty and dampens falls in consumption and investment when a negative shock materializes. In fact, the stabilization achieved by rules-based fiscal stimulus comes close to that when monetary policy actions are unconstrained.

To ensure a timely and effective response to a recession and improve the economy's resilience, policymakers should consider enhancing existing automatic stabilizers and adopting rules-based fiscal stimulus measures. While these recommendations cannot address a shock that has already happened,

such as the current pandemic, developing and putting them in place now could help insure the eventual recovery against future adverse shocks and bolster economic resilience going forward. They are doubly important when the economy is operating close to the effective lower bound on interest rates and discretionary fiscal policy lags are long. Discretionary fiscal measures—which may be more tailored to the specific shock—may still be essential, complementing the automatic response. Moreover, the high degree of synchronization of business cycles across advanced economies implies that a coordinated push to improve the responsiveness of fiscal policy to downturns would entail even greater gains.[55]

[55]See Online Annex 2.1 for evidence on the rise in synchronization of business cycles across advanced economies. See Gaspar, Obstfeld, and Sahay (2016) on how an internationally coordinated response to a common adverse shock is more beneficial.

Box 2.1. Can Negative Policy Rates Stimulate the Economy?

As conventional monetary policy has collided with the effective lower bound on policy rates since the global financial crisis, central banks in many advanced economies have expanded their toolkit to include asset purchases, forward guidance (public communication by the central bank about the likely future path of monetary policy and its objectives and intentions), and negative policy rates. This box illustrates recent pre-pandemic experiences with negative interest rate policy in several advanced economies, focusing on banks.

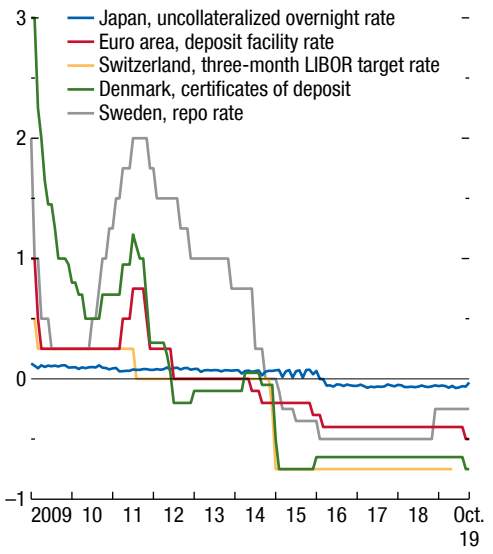
Following Denmark in 2012, a number of other countries, as well as the European Central Bank, introduced negative interest rates (Figure 2.1.1), while other countries continue to examine the possibility. Central banks have enforced negative interest rates through charging commercial banks for reserves they hold at the central bank, often at different rates across different levels of reserves.[1]

In principle, the effects of cutting interest rates below zero are similar to conventional policy cuts when the interest rate is above zero. Responding to the cost change, individual banks will reduce their excess reserves by increasing lending and purchasing other financial assets. In this way, the policy seeks to reduce lending rates to the broader economy, increase credit supply, boost prices across financial markets, and thus stimulate aggregate demand by raising corporate profits and reducing corporate delinquency and default rates. By allowing interest rates to become negative, central banks have greater room to be expansionary.[2]

However, monetary policy easing close to the effective lower bound may have both positive and negative effects, making monetary policy transmission more complex. The introduction of negative rates in the euro area signaled to the market that policy rates could go below zero, and the European Central Bank was able to lower and flatten the yield curve.[3] This policy change created a wedge between safer, more liquid and riskier, less liquid assets, and incentivized banks to rebalance their portfolio from liquid assets to corporate lending, with sizable positive real effects on firms.[4]

At the same time, banks are often reluctant to pass negative rates on to depositors, who could opt to simply withdraw and hold their funds in cash. Given that deposit rates are stuck at zero, banks can experience a compression of interest margins if loan rates decline (Figure 2.1.2), which could reduce profitability.[5] Because of this negative net worth effect, banks might

Figure 2.1.1. Monetary Policy Rates
(Percent)



Sources: National central banks; and Thomson Reuters Datastream.
Note: The data shown are at monthly frequency. The line for Switzerland is missing from June 2019 onwards, reflecting its switch from the three-month LIBOR rate to a new policy rate as its target. LIBOR = London interbank offered rate.

The author of this box is Andrea Presbitero.

[1]See Agarwal and Kimball (2019) for a discussion of how to implement negative rates, including tiering.

[2]See Rogoff (2017).

[3]See Rostagno and others (2019).

[4]See Ruge-Murcia (2006) and Bottero and others (2019) for more details and evidence on this mechanism.

[5]However, there might be exceptions. There is evidence that at least some euro area banks have been able to pass negative rates on to depositors (Altavilla and others 2019). Second, the contractionary effect of negative rates depends on a reduction of bank profitability. See Rostagno and others (2019); Lopez, Rose, and Spiegel (2020); among others, as well the April 2020 *Global Financial Stability Report* for a discussion of the consequences of low rates more generally on bank profitability.

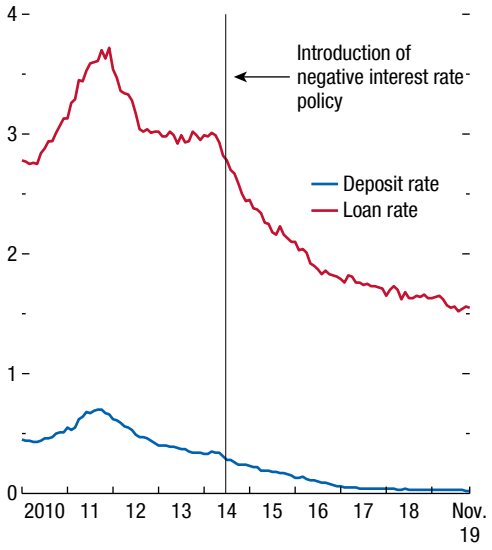
Box 2.1 *(continued)*

choose to reduce the supply of credit and take on more risk.[6] Accordingly, the loss of bank profitability from a decline in the spread between lending and deposit rates could weaken the transmission of monetary policy stimulus through the banking system and potentially have an adverse effect on aggregate output.[7]

The portfolio rebalancing and net worth channels are not mutually exclusive and their relative importance—and therefore, the overall effect of negative rates on the economy—is likely to differ depending on (1) local credit market conditions, such as banks' reliance on deposit funding and short-term liquid assets, which measure the banks' exposures to the two channels; and (2) banks' market power, which may affect their ability to pass negative rates on to depositors and their capacity to compensate the decline in net interest margin by charging higher fees for services. Moreover, higher asset prices and stronger aggregate demand from more expansionary monetary policy could raise banks' profitability through lower loan loss provisions and higher capital gains.

While recent studies lack compelling evidence that bank profitability has been severely curtailed by mildly negative policy rates, this might change if rates were to become deeply negative or stay mildly negative for longer periods. Most of the offsetting forces to a decline in profitability due to a compression of interest margins, such as capital gains, may not persist, so that margin compression might dominate in the medium term, making the net worth channel more prominent, with adverse effects on banks' profitability and lending capacity. Finally, if negative rates were to last a prolonged period of time, the cumulative effects of increased risk-taking by the financial and corporate sectors could undermine financial stability.[8]

Figure 2.1.2. Loan and Deposit Rates to Nonfinancial Corporations in the Euro Area
(Percent)



Source: European Central Bank Statistical Data Warehouse.
Note: The deposit rate is the overnight rate for nonfinancial corporations. The loan rate is the cost of borrowing for nonfinancial corporations, defined as the interest rate on all business loans, including revolving loans and overdrafts.

[6]See Heider, Saidi, and Schepens (2019). In contrast, Arce and others (2018) shows that if capital requirements are tight due to micro- and macroprudential policies, banks with lower capital ratios experiencing lower profitability from negative interest rates do not necessarily take on more risk.

[7]See Brunnermeier and Koby (2019); Eggertsson, Juelsrud, and Wold (2019); and Wang and others (2019).

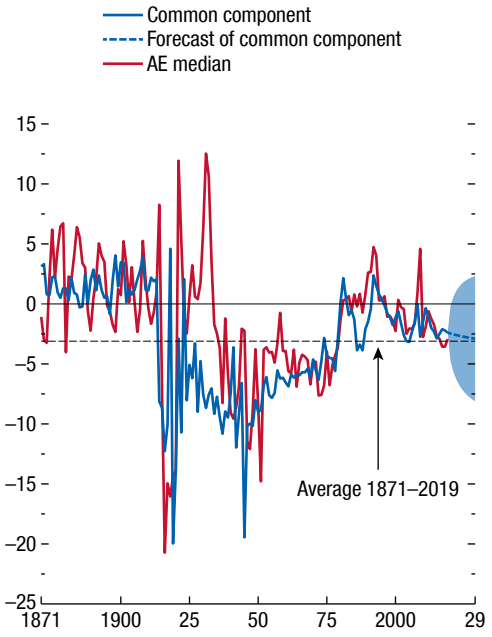
[8]See Committee on the Global Financial System (2018).

Box 2.2. The Persistence and Drivers of the Common Component of Interest Rate–Growth Differentials in Advanced Economies

As highlighted in the main text, unanticipated lower interest rates and higher growth rates in recent years have tempered the rise of debt-to GDP ratios of many advanced economies. As countries' debts are repaid over many years, the persistence of the interest rate–growth differential ($r - g$) is also a key determinant of the scope for fiscal support in a future downturn. The more persistent are declines in $r - g$, the larger the debt savings over the longer term, holding future primary deficits unchanged. If declines are temporary, with $r - g$ likely to revert toward higher levels, any additional room for borrowing could be much smaller (again, all else equal). This box examines the evolution of the interest rate–growth differential over time and how it might shed light on the likely persistence of this differential in the future.

A cross-country, long time series analysis of the interest rate–growth differential for a selection of advanced economies since 1871 suggests that the bulk of its variability is country-specific or transitory.[1] For example, growth and inflation surprises—which are highly likely in the current conjuncture given uncertainties about the path of the ongoing pandemic across countries—lead to transitory changes in the interest rate–growth differential. However, a common and highly persistent component accounts for about 20 percent of the overall variation (Figure 2.2.1). This component is more important than this figure might suggest, as it captures all the nontransitory variation, which is common across countries and is thus the critical component for understanding international trends in $r - g$.[2] A simple time series statistical model used to forecast this common component suggests that it is expected to remain broadly at current levels for the foreseeable future, with approximately an 85 percent chance that this differential is negative 10 years from now. In other words, low and negative $r - g$ looks more like a return to normal than an aberration.

Figure 2.2.1. Common Component of Interest Rate–Growth Differentials
(Percentage points)



Sources: Bank for International Settlements; Haver Analytics; IMF, *International Financial Statistics*; Jordà and others (2019); national sources; and IMF staff estimates.
Note: The sample includes 15 advanced economies. Blue shaded area shows 95 percent confidence interval of forecast. The forecast is estimated from a set of candidate autoregressive moving-average model with lags determined by the Akaike information criterion, which selects an AR(1) model. Confidence intervals are computed using post-1950 data. Expected inflation and growth computed as a smoothed average within distinct monetary eras: 1871–1913, 1914–18, 1919–38, 1939–45, 1946–71, 1972–90, 1991–2007, 2008–19. See Online Annex 2.2 for further details on the analysis. AE = advanced economy.

Complementing the simple statistical analysis of the common component of $r - g$, a regression analysis can help identify its deep drivers and allow an assessment of their likely persistence. Key factors highlighted in the literature include:[3]

- a persistent decline in global productivity (as captured by global total factor productivity growth), affecting both r and g;
- global population aging (as captured by the increasing share of the global population that is 40–64 years old) may affect both r and g through

The author of this box is Philip Barrett.

[1]The nominal interest rate used in this exercise is the short-term policy rate, as it excludes factors such as risk- and term-premia, which are themselves endogenous to other fiscal variables.

[2]Specifically, country fixed effects (capturing country-specific, time-invariant factors) and expectational errors in growth and inflation (which are purely transitory and unpredictable components) explain about 60 percent of the overall deviations in $r - g$ across countries and time. See Online Annex 2.2 for more details on the specification of the panel data model. All annexes are available at http://www.imf.org/en/Publications/WEO.

[3]See Andrade and others (2018), among others.

Box 2.2 *(continued)*

higher saving rates and potentially ambiguous effects on growth;[4]

- the rise of emerging market and developing economies (as captured by their share of world output), which have higher desired saving rates and a proclivity to save overseas; and
- financial repression that keeps interest rates low through regulations on financial market participants (as proxied by the opportunity cost of unremunerated reserve requirements in the United States as a share of GDP).[5]

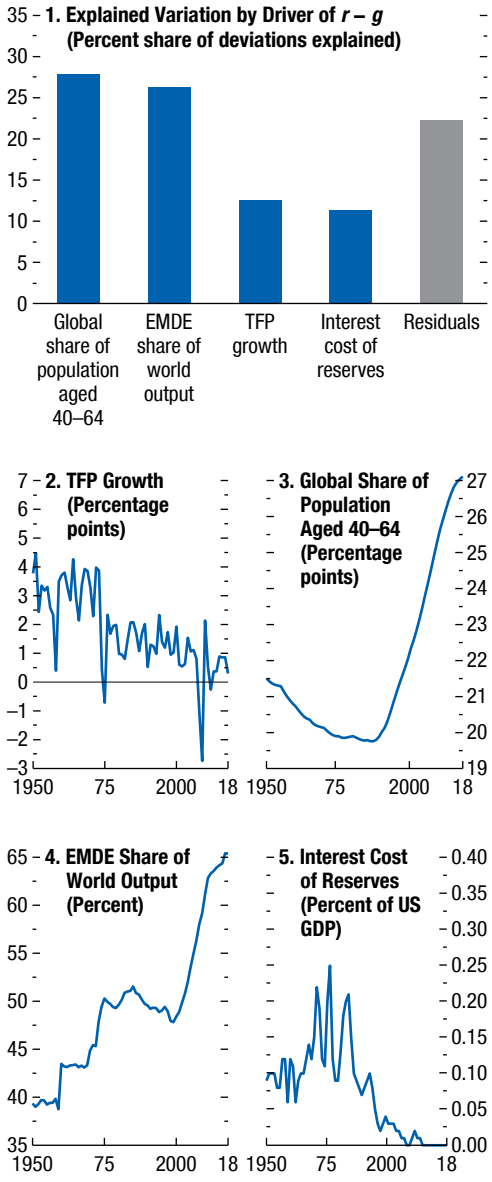
A regression analysis of the common component of $r - g$ since 1950 suggests that all these drivers are significant. However, the most important are the increase in the share of global population aged 40–64 and the rise of emerging market and developing economies in the global economy (Figure 2.2.2, panel 1). Since 1950 these two variables have steadily trended upward, in line with the long-term behavior of $r - g$. In contrast, global total factor productivity growth and the opportunity cost of required reserves in the United States have been more variable (Figure 2.2.2, panels 2–5).

Future movements in these variables could influence $r - g$ beyond the ways captured in the statistical forecasting model. For example, growth in the global population share of the middle-aged has slowed sharply over the past decade. In future, this share is expected to remain broadly constant at current levels. If past relationships continue to hold, then this will likely ease the downward pressure on interest rate–growth differentials

[4]The relationship between interest rates and population aging reflects life cycle considerations, with increased saving expected to occur just prior to retirement (Bloom, Canning, and Graham 2003). The debate on the relationship between growth and population aging remains unsettled, with some arguing that it will lower growth through lower labor force participation and technological change (Gordon 2016) while others argue that it raises growth through increased uptake of automation and other productivity-enhancing technologies (Acemoglu and Restrepo 2017).

[5]Required reserves are legally mandated reserve holdings of US banks at the Federal Reserve. The opportunity cost of required reserves is the interest saving that the US public sector gains from this requirement. Before 2009 banks received no interest on these reserves, which are unavailable for lending. Since 2009 the Federal Reserve has paid interest on required reserves, eliminating this interest saving for the United States. To the extent that the US banking system provides a backstop for global finance, unremunerated reserve requirements may be thought of as a tax on safe assets worldwide. See Online Annex 2.2 for details on how this measure correlates closely with that from Abiad, Detragiache, and Tressel (2010).

Figure 2.2.2. Drivers of the Common Component of Interest Rate–Growth Differentials



Sources: Federal Reserve; Maddison Project; United Nations; and IMF staff calculations.
Note: Panel 1 bars show the share of absolute variation in the common component of $r - g$, which is explained by the candidate drivers (panels 2–5) from a linear regression. See Online Annex 2.2 for further details on the data and analysis. EMDE = emerging market and developing economy; $r - g$ = interest rate-growth differential; TFP = total factor productivity.

Box 2.2 *(continued)*

as demand for savings declines. Similarly, the share of emerging market and developing economies is unlikely to continue to grow as sharply as in recent years. The ongoing health crisis may also have a longer-term impact on $r - g$ if the pandemic, or policy responses to it, affect demand for precautionary savings.

Although the impact of small changes in the interest rate–growth differential may eventually be large, a meaningful impact may take several years to materialize, simply because countries take many years to repay their debts. As a result, other factors may matter more in the near term. For instance, sudden increases in risk premia—even if temporary—can cause public debt to GDP to grow sharply. This could include unanticipated negative events that prompt shifts in investor sentiment toward safe-haven assets, which, in turn, can push up spreads unexpectedly for some countries.

Overall, the risk-free interest rate–growth differential serves as a useful baseline for the likely future path of public debt-to-GDP ratios. The evidence presented in this box suggests that low differentials are more likely a return to long-term normality than a rare event. Yet, this finding is potentially sensitive to changing long-term factors, including demographic pressures and the composition of the global economy, as well as short-term risks to spreads.

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CHAPTER 3

DAMPENING GLOBAL FINANCIAL SHOCKS IN EMERGING MARKETS: CAN MACROPRUDENTIAL REGULATION HELP?

As discussed in Chapter 1, the COVID-19 pandemic is impacting emerging markets through an unprecedented mix of domestic and external shocks whose combined effects are very hard to predict. Among these, emerging markets are confronting a sharp tightening in global financial conditions. Against this backdrop, this chapter asks whether, based on historical experience, countries that have adopted a more stringent level of macroprudential regulation—aimed at strengthening financial stability—are better placed to withstand the impact of global financial shocks on domestic macroeconomic conditions. The analysis finds that a tighter level of macroprudential regulation can significantly dampen the effects of global financial shocks on GDP growth in emerging markets. Furthermore, macroprudential regulation tends to reduce the effects of global financial shocks on credit growth and the exchange rate. However, maintaining a tight level of macroprudential regulation is not costless. Although macroprudential regulation supports GDP growth in the face of adverse global financial shocks, it also lowers economic activity when global financial conditions are favorable. This symmetric effect calls for further research on how to adjust macroprudential regulation optimally. The analysis also finds that macroprudential regulation allows monetary policy to respond more countercyclically to global financial shocks, which could be an important channel through which macroprudential regulation enhances macroeconomic stability. Finally, the chapter examines potential side effects of macroprudential regulation on average GDP growth or through cross-country spillovers. The analysis finds no evidence of detrimental effects on average GDP growth, but more research is needed before definitive conclusions are drawn. Regarding spillovers, there is some evidence that tighter macroprudential regulation in one country tends to enhance resilience in other countries as well, possibly because greater domestic stability supports more stable financial and trade flows.

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Introduction

Fluctuations in global financial markets have historically significantly influenced financial and macroeconomic conditions in emerging markets. Under buoyant global financial conditions, emerging markets have enjoyed stronger economic growth supported by abundant foreign capital inflows. Conversely, when global financial conditions tightened—most notably during the global financial crisis—economic activity in emerging markets was severely affected.[1] The tightening in global financial markets caused by the COVID-19 pandemic is again placing emerging markets under severe distress. As documented in the April 2020 *Global Financial Stability Report,* capital flows to emerging markets are rapidly receding while global risk aversion has spiked. This is compounding the challenges faced by emerging markets that are also confronting the dramatic consequences of the domestic diffusion of the virus.

According to conventional macroeconomic theory, emerging markets should be able to largely offset the impact of global financial shocks by relying on exchange rate flexibility. Indeed, exchange rate flexibility appears to soften the effects of foreign financial shocks (Obstfeld, Ostry, and Qureshi 2019), but it falls short of providing full insulation.[2] Global financial conditions affect credit markets and macroeconomic conditions, even in countries with flexible exchange rates (Rey 2015, 2016).

The fact that exchange rate flexibility does not fully insulate emerging markets from global financial shocks has fueled recurring debates about whether policymakers should deploy additional policy tools. The discussion often focuses on the role of capital flow

[1]See, for example, Canova (2005); Maćkowiak (2007); Georgiadis (2016); Choi and others (2017); Dedola, Rivola, and Stracca (2017); Kirti (2018); Iacoviello and Navarro (2019); Vicondoa (2019), and Bräuning and Ivashina (forthcoming).

[2]Recent models show that exchange rate flexibility may not fully absorb foreign shocks in the presence of financial frictions (Ottonello 2015; Farhi and Werning 2016; Akinci and Queralto 2018; Aoki, Benigno, and Kiyotaki 2018; Cavallino and Sandri 2020) and trade invoicing in US dollars (Egorov and Mukhin 2019, Gopinath and others 2019).

management measures and foreign exchange intervention because these tools directly target international financial transactions. However, awareness is growing that macroprudential policies can themselves play an important role in stabilizing credit markets, despite considerable heterogeneity in effectiveness among instruments (Box 3.1).

Considering this background, the chapter analyzes whether, based on past experience, emerging markets that have adopted a tighter level of macroprudential regulation—which involves a broad range of policy measures to contain the buildup of systemic vulnerability and protect financial stability—may be able to withstand more effectively the macroeconomic impacts of global financial shocks. The premise underpinning the analysis is that, by reinforcing balance sheets, restricting risk-taking, and limiting foreign currency exposures, macroprudential regulation strengthens the domestic financial sector's resilience and thus enhances macroeconomic stability.

Ostry and others (2012) provides early evidence favoring this hypothesis, showing that macroprudential regulation enhanced resilience during the global financial crisis of 2008–09. Similarly, Neanidis (2019) finds that stronger bank supervision reduces the negative impact of volatile capital flows on economic growth.[3] This chapter examines the dampening effects of macroprudential regulation against global financial shocks more systematically by analyzing the experience of 38 emerging markets between 2000 and 2016 based on data availability.[4]

During that period, emerging markets were exposed to highly volatile global financial conditions driven by large swings in US policy rates, global risk aversion—proxied here by the Chicago Board Options Exchange Volatility Index (VIX)—and capital inflows (Figure 3.1, panels 1 and 2).[5] Global financial volatility significantly affected emerging markets. Panels 3 and 4 of Figure 3.1 show that domestic credit and GDP in emerging markets grew strongly during the buoyant years before the global financial crisis and sharply contracted during the crisis.

Meanwhile, emerging markets have gradually tightened macroprudential regulation. The IMF's integrated Macroprudential Policy (iMaPP) database records tightening and loosening actions for various macroprudential policy instruments between 1990 and 2016 (Alam and others 2019). These include measures to boost bank capital and liquidity, limit foreign exchange mismatches, and prevent risky lending to leveraged borrowers.

Panel 1 of Figure 3.2 shows the average number of macroprudential tightening actions per country in emerging markets since 2000. By cumulating the tightening and loosening actions for each country since 1990, it is possible to construct an approximate measure of the stringency of macroprudential regulation. Panel 2 of Figure 3.2 shows that macroprudential regulation in emerging markets has tightened considerably over the years, especially since 2005. The global financial crisis led to a temporary loosening in macroprudential regulation, but emerging markets returned to tightening macroprudential regulation during the subsequent recovery. Panel 2 also illustrates a substantial dispersion in the level of macroprudential regulation across countries.

In this context, this chapter asks three main questions:

- Can a more stringent level of macroprudential regulation dampen the effects of global financial shocks on macroeconomic conditions in emerging markets?
- Regarding possible channels through which macroprudential regulation affects resilience, does monetary policy respond more countercyclically to global financial shocks when macroprudential regulation is tighter?
- Does macroprudential regulation have side effects on average economic growth and via cross-country spillovers?

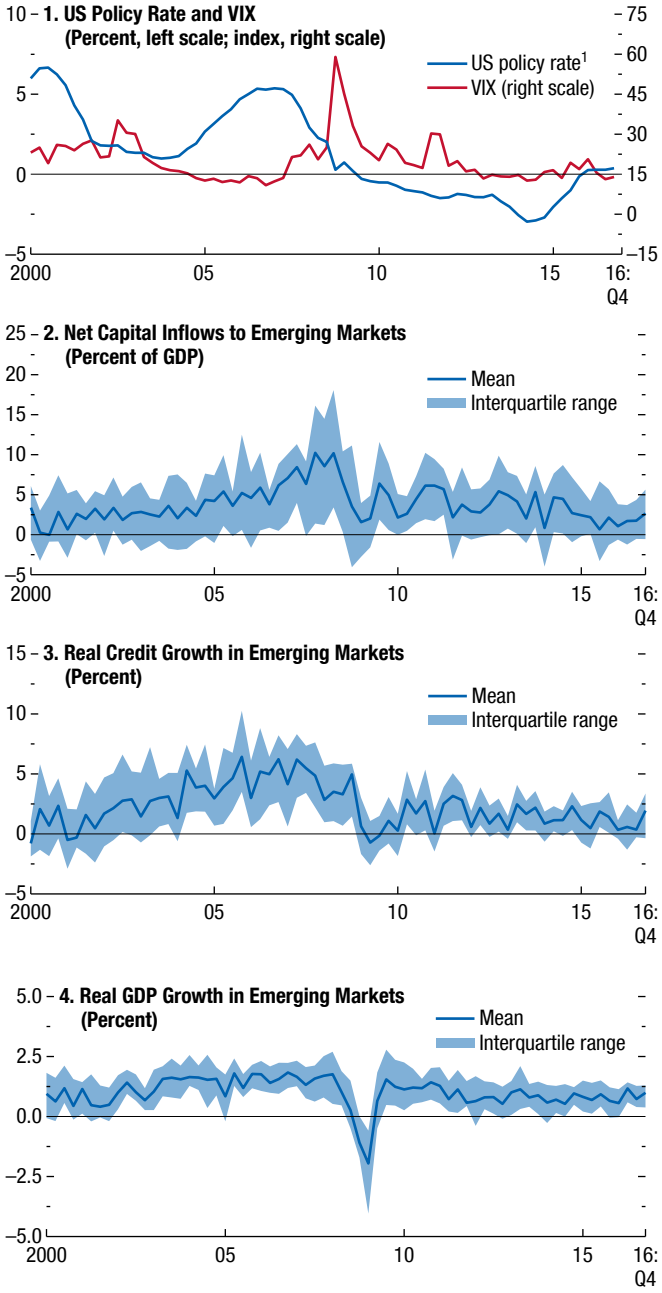
[3]Brandao-Marques and others (forthcoming) analyzes the role of macroprudential policies in affecting the full distribution of future GDP growth. Examining the effectiveness of changes in macroprudential regulation, the study finds that these policies can dampen downside risk to growth from external financial shocks. See also Galán (2020) for a related analysis.

[4]The country sample includes Albania, Argentina, Belarus, Bosnia and Herzegovina, Brazil, Bulgaria, Chile, China, Colombia, Costa Rica, Croatia, the Dominican Republic, Ecuador, El Salvador, Georgia, Hungary, India, Indonesia, Jamaica, Jordan, Kazakhstan, Malaysia, Mexico, Morocco, North Macedonia, Pakistan, Paraguay, Peru, the Philippines, Poland, Romania, Russia, Serbia, South Africa, Thailand, Turkey, Ukraine, and Uruguay. The sample period ends in 2016—the last year in the iMaPP database—and excludes extreme crises characterized by a "freely falling" exchange rate, according to the classification of Ilzetzki, Reinhart, and Rogoff (2019). For details on the sample selection and all data sources used in the analysis, see Online Annex 3.1. All annexes are available at http://www.imf.org/en/Publications/WEO.

[5]Emerging markets' cross-border financial positions increased considerably as a share of GDP until the global financial crisis and have remained broadly stable since then (Lane and Milesi-Ferretti 2018). The VIX captures the market's expected volatility in the Standard & Poor's 500 index over the coming 30 days.

Figure 3.1. Global Financial Conditions and Emerging Markets

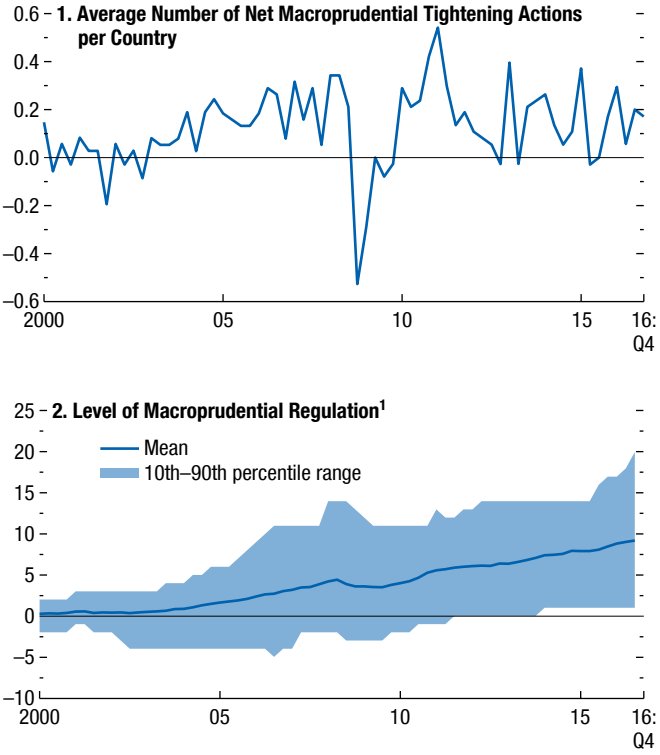
Global financial conditions can significantly influence credit markets and economic activity in emerging markets.



Sources: Bank for International Settlements; Haver Analytics; IMF, *Balance of Payments and International Investment Position Statistics*; IMF, *International Financial Statistics*; Wu and Xia (2015); and IMF staff calculations.
Note: VIX = Chicago Board Options Exchange Volatility Index.
[1]The US policy rate is the federal funds rate except during the zero lower bound period, which uses the implied rate from Wu and Xia (2016).

Figure 3.2. Macroprudential Regulation in Emerging Markets

Emerging markets have tightened macroprudential regulation over the years, but considerable variation remains across countries.



Sources: IMF, integrated Macroprudential Policy (iMaPP) database; and IMF staff calculations.
[1]The level of macroprudential regulation is calculated by cumulating the net tightening actions for each country since 1990, the first year in the iMaPP database.

By exploiting the time-series and cross-country variation in macroprudential regulation, the analysis first shows that macroprudential regulation can strengthen emerging markets' resilience to swings in global financial conditions. Specifically, a more stringent level of macroprudential regulation reduces the sensitivity of GDP growth in emerging markets to global financial shocks.[6] These results are robust to a broad set of endogeneity tests to alleviate concerns about reverse causality and omitted variables.

[6]It is important to emphasize that the analysis does not examine how *changes* in macroprudential regulation affect macroeconomic conditions, which is the focus of most of the existing literature. It instead investigates whether a tighter *level* of macroprudential regulation—which is expected to strengthen financial resilience—dampens the effects of global financial shocks on domestic macroeconomic conditions.

The dampening effects of macroprudential regulation show decreasing marginal returns. Therefore, when regulation is already more stringent, further macroprudential tightening becomes less effective in strengthening resilience. This decrease in effectiveness is consistent with concerns about circumvention, whereby excessive macroprudential regulation may push financial activities outside the regulatory perimeter and increase cross-border lending.[7]

No particular set of tools seems to drive the dampening effects of macroprudential regulation. A broad range of macroprudential measures can contribute to enhancing resilience to global financial shocks, including macroprudential tools that boost bank capital and liquidity, limit foreign exchange exposures, and prevent forms of credit that are too risky. However, these tools have heterogeneous dampening effects that depend on the type of global financial shock hitting the economy.

Macroprudential regulation also appears to reduce domestic credit's sensitivity to global financial shocks, in line with the hypothesis that stronger bank balance sheets lead to steadier credit supply. Furthermore, macroprudential regulation tends to stabilize nominal and real exchange rates, possibly because a safer financial system reduces the volatility of currency risk premia.

However, maintaining a high level of macroprudential regulation at all times is not costless because regulation involves symmetric dampening effects. A higher level of macroprudential regulation supports GDP growth when global financial shocks are adverse, but it lowers economic activity when global financial conditions are favorable. This observation calls for further analysis on how to adjust macroprudential policies optimally to dampen the effects of negative global financial shocks without unduly constraining economic activity when financial conditions are supportive.[8] Such analysis should also take into account the need to adjust macroprudential policies based on domestic systemic vulnerabilities (IMF 2014).

Regarding possible channels through which macroprudential regulation may strengthen macroeconomic resilience, the chapter examines whether a tighter level of regulation allows central banks to respond more countercyclically to global financial shocks. This question is important because emerging markets are often reluctant to cut policy rates when global financial conditions tighten, possibly to stabilize exchange rates and capital flows.[9]

Similar dynamics appear to be at play during the ongoing global crisis, with central banks confronting a challenging trade-off between domestic and external stability. Emerging markets face a severe decline in both domestic and foreign demand, which calls for extraordinary monetary easing. But such actions could exacerbate destabilizing capital outflows and lead to even sharper exchange rate depreciations that further imperil financial stability. And, indeed, emerging market central banks have generally reduced policy rates less than the United States so far, despite not being constrained by the zero lower bound.[10]

The empirical results show that macroprudential regulation allows monetary policy to respond more countercyclically to global financial shocks. For example, in countries with tighter macroprudential regulation, central banks tend to cut policy rates more aggressively when global risk aversion spikes, thus supporting domestic demand. A possible interpretation is that macroprudential regulation alleviates concerns about financial stability and thus allows monetary policy to focus more squarely on macroeconomic stabilization.

Finally, the chapter studies potential side effects of macroprudential regulation. As mentioned previously, macroprudential regulation has symmetric dampening effects, thus reducing economic growth when global financial conditions are favorable. Besides those negative effects, there could be a deeper concern that a more stringent level of macroprudential regulation may reduce the average level of economic growth throughout the economic cycle. The analysis finds no evidence of such a negative impact. However, given that endogeneity concerns are more severe in this context, more research is needed to reach definitive conclusions.

[7]See, for example, Aiyar, Calomiris, and Wieladek (2014); Reinhardt and Sowerbutts (2015); Cerutti, Claessens, and Laeven (2017); Ahnert, Forbes, Friedrich, and Reinhardt (2018); Bengui and Bianchi (2018); Braggion, Manconi, and Zhu (2018); and Cizel and others (2019).

[8]Box 3.2 shows that policymakers in emerging markets tend to adjust macroprudential regulation in response to global financial shocks, but more research is needed to understand whether these responses are optimal.

[9]Obstfeld, Shambaugh, and Taylor (2005); Aizenman, Chinn, and Ito (2016, 2017); Han and Wei (2018); Cavallino and Sandri (2020); and Bhattarai, Chatterjee, and Park (forthcoming) document similar findings. Monetary policy appears to respond procyclically, even after controlling for expected inflation.

[10]Between March 1 and April 10 2020 the United States reduced the policy rate by 150 basis points while the emerging markets considered in the analysis, on average, lowered rates by about 55 basis points.

Macroprudential regulation may also raise concerns about negative cross-country spillovers. If a country shields itself against global financial volatility, other countries may face more exposure to such volatility. The analysis finds no evidence of such negative spillovers. Rather, it finds some evidence of positive spillovers, given that a higher level of macroprudential regulation in one country tends to enhance macroeconomic stability in other countries in the face of capital flow shocks. Macroprudential regulation may thus reduce the propagation of global financial shocks, possibly because enhanced resilience at the level of individual countries leads to more stable cross-border trade and financial flows, even though more research is needed to better understand these transmission channels.

An important caveat to the analysis is that current indicators of macroprudential regulation are subject to several measurement drawbacks, for example because they do not account for the intensity of changes in regulation. Further efforts are needed to improve the measurement of macroprudential regulation and assess the robustness of the findings presented in the chapter. The robustness of the chapter's findings will also need to be tested in richer empirical frameworks that allow for dynamic effects and a fuller interplay between policy tools. This is particularly important, given that policy tools can interact in complex and nontrivial ways.

Can Macroprudential Regulation Dampen the Effects of Global Financial Shocks?

Macroprudential regulation involves a broad set of policy tools that aim to contain the buildup of systemic vulnerabilities and strengthen financial sector resilience, including measures to increase bank capital and liquidity, reduce leverage in the household and corporate sectors, and prevent currency mismatches. The hypothesis motivating this chapter's analysis is that, by buttressing financial sector stability, macroprudential regulation should also enhance macroeconomic resilience to global financial shocks. For example, a banking sector that is better capitalized and more liquid should cope more easily with a sudden withdrawal of foreign capital, firms that are less leveraged should better withstand a sudden increase in foreign borrowing costs, and bank and corporate balance sheets that are less exposed to currency mismatches should be less vulnerable to swings in exchange rates.[11] Does the empirical evidence support this logic?

To address this question, the empirical framework uses a panel regression of real GDP growth in emerging markets over a vector of global financial shocks and their interactions with the stringency of macroprudential regulation. The regression coefficients on the interaction terms capture whether the level of macroprudential regulation mediates the impact of global financial shocks on emerging markets' GDP. The regression also includes interaction terms of the global financial shocks with the squared level of macroprudential regulation to account for possible nonlinear effects. Furthermore, the regression includes country fixed effects to capture time-invariant country-specific factors and various controls, similar to the approach of Obstfeld, Ostry, and Qureshi (2019).[12]

The analysis considers three sources of global financial shocks: US monetary policy shocks to measure variations in international risk-free rates, the VIX to capture changes in global risk premia, and net capital inflows (in percent of GDP) to account for changes in the quantity supply of foreign funds.[13] Following Blanchard and others (2017), net capital inflows to a

[11]While this chapter examines whether the level of regulation affects the transmission of global financial shocks to GDP, there is also a large literature that analyzes the effects of changes in macroprudential regulation on the economy. As discussed in the recent review of the literature in Galati and Moessner (2018), "the transmission mechanisms of macroprudential policy tools are not yet well understood." However, there is growing evidence that borrower-based tools transmit to the economy by affecting household credit and house prices.

[12]These include lagged GDP growth, the lagged log of real GDP per capita, institutional quality, and a linear trend. The regression also controls for the lagged output gap (to capture growth dynamics over the business cycle) and commodity terms of trade because several emerging markets are large importers or exporters of commodities. Online Annex 3.2 reports the econometric specification and details of the analysis.

[13]Most studies in the literature analyze only one of these three shocks. Including all shocks at once helps in considering all major sources of global financial shocks and trying to disentangle the components associated with risk-free rates, risk premia, or the quantity supply of foreign capital. The monetary policy shocks are the ones in Iacoviello and Navarro (2019), extended to the end of 2016 and computed as the residuals from a regression of the federal funds rate on US inflation, US log GDP, US corporate spreads, and the log of foreign GDP. The regression uses net capital flows, given that gross outflows offset part of the volatility in gross inflows (Broner and others 2013; Jeanne and Sandri 2020). Capital flows are normalized by the Hodrick-Prescott-trend component of GDP to avoid introducing volatility due to high-frequency movements in GDP. See the April 2020 *Global Financial Stability Report* for an analysis of the sensitivity of capital flows to global and domestic factors.

given country are instrumented using the sum of gross capital inflows to other emerging markets. This is to isolate the component of capital flows driven by global push factors rather than domestic developments.

The stringency of macroprudential regulation is measured by cumulating the net tightening actions for each country since 1990, the first year in the iMaPP database.[14]

The first three panels of Figure 3.3 illustrate the impact of global financial shocks on GDP in emerging markets as a function of the stringency of macroprudential regulation on the horizontal axis. At a low level of macroprudential regulation, an increase in global risk aversion (proxied by the VIX) or an outflow of capital considerably reduces economic growth in emerging markets. Given that quarterly GDP growth in the sample of analysis averages 1 percent, a 60 percent spike in the VIX, or a capital outflow equal to 2 percent of GDP, can push emerging markets with the lowest levels of macroprudential regulation into recession. Once the VIX and net capital flows are controlled for, shocks to US policy rates appear not to have statistically significant effects on emerging markets' economic growth.[15]

The figure further illustrates that the VIX and capital outflows have fewer damaging effects in countries with tighter macroprudential regulation. Therefore, macroprudential regulation dampens the impact of global financial shocks on economic activity in emerging markets. If the level of regulation is sufficiently tight, the VIX and net capital outflows no longer have statistically significant effects on emerging markets' GDP.

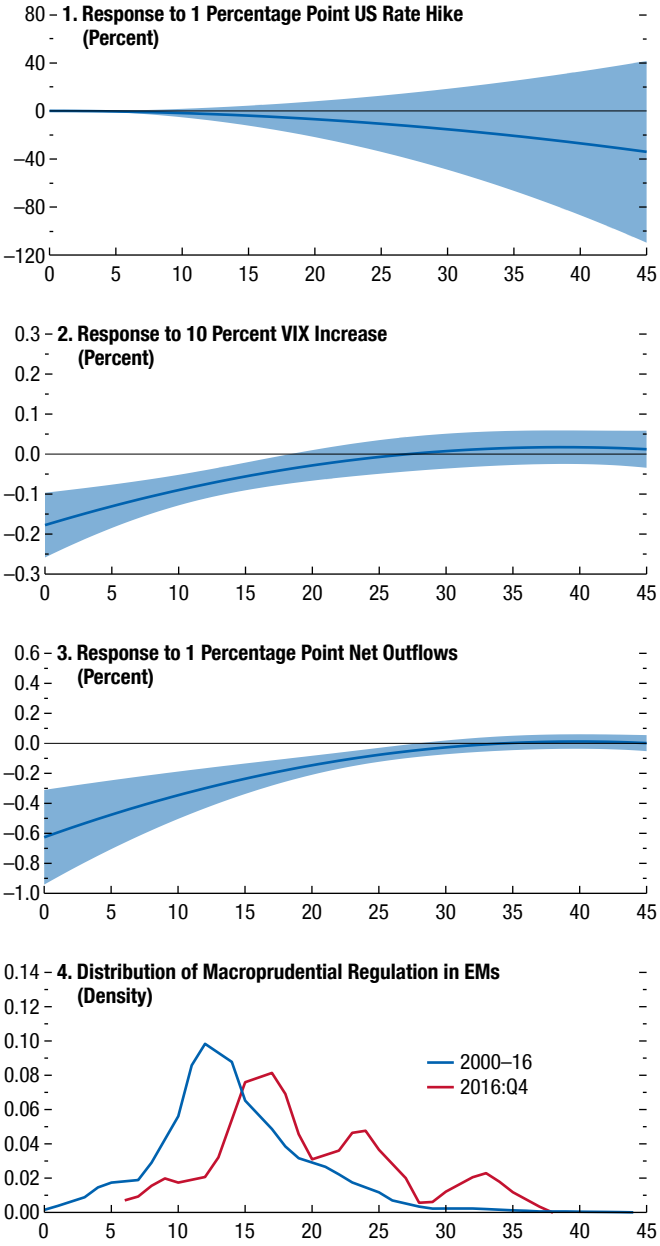
Panel 4 of Figure 3.3 shows the distribution of macroprudential regulation in emerging markets during 2000–16 and at the end of 2016. Emerging markets have generally tightened macroprudential policies over time, as evidenced by the shift of the distribution to the right. Yet, various countries are still at levels of

[14]The econometric analysis rescales the cumulated macroprudential indices across all countries so that values are always positive because the regression specification includes squared values of these indices.

[15]This lack of a statistically significant effect does not imply that US monetary policy has no impact on emerging markets, but it does imply that the effects materialize through changes in risk premia and capital flows rather than in risk-free rates. Indeed, if the regression does not control for the VIX and capital flows, a tightening of US monetary policy negatively affects economic growth in emerging markets. Kalemli-Özcan (2020) also documents the importance of risk premia in affecting emerging markets.

Figure 3.3. GDP Response in Emerging Markets to Global Financial Shocks

A higher level of macroprudential regulation dampens the impact of global financial shocks on GDP in emerging markets.



Source: IMF staff calculations.
Note: The *x*-axis denotes the level of macroprudential regulation. See Online Annex 3.1 for data sources and country coverage. Panels 1–3 show the GDP response to global financial shocks for different levels of macroprudential regulation; panel 4 shows the probability density function of macroprudential regulation in the sample; see Online Annex 3.2 for details. Net capital outflows are scaled by the HP-trend of GDP. The coefficients on the interaction terms between the shock and macroprudential regulation are statistically significant in panel 2 and panel 3, but not in panel 1. The shaded areas correspond to 90 percent confidence intervals computed with Driscoll-Kraay standard errors. EMs = emerging markets.

macroprudential regulation at which further tightening can strengthen resilience to global financial shocks. Nonetheless, gains from further tightening appear modest. Panels 2 and 3 of Figure 3.3 point to nonlinearities in the dampening effects of macroprudential regulation: a tightening in macroprudential regulation becomes progressively less effective in strengthening resilience to global financial shocks.

These nonlinearities may be consistent with problems of circumvention. As the stringency of regulation increases, domestic borrowers have stronger incentives to seek credit in the unregulated shadow financial market or from international lenders. Credit from these sources is likely to be more sensitive to global financial conditions and thus could weaken the dampening effects of macroprudential regulation.

Robustness Tests

The analysis has an important caveat: the index of macroprudential regulation constructed by cumulating net tightening actions is subject to several measurement concerns. First, countries may have started with a different level of macroprudential regulation in 1990 (the first year in the iMaPP database), thus confounding cross-country rankings. Second, the iMaPP database records when macroprudential policies are tightened or loosened, but not the intensity of those changes (except in the case of loan-to-value limits). Third, the cumulated index used in the baseline analysis gives equal weight to tightening actions across a broad range of macroprudential measures recorded in the iMaPP database, even though they may have heterogeneous effects on resilience.

These measurement problems could affect the estimates' accuracy but are unlikely to drive the results on the dampening effects of macroprudential regulation. In fact, they should bias the analysis against finding significant effects associated with macroprudential policies, as Akinci and Olmstead-Rumsey (2018) and Forbes (2018), for example, discuss. It is also reassuring that the results are robust to using different time-series and cross-sectional variation in the data and considering subcomponents of the macroprudential index, as the rest of the chapter describes. Nonetheless, the chapter's findings will need to be reexamined when more precise measures of macroprudential regulation become available.

Another possible concern with the analysis is that the level of macroprudential regulation may respond to changes in GDP growth, in which case reverse causality would bias the results. This concern is partly attenuated by the fact that the level of macroprudential regulation is persistent and much less volatile than quarterly fluctuations in GDP growth. In fact, because the level of macroprudential regulation is obtained by cumulating all past tightening and loosening macroprudential actions, it is largely predetermined with respect to the realization of global financial shocks and the associated GDP response. Besides, macroprudential policies seem not to be systemically adjusted in reference to GDP growth developments, as Richter, Schularick, and Shim (2019) documents in the case of loan-to-value ratios.[16]

Nonetheless, to alleviate concerns about reverse causality further, the dampening effects of macroprudential regulation are reestimated under various robustness tests. These tests include excluding periods with negative GDP growth—when macroprudential policies are more likely to be adjusted in reference to domestic macroeconomic developments—and lagging the level of macroprudential regulation by one quarter and one year. Furthermore, to rule out reverse causality concerns, the regression is estimated using the average level of macroprudential regulation for each country during 2000–16. In this specification, the dampening effects of macroprudential regulation are identified by exclusively relying on cross-country heterogeneity in the stringency of macroprudential regulation. Table 3.1 shows that the dampening effects of macroprudential regulation on GDP relative to VIX and capital flow shocks remain statistically significant in each of the robustness tests. Online Annex 3.2 reports details of the underlying analysis.

Finally, omitted-variable bias could affect the results. More precisely, the dampening effects identified in the regression could be driven by country characteristics or policy actions that are correlated with macroprudential regulation and have been omitted from the analysis. To address these concerns, the regression specification is augmented with interaction terms between global financial shocks and various factors that may affect resilience. These factors include country structural characteristics, such as institutional quality

[16]Using a narrative approach, Richter, Schularick, and Shim (2019) finds that of 92 changes in loan-to-value ratios in a sample of 56 economies during 1990 and 2012, only 3 were motivated by developments in GDP, inflation, or other real variables.

Table 3.1. Robustness to Reverse Causality: Dampening Effects on GDP

	Global Financial Shocks		
	US Rate	Ln VIX	Net Outflows
Baseline	n.s.	✓	✓
Excluding Negative GDP Growth	n.s.	✓	✓
Macroprudential Regulation, One Quarter Lagged	n.s.	✓	✓
Macroprudential Regulation, One Year Lagged	n.s.	✓	✓
Average Macroprudential Regulation	n.s.	✓	✓

Source: IMF staff calculations.

Note: See Online Annex 3.1 for data sources and country coverage. Check marks denote a statistically significant dampening effect (captured by the coefficient on the interaction term between the shock and the level of macroprudential regulation) at the 10 percent significance level, computed with Driscoll-Kraay standard errors. The columns denote the shocks, and the rows list the test performed; see Online Annex 3.2 for details. n.s. = nonsignificant dampening effect. VIX = Chicago Board Options Exchange Volatility Index.

Table 3.2. Robustness to Omitted Variables: Dampening Effects on GDP

	Global Financial Shocks		
	US Rate	Ln VIX	Net Outflows
Baseline	n.s.	✓	✓
Institutional Quality	n.s.	✓	✓
Financial Development	n.s.	✓	✓
Gross Public Debt	n.s.	✓	✓
Gross Public Debt in Foreign Currency	n.s.	✓	✓
Cyclically Adjusted Balance	n.s.	✓	✓
Monetary Policy Rate	n.s.	✓	✓
Inflation Expectation Anchoring	n.s.	✓	✓
Fixed Exchange Rate Regime	n.s.	✓	✓
Capital Controls	n.s.	✓	✓
Official Reserves	n.s.	✓	✓
Time Fixed Effects	n.s.	✓	✓

Source: IMF staff calculations.

Note: See Online Annex 3.1 for data sources and country coverage. Check marks denote a statistically significant dampening effect (captured by the coefficient on the interaction term between the shock and the level of macroprudential regulation) at the 10 percent significance level, computed with Driscoll-Kraay standard errors. The columns denote the shocks, and the rows list the additional controls that enter the specification, along with their interactions with the shocks; see Online Annex 3.2 for details. n.s. = nonsignificant dampening effect. VIX = Chicago Board Options Exchange Volatility Index.

and financial development;[17] fiscal variables, such as gross public debt (in percent of GDP), gross public debt in foreign currency (in percent of total public debt), and the cyclically adjusted fiscal balance (in percent of GDP); and monetary policy variables, such as the monetary policy rate and the anchoring of inflation expectations (Bems and others 2018). The omitted-variable tests also control for the exchange rate regime, distinguishing between fixed and floating exchange rates (Ilzetzki, Reinhart, and Rogoff 2019). Finally, the regression is augmented to include the stringency of capital controls (Fernandez and others 2016) and the stock of official reserves (in percent of GDP), which can allow countries to directly affect capital flows and the exchange rate. A systematic analysis of the interplay among macroprudential measures, capital controls, and foreign exchange intervention is left for future research.

Table 3.2 shows that the dampening effects of macroprudential regulation remain significant after including any of the additional interaction terms previously described above, thus alleviating concerns about omitted-variable bias. Furthermore, the results are robust to the inclusion of time fixed effects, which absorb any comovement in GDP growth among emerging markets.[18] Even though these tests alleviate concerns about omitted-variable bias, it will be important to test for the robustness of the results using empirical frameworks that allow for dynamic effects and a richer interplay between policy tools and country characteristics.

Further Analysis on the Dampening Effects of Macroprudential Regulation

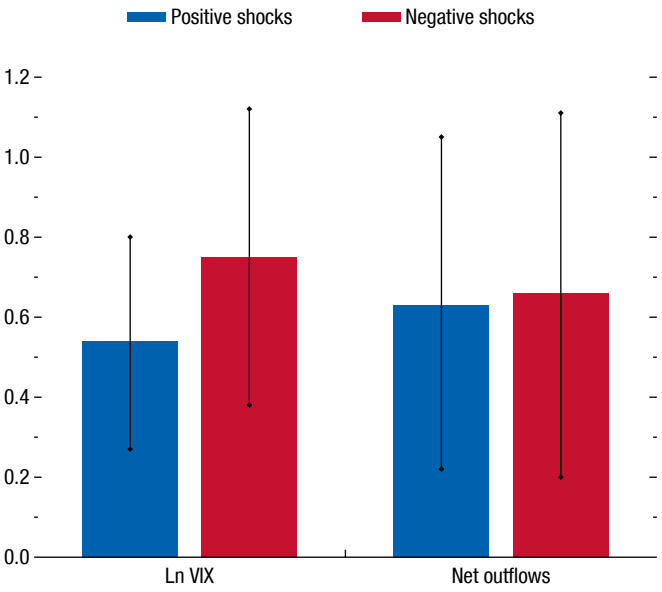
The previous analysis found that macroprudential regulation reduces the sensitivity of GDP growth in emerging markets to global financial shocks. Are these dampening effects at play against both positive and negative shocks? To address this question, the regression specification is extended to include dummies that differentiate between an increase and a decrease in the shock variables.

[17]The analysis uses the IMF's Financial Development Index, which measures the development of financial institutions and financial markets in terms of depth, access, and efficiency. The data display no significant cross-country correlation between financial development and macroprudential regulation. Furthermore, during the period of analysis, most emerging markets experienced both gradual financial deepening and macroprudential tightening. These observations suggest that tighter macroprudential regulation does not undermine financial development. Online Annex 3.1 provides additional details on the definition and data sources of the other variables used in the robustness tests.

[18]When time fixed effects are included, the regression must exclude US monetary shocks and the VIX (because they are common to all countries) but can retain their interactions with macroprudential regulation. This specification makes it impossible to estimate these shocks' overall impact on GDP (as illustrated in Figure 3.3) but still allows measurement of the dampening effects of macroprudential regulation.

Figure 3.4. Symmetric Dampening Effects of Macroprudential Regulation on GDP Growth
(Percent)

Macroprudential regulation dampens the effects of both positive and negative global financial shocks.



Source: IMF staff calculations.
Note: See Online Annex 3.1 for data sources and country coverage. The blue (red) bars show the point estimate for the coefficient on the triple interaction term among the shock, the level of macroprudential regulation, and a dummy that identifies positive (negative) shocks, respectively; see Online Annex 3.2 for details. The level of macroprudential regulation is divided by 10 to make visualization of the coefficients easier. In the case of Ln VIX, the shock is a 1 percent increase in the VIX; for net outflows, the shock consists of a 5 percentage point increase in net outflows. The *x*-axis depicts the shocks. The vertical lines correspond to 90 percent confidence intervals computed with Driscoll-Kraay standard errors. VIX = Chicago Board Options Exchange Volatility Index.

Figure 3.4 plots the regression coefficients on the interaction terms between the global financial shocks and the level of macroprudential regulation, distinguishing between positive and negative shocks. It shows that macroprudential regulation entails symmetric dampening effects of a similar magnitude. A Wald test confirms that the dampening effects against positive and negative global financial shocks are not statistically different from one another. This lack of a statistically significant difference implies that, although a tighter level of regulation supports economic growth in cases of negative financial shocks, it also lowers economic activity when global financial shocks are positive.

Maintaining a high level of macroprudential regulation is, thus, not costless because it implies forgoing growth opportunities when global financial conditions are favorable. This does not imply that policymakers should wait to tighten macroprudential regulation until global financial conditions deteriorate. Constraining excessive risk-taking and credit provision when financial conditions are loose is indeed a key channel through which macroprudential regulation ensures greater resilience at times of financial distress. Nonetheless, the symmetric dampening effects of macroprudential regulation call for further analysis of how to adjust regulation optimally to dampen the effects of negative shocks without excessively constraining economic activity when financial conditions are supportive.

Up to this point, the analysis has used an overall index of macroprudential regulation that combines a broad range of specific measures recorded in the iMaPP database. Do any of these specific measures drive the dampening effects of macroprudential regulation? To shed light on this issue, the analysis is replicated using more disaggregated groups of macroprudential regulation, including measures targeted at bank capital and liquidity, credit demand (such as loan-to-value ratios), credit supply (such as limits on credit growth), and foreign currency exposure.[19]

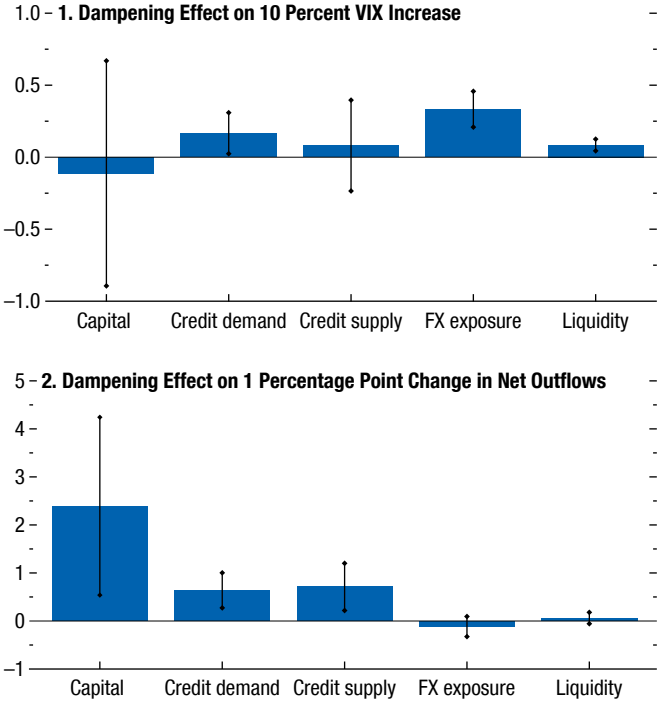
Figure 3.5 displays the dampening properties of each of these macroprudential categories in reference to the VIX (panel 1) and net capital outflows (panel 2). All macroprudential components play some role in dampening the effects of global financial shocks, but the effects are heterogeneous and depend on the type of shock. Measures targeted at credit demand, foreign currency exposure, and liquidity offer protection against fluctuations in the VIX. Macroprudential regulation targeted at bank capital, credit demand, and credit supply protects against shocks to net capital flows.

These results suggest that enhancing resilience to global financial shocks requires a well-rounded macroprudential framework, rather than a narrow focus on a few specific tools. Furthermore, the analysis shows that the dampening effects of macroprudential regulation are not limited to measures targeted at foreign currency exposures that could operate similarly to capital flow

[19]See Online Annex Table 3.1.3 for a description of each category. The analysis estimates different regressions for each group of macroprudential measures. It is not advisable to include all groups in the regression at once, given that each group has to be interacted with three global financial shocks, and the interaction terms with net capital inflows have to be instrumented.

Figure 3.5. Dampening Effects on GDP Growth, by Categories of Macroprudential Measures
(Percent)

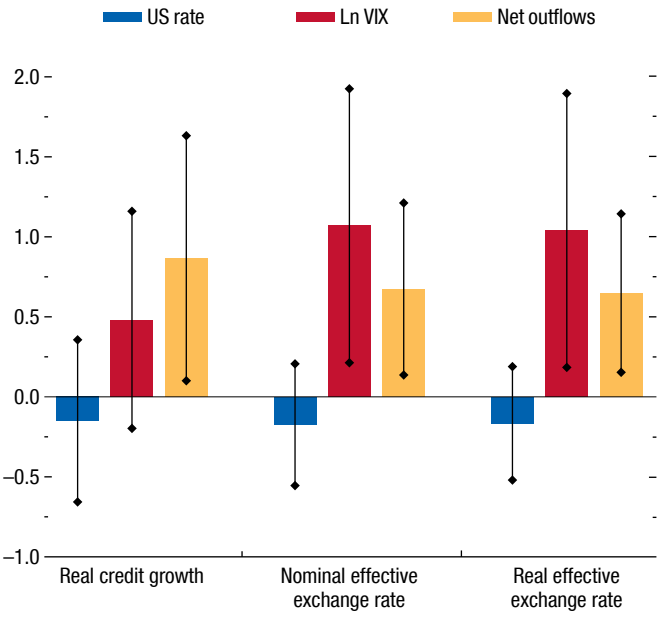
A broad range of macroprudential measures contribute to dampening the effects of global financial shocks.



Source: IMF staff calculations.
Note: See Online Annex 3.1 for data sources and country coverage. The bars show the point estimate for the coefficient on the interaction term between the shock and the level of macroprudential regulation; see Online Annex 3.2 for details. The level of macroprudential regulation is divided by 10 to make visualization of the coefficients easier. The *x*-axis depicts five categories of macroprudential measures. The vertical lines correspond to 90 percent confidence intervals computed with Driscoll-Kraay standard errors. FX = foreign exchange; VIX = Chicago Board Options Exchange Volatility Index.

Figure 3.6. Dampening Effects of Macroprudential Regulation on Credit and Exchange Rates
(Percent)

Macroprudential regulation tends to dampen the effects of global financial shocks on domestic credit and exchange rates as well.



Source: IMF staff estimates.
Note: See Online Annex 3.1 for data sources and country coverage. The bars show the point estimate for the coefficient on the interaction term between the shock and the level of macroprudential regulation; see Online Annex 3.2 for details. In the case of net outflows, the shock is equal to a 5 percentage point increase in net outflows. The level of macroprudential regulation is divided by 10 to make visualization of the coefficients easier. The *x*-axis depicts three dependent variables. The vertical lines correspond to 90 percent confidence intervals computed with Driscoll-Kraay standard errors. VIX = Chicago Board Options Exchange Volatility Index.

management measures.[20] Macroprudential regulation that ensures adequate capital and liquidity and prevents excessive risk-taking in credit provision also plays an important role in fostering resilience to global financial shocks.

Finally, the dampening properties of macroprudential regulation are not limited to the effects on GDP growth. Figure 3.6 shows that macroprudential policies also weaken the effects of capital flow shocks on the real growth of bank credit.[21] This finding is consistent with the idea that, by boosting bank capital and liquidity as well as reducing currency mismatches, macroprudential regulation makes the banking sector less susceptible to fluctuations in the supply of foreign funds.

The analysis also finds that macroprudential regulation tends to dampen the effects of VIX and capital flow shocks on the nominal and real effective

[20]For the country sample used in the analysis, the IMF 2019 Taxonomy of Capital Flow Management Measures identifies only nine macroprudential tightening or loosening actions that are also classified as capital flow management measures because they are designed to limit capital flows. Out of these, the iMaPP database records seven. The results in the chapter are robust to excluding those measures.

[21]The regression finds that shocks to US monetary policy and the VIX do not influence credit growth once capital flow shocks are controlled for, regardless of the level of macroprudential regulation.

exchange rates.[22] A possible interpretation is that, by curbing risk-taking in the domestic economy, macroprudential regulation reduces the volatility of currency risk premia. Lower volatility in currency risk premia, in turn, may contribute to more stable economic growth by weakening the damaging effects of currency mismatches and allowing monetary policy to respond more countercyclically, as the next section analyzes.

Can Macroprudential Regulation Support a More Countercyclical Monetary Policy Response?

According to the Mundell-Fleming trilemma, countries open to capital flows can retain monetary independence if they have a flexible exchange rate (Fleming 1962; Mundell 1963). Monetary independence is broadly interpreted as monetary policy's ability to set interest rates and stabilize domestic macroeconomic conditions, independent of swings in global monetary and financial conditions. In line with the trilemma, the empirical literature documents that policy rates in countries with flexible exchange rates respond less to US monetary policy and the VIX than those in countries with fixed exchange rates (Obstfeld 2015).

However, even among emerging markets with flexible exchange rates, several central banks tend to increase policy rates in response to a US monetary tightening or a spike in the VIX, even after expected inflation is controlled for (Obstfeld, Shambaugh, and Taylor 2005; Aizenman, Chinn, and Ito 2016, 2017; Han and Wei 2018; Cavallino and Sandri 2020; Bhattarai, Chatterjee, and Park forthcoming). This is possibly to limit fluctuations in exchange rates and capital flows that may undermine financial stability. In these situations, monetary policy appears to operate procyclically, exacerbating the negative effects of tighter global financial conditions on domestic economic growth.

To enhance monetary independence, the trilemma calls for using capital controls to restrain free capital mobility.[23] Could macroprudential regulation also support a more countercyclical response of monetary policy? By mitigating financial stability concerns, macroprudential policy could allow monetary policy to focus more squarely on domestic economic conditions. Furthermore, as the previous analysis documents, macroprudential regulation can limit exchange rate fluctuations and, thus, central banks' need to respond procyclically to stabilize the currency.

To shed light on this issue, the analysis examines whether macroprudential regulation affects monetary policy's response to global financial shocks in emerging markets. It considers only periods when countries had flexible exchange rates and, thus, retained control of monetary policy. Policy rates are regressed on the set of global financial variables—US monetary policy, the VIX, and instrumented net capital outflows—and their interactions with the stringency of macroprudential regulation.[24] The regression includes country fixed effects and various control variables, such as the domestic output gap, expected inflation, real credit growth, and commodity terms of trade.

Figure 3.7 illustrates the results. Panels 1 and 2 show that, at low levels of macroprudential regulation, emerging markets tighten monetary policy in response to a hike in US monetary policy or increase in the VIX. A more stringent level of macroprudential regulation dampens this procyclical response. In fact, a sufficiently high level of macroprudential regulation allows central banks in emerging markets to react countercyclically by lowering policy rates, especially in response to an increase in the VIX.[25]

However, macroprudential regulation has no statistically significant effect on the response of monetary policy to capital outflow shocks (Figure 3.7, panel 3). Capital outflows appear to trigger a monetary tightening in emerging markets, independent of the macroprudential regulation level. This suggests that,

[22]Once the VIX and capital flow shocks are controlled for, emerging markets' exchange rates are not sensitive to US monetary policy shocks. The dampening effects of macroprudential regulation on the exchange rate become border-line insignificant (except for the impact of the VIX on the real effective exchange rate) when adding controls for the interactions of global financial shocks with the level of official reserves. The interactions with official reserves are not statistically significant.

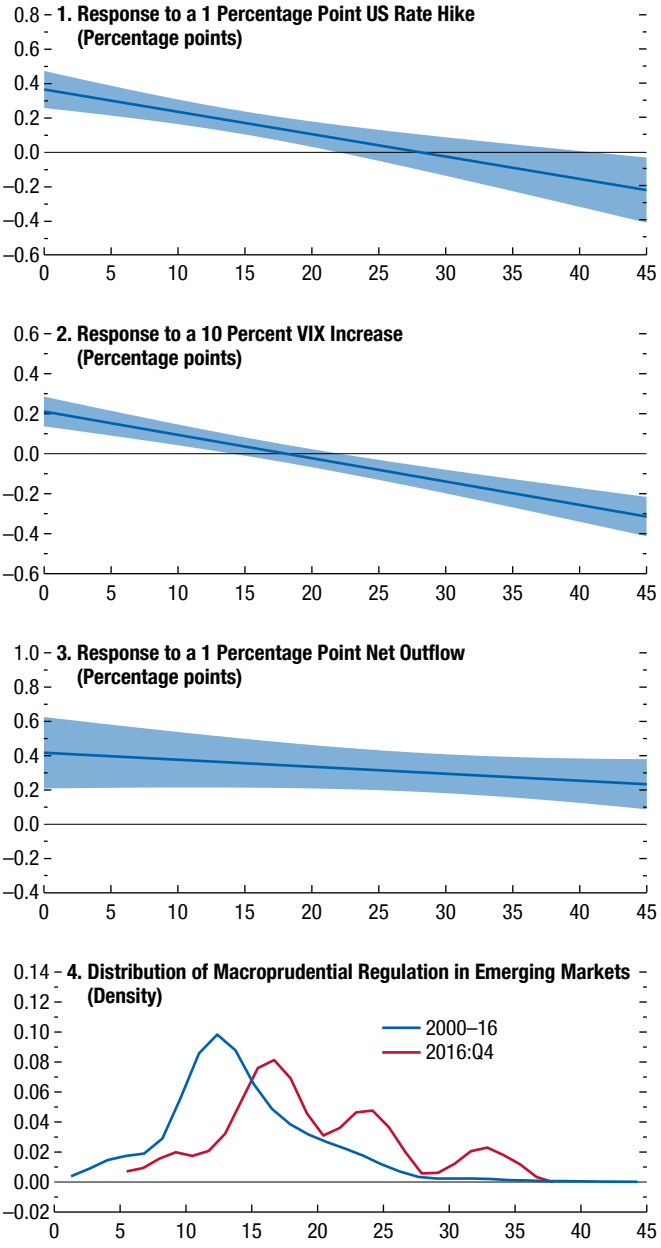
[23]Foreign exchange intervention may also play a role in enhancing monetary independence by helping central banks to stabilize the exchange rate in case of disorderly market conditions.

[24]Unlike in the analysis of macroprudential regulation's dampening effects, the regression includes actual US policy rates rather than unexpected shocks, in line with the empirical literature on the trilemma and also because the empirical analysis shows that emerging markets in the sample tend to adjust policy rates in reference to actual US policy rates rather than to the unexpected component only. The US policy rate is adjusted for the effect of unconventional monetary policy during the zero-lower-bound period using the implied rate calculated in Wu and Xia (2016).

[25]This evidence is consistent with Aizenman, Chinn, and Ito (2017), which shows that macroprudential regulation can reduce the comovement of policy rates between peripheral and center economies. Relatedly, Manu and Sgherri (2020) finds that macroprudential policies and capital flow measures strengthen the responsiveness of monetary policy to expected inflation.

Figure 3.7. Policy Rate Responses in Emerging Markets to Global Financial Shocks

Macroprudential regulation allows monetary policy in emerging markets to respond more countercyclically to global financial shocks.



Source: IMF staff calculations.
Note: The *x*-axis denotes the level of macroprudential regulation. See Online Annex 3.1 for data sources and country coverage. Panels 1–3 show the estimated policy rate response to global financial shocks for different levels of macroprudential regulation; panel 4 shows the probability density function of macroprudential regulation in the sample; see Online Annex 3.3 for details. The coefficients on the interaction terms between the shock and macroprudential regulation are statistically significant in panel 1 and panel 2, but not in panel 3. The shaded areas correspond to 90 percent confidence intervals computed with Driscoll-Kraay standard errors. VIX = Chicago Board Options Exchange Volatility Index.

even in countries with tight macroprudential regulation, central banks continue to face important policy trade-offs in responding to sharp fluctuations in capital flows, and that additional policy tools might be required, such as foreign exchange intervention in the case of disorderly market conditions.

Are the effects of macroprudential policies on the monetary policy response robust to endogeneity tests? A first concern is that the macroprudential regulation level could be adjusted in reference to domestic policy rates, thus leading to reverse causality problems. In the regression sample, macroprudential regulation does indeed tend to be loosened when monetary policy is tightened.

To ensure that reverse causality does not drive the results, the regression analysis is replicated using lagged—by one quarter and one year—values of macroprudential regulation, as well as the average level of regulation in each country, in which case the identification is purely cross-sectional. Table 3.3 shows that, across all these specifications, macroprudential regulation continues to support a more countercyclical response of monetary policy to global financial conditions. The only difference from the baseline specification is when average levels of macroprudential regulation are used, in which case regulation supports a more countercyclical response to capital flow shocks rather than to changes in US monetary policy. Online Annex 3.3 reports details of the analysis.

With regard to concerns about omitted-variable bias, the regression specification is augmented to include, one at a time, the interactions of global financial shocks with various country characteristics and policy

Table 3.3. Robustness to Reverse Causality: Supporting Countercyclical Monetary Response

	Global Financial Shocks		
	US Rate	Ln VIX	Net Outflows
Baseline	✓	✓	n.s.
Macroprudential Regulation, One Quarter Lagged	✓	✓	n.s.
Macroprudential Regulation, One Year Lagged	✓	✓	n.s.
Average Macroprudential Regulation	n.s.	✓	✓

Source: IMF staff calculations.
Note: See Online Annex 3.1 for data sources and country coverage. Check marks denote significantly more counter-cyclical response at the 10 percent significance level, computed with Driscoll-Kraay standard errors. The columns denote the shocks, and the rows list the test performed; see Online Annex 3.3 for details. n.s. = nonsignificant effect on monetary policy response. VIX = Chicago Board Options Exchange Volatility Index.

Table 3.4. Robustness to Omitted Variables: Supporting Countercyclical Monetary Response

	Global Financial Shocks		
	US Rate	Ln VIX	Net Outflows
Baseline	✓	✓	n.s.
Institutional Quality	✓	✓	n.s.
Financial Development	✓	✓	n.s.
Gross Public Debt	✓	✓	n.s.
Gross Public Debt in Foreign Currency	✓	✓	n.s.
Cyclically Adjusted Balance	✓	✓	✓
Inflation Expectation Anchoring	✓	✓	n.s.
Capital Controls	✓	✓	n.s.
Official Reserves	n.s.	✓	n.s.
Time Fixed Effects	✓	✓	n.s.

Source: IMF staff calculations.

Note: See Online Annex 3.1 for data sources and country coverage. Check marks denote significantly more counter-cyclical response at the 10 percent significance level, computed with Driscoll-Kraay standard errors. The columns denote the shocks, and the rows list the additional controls that enter the specification, along with their interactions with the shocks; see Online Annex 3.3 for details. n.s. = nonsignificant effect on monetary policy response. VIX = Chicago Board Options Exchange Volatility Index.

variables, such as institutional quality, financial development, gross public debt, gross public debt in foreign currency, the cyclically adjusted fiscal balance, the anchoring of inflation expectations, capital controls, and the level of official reserves. Table 3.4 shows that macroprudential regulation continues to support a more countercyclical response of monetary policy to changes in US policy rates and the VIX across all these specifications. The only exception is that macroprudential regulation no longer affects the monetary policy response to changes in US policy rates when the level of official reserves is controlled for.[26] The results of the effects of macroprudential regulation on the monetary policy response are also robust to the inclusion of time fixed effects.

Are There Side Effects of Macroprudential Regulation on Average Growth or via Cross-Country Spillovers?

The empirical evidence presented so far suggests that macroprudential regulation can dampen the macroeconomic effects of global financial shocks and can allow monetary policy to respond more countercyclically. Do these benefits come at the cost of negative side effects—for example, lower average economic growth or harmful cross-border spillovers?

Effects on Economic Growth

The analysis finds that macroprudential regulation has symmetric dampening effects, which implies that the gains from greater economic growth, when global financial shocks are adverse, come at the cost of foregone economic activity when financial conditions are supportive. Beyond these symmetric effects, there could be a concern that tight macroprudential regulation might lower the average rate of economic growth if regulation excessively constrains credit provision or leads to a suboptimal level of risk-taking.

Nonetheless, macroprudential regulation might also have positive effects on average economic growth by ensuring a more efficient allocation of credit, mobilizing savings, and reducing the permanent GDP losses associated with financial crises (Agénor 2019; Ma 2020). The empirical literature documents a variety of results. Some studies show that tightening macroprudential policies leads to a temporary decline in GDP (Eickmeier, Kolb, and Prieto 2018; Kim and Mehrotra 2018; Richter, Schularick, and Shim 2019). Others focus on longer-term effects, finding that macroprudential policies tend to boost economic growth (Boar and others 2017; Agénor and others 2018; Neanidis 2019).

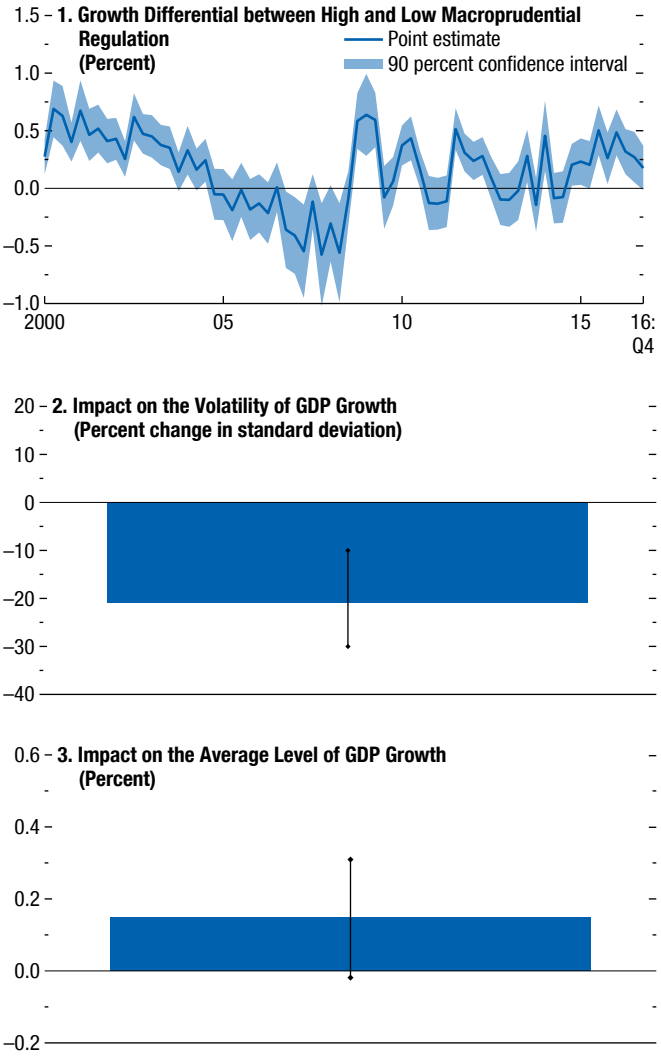
The empirical approach used to analyze the dampening effects of macroprudential regulation can also shed some light on the effects of regulation on average GDP growth. Using the estimated regression coefficients, it is possible to predict the rate of GDP growth that a country would have experienced during 2000–16 if it had a high or low level of macroprudential regulation. These levels are based on the 75th percentile and 25th percentiles, respectively, of the distribution of macroprudential regulation in the sample of analysis.

Panel 1 of Figure 3.8 plots the differential in the GDP growth rate between a high and a low level of macroprudential regulation. Higher levels of regulation would have delivered significantly stronger economic growth in the early 2000s and during the global financial crisis, when global financial conditions were adverse. For example, higher levels of macroprudential regulation would have increased quarterly GDP growth by about 0.6 percent between the fourth quarter of

[26]Annex Table 3.3.3 shows that a higher stock of official reserves supports a more countercyclical response of monetary policy in emerging markets to changes in US policy rates, possibly because it allows for more decisive foreign exchange intervention. The robustness tests cannot easily control for foreign exchange intervention because the decision to intervene is highly endogenous as it depends on global financial shocks and their expected impact on the economy.

Figure 3.8. Effects of Macroprudential Regulation on GDP Growth

Macroprudential regulation can reduce the volatility of GDP growth. The analysis does not detect effects of regulation on the average level of GDP growth.



Source: IMF staff calculations.
Note: See Online Annex 3.1 for data sources and country coverage. Panel 1 shows the growth differential between a country with macroprudential regulation set at the 75th percentile of the sample distribution and one with macroprudential regulation set at the 25th percentile; panel 2 shows the point estimate of the impact of macroprudential regulation on the volatility of GDP growth; and panel 3 shows the impact of macroprudential regulation on average GDP growth; see Online Annex 3.4 for details. The vertical lines correspond to 90 percent confidence intervals computed with Driscoll-Kraay standard errors.

2008 and the second quarter of 2009. However, higher levels of macroprudential regulation would also have lowered economic growth considerably in the years before the global financial crisis, when global financial conditions were buoyant. Thus, macroprudential regulation reduces the amplitude of economic fluctuations by sustaining growth in the face of adverse shocks while lowering economic activity when global financial conditions are supportive.

In line with the dampening effects documented earlier in the analysis, these results imply that a more stringent level of macroprudential regulation reduces the volatility of GDP growth. As shown in panel 2 of Figure 3.8, a higher level of macroprudential regulation at the 75th percentile of the sample distribution would have reduced the standard deviation of GDP growth during 2000–16 by about 20 percent relative to a lower level of regulation at the 25th percentile.

Do the gains from lower GDP volatility come at the cost of lower average GDP growth? The analysis finds no evidence that macroprudential regulation has detrimental effects on average economic growth. Panel 3 of Figure 3.8 shows that, during 2000–16, a higher level of regulation would have had no statistically significant effect on average GDP growth.[27]

The lack of evidence regarding negative effects of macroprudential regulation on average GDP growth comes with important caveats. First, negative effects on average economic growth could materialize at a higher level of regulation than that observed during the analysis period. Second, reverse causality could affect the results, whereby country authorities may systematically tighten macroprudential regulation when economic growth is greater and vice versa. The stickiness in the level of regulation and policymakers' tendency not to use macroprudential policies to respond to GDP developments attenuate concerns regarding reverse causality (Richter, Schularick, and Shim 2019).[28] Further analysis is needed to reach more definitive conclusions on the causal effects of macroprudential regulation on average GDP growth.

[27]Analyzing the derivative of GDP growth with respect to the level of macroprudential regulation yields similar results. The regression estimates show that macroprudential regulation does not generally have significant effects on GDP growth, except when financial conditions are tight, in which case regulation appears to marginally increase economic growth.

[28]Concerns about reverse causality are less severe in the previous analysis of the dampening effects of macroprudential regulation because the results are robust to using the average level of macroprudential regulation for each country. In that case, the dampening effects are estimated based on whether global financial shocks affect countries with higher macroprudential regulation less. A similar exercise is not possible for the analysis of the effects of macroprudential regulation on GDP growth because country fixed effects absorb cross-country differences in the average level of macroprudential regulation.

Cross-Country Spillovers

Another possible concern with macroprudential regulation is that, if a country protects itself from swings in global financial conditions through tight macroprudential regulation, it could expose other countries to greater volatility.[29] For example, measures that curb risk-taking in a given country could lead to the relocation of risky financial activities to other countries (Houston, Lin, and Ma 2012; Ongena, Popov, and Udell 2013; McCann and O'Toole 2019), thus making those countries more susceptible to global financial shocks.

However, macroprudential regulation may also entail positive cross-country spillovers. If a country uses macroprudential regulation to strengthen its resilience to global financial shocks, other countries may enjoy greater stability through less volatile trade and financial flows with the country using macroprudential regulation.

The regression framework used to analyze the dampening effects of macroprudential regulation in a given country can be extended to capture the presence and nature of cross-country spillovers. Besides interacting the global financial shocks with the level of macroprudential regulation in a given country, the regression is expanded to include interaction terms of the shocks with the average level of regulation in other emerging markets. These new interaction terms capture whether the level of macroprudential regulation in other countries affects the sensitivity of GDP growth in a given country to global financial shocks.

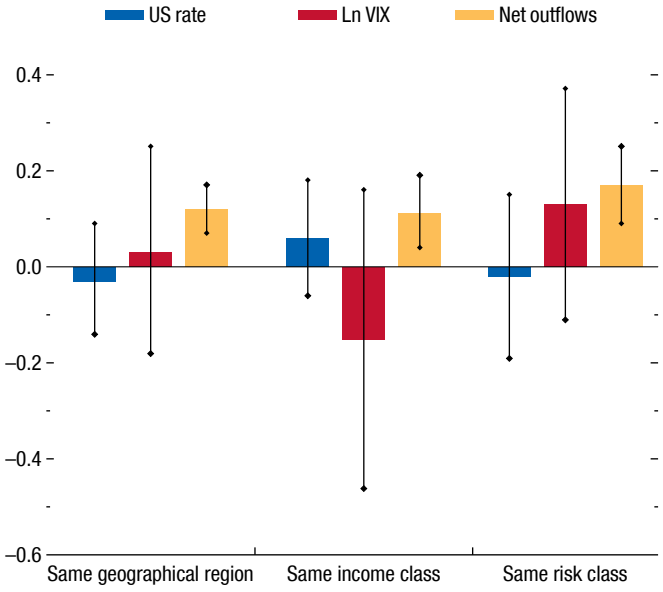
Spillovers are likely to occur across emerging markets that share similar characteristics. The analysis groups countries into three alternative categories based on geographic region, income level, and risk class. Regarding income level, countries are grouped depending on whether their GDP per capita is above or below the median of the emerging market sample in any given year. The same procedure is followed to differentiate countries according to their risk class, based on a composite risk index that Giordani and others (2017) uses to analyze spillovers from capital flows management measures.

Figure 3.9 shows the regression coefficients on the interaction terms of the global financial shocks with the average level of macroprudential regulation in other emerging markets within the same geographic, income, and risk category. The average level of regulation is computed by weighting countries according to the size of gross capital inflows that they receive. Positive coefficients on the interaction terms indicate positive spillovers, so GDP growth in a given country is higher in the face of adverse global financial shocks if other countries have tight macroprudential regulation. Regardless of the country group categories, the analysis finds no evidence of spillovers associated with shocks to US monetary policy and the VIX because the regression coefficients on these interactions are statistically nonsignificant. However, the results point to the presence of positive spillovers associated with

Figure 3.9. Cross-Country Spillovers from Macroprudential Regulation

(Percent)

Macroprudential regulation appears to generate positive cross-country spillovers by strengthening resilience to capital flow shocks.



Source: IMF staff estimates.
Note: See Online Annex 3.1 for data sources and country coverage. The bars show the point estimate of the coefficient, and the vertical lines correspond to 90 percent confidence intervals computed with Driscoll-Kraay standard errors; see Online Annex 3.4 for details. VIX = Chicago Board Options Exchange Volatility Index.

[29]Similar arguments have been raised regarding capital flow management measures (Lambert, Ramos-Tallada, and Rebillard 2012; Forbes and others 2016; Giordani and others 2017). As in previous sections of the chapter, the analysis looks at possible spillovers associated with how global financial shocks interact with the *level* of macroprudential regulation. This is different from analyzing the cross-border effects of *changes* in macroprudential regulation, for example, whether tightening capital requirements reduces foreign lending.

shocks to net capital flows. This finding is consistent across all three types of country groupings.[30]

Therefore, the analysis finds no evidence of negative cross-country spillovers, thus alleviating concerns that tighter macroprudential regulation in a given country could exacerbate macroeconomic instability in other countries. On the contrary, there is some evidence of positive cross-country spillovers, consistent with the idea that macroprudential regulation in a given country may also benefit other countries by supporting more stable trade and financial links. More research is needed to better understand these transmission channels.

Conclusion

The key result of the analysis in this chapter is that macroprudential regulation can dampen the macroeconomic impacts of global financial shocks on emerging markets. More specifically, a tighter level of macroprudential regulation reduces the sensitivity of GDP growth in emerging markets to fluctuations in risk premia and changes in foreign capital flows.

The dampening effects of macroprudential regulation do not seem to be driven by a specific set of tools; instead, a broad range of macroprudential measures targeting liquidity, capital, foreign exchange exposures, and risky forms of credit all appear to play a role in enhancing macroeconomic resilience. However, the dampening effects of different tools are heterogenous and depend on the particular type of global financial shock hitting an economy. Macroprudential regulation can also help stabilize real credit growth and the nominal and real exchange rates.

However, maintaining a permanently high level of macroprudential regulation is not costless because macroprudential regulation has symmetric dampening effects: it attenuates the negative impact on GDP from a tightening in global financial conditions, but also limits GDP growth when financial conditions are loose. This finding calls for more research on how to adjust macroprudential regulation optimally, depending on domestic and external financial conditions.

One possible channel through which macroprudential regulation may strengthen macroeconomic resilience is by allowing monetary policy to respond more countercyclically to global financial shocks. The empirical evidence suggests that, at low levels of macroprudential regulation, central banks in emerging markets tend to increase policy rates when global financial conditions tighten, possibly because of financial stability concerns arising from movements in exchange rates and capital outflows. However, at higher levels of macroprudential regulation, central banks tend to respond more countercyclically, especially by lowering policy rates when the VIX increases, thus cushioning the impact of adverse financial shocks on domestic economic growth.

This implies that countries that entered the global pandemic with a more stringent level of macroprudential regulation should be able to ease monetary policy more decisively, despite the sharp increase in global risk aversion. This is particulary important in the current juncture, given the extraordinary contraction in domestic and foreign demand caused by the COVID-19 pandemic. At the same time, the empirical analysis shows that macroprudential regulation does not seem to have tangible effects on the response of monetary policy to capital flow shocks, which remains procyclical. Additional policy tools may thus be needed to support monetary policy in those countries dealing with extreme capital outflows.

Regarding possible side effects associated with macroprudential regulation, the analysis does not find detrimental effects of regulation on average GDP growth. However, this result should be interpreted with caution, given endogeneity challenges. The analysis also finds no evidence of negative cross-country spillovers. On the contrary, a higher level of macroprudential regulation in a given country appears to strengthen resilience to capital flow shocks, even in other countries, possibly as a result of more stable trade and financial links.

The empirical results presented in this chapter are subject to important caveats. First, the indexes of macroprudential regulation used in the analysis suffer from several measurement limitations. Therefore, this chapter's empirical findings will need to be reexamined as the quality of macroprudential data continues to improve. Second, it is important to test for the robustness of the results using empirical frameworks that allow for dynamic effects and for a richer interplay of macroprudential regulation with other policy tools and country characteristics. These issues will be covered in upcoming work by the IMF that will develop

[30]There is no evidence of negative spillovers, even if the regression controls for time fixed effects. In this case, spillovers remain positive on capital flow shocks when countries are grouped by geographic location and risk class.

a framework to analyze the complex interactions among various policy tools, namely, monetary policy, macroprudential regulation, capital flow management measures, and foreign exchange intervention.

The analysis suggests various avenues for future research. First, given the symmetric dampening effects of macroprudential regulation against both positive and negative global financial shocks, more research is needed to better understand how to optimally adjust regulation in line with domestic and external developments. Second, the chapter's analysis has considered whether a higher level of macroprudential regulation—which is expected to enhance financial resilience—can dampen the effects of global financial shocks on domestic macroeconomic conditions. Future research could explore whether policymakers could also offset the impact of global shocks by promptly adjusting macroprudential regulation, for example, by easing regulation when an adverse shock hits. Finally, the analysis has identified possible channels through which macroprudential regulation may dampen global financial shocks, for example, by stabilizing credit growth or the exchange rate and by allowing monetary policy to respond more countercyclically. More research is warranted to improve the characterization of these transmission channels and link them to specific macroprudential measures.

Box 3.1. Macroprudential Policies and Credit: A Meta-Analysis of the Empirical Findings

A growing body of empirical literature attempts to shed light on the effectiveness of macroprudential policy, focusing mostly on whether macroprudential policies are effective in controlling credit growth—a key issue because credit is the single best predictor of banking crises (Schularick and Taylor 2012). Drawing on 58 empirical studies encompassing cross-country and microlevel studies, Araujo and others (forthcoming) builds a repository of the empirical findings and synthesizes them using a meta-analysis framework. Meta-analysis techniques combine the results of several studies quantitatively to provide an overview of the results in the literature (Stanley 2001).

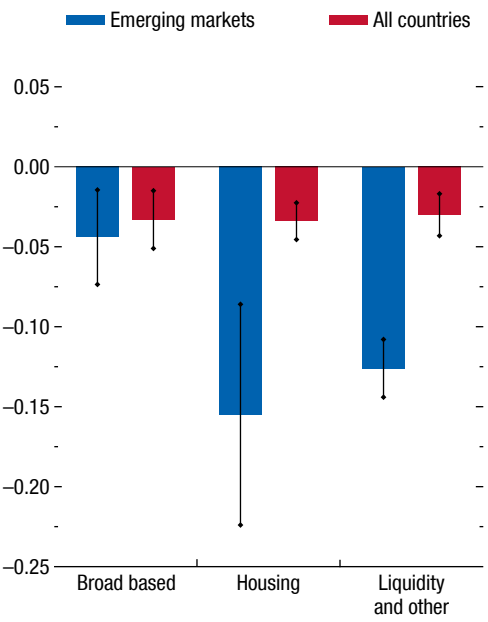
The meta-analysis uses the following regression framework:

$$\hat{\beta}_j = \theta_B MPM_j^B + \theta_H MPM_j^H + \theta_L MPM_j^L + \gamma \mathbf{X}_j + \varepsilon_j. \quad (3.1.1)$$

In this framework, the dependent variable $\hat{\beta}_j$ is the standardized effect of tightening macroprudential policy on domestic credit growth corresponding to result j in a particular research study.[1] MPM_j^B, MPM_j^H, and MPM_j^L are dummy variables that denote whether the macroprudential tightening analyzed involves broad-based, housing, or liquidity and other structural measures.[2] The coefficients on these dummy variables (θ) represent the average effect of each measure on credit. X_j is a set of control variables, which, in line with the standard practice in the meta-analysis literature, includes a publication bias correction based on the standard error of the estimate (Stanley and Doucouliagos 2012) and a dummy that identifies robust results within a study.

Figure 3.1.1 shows the average effects of macroprudential tightening on credit, differentiating between estimates based exclusively on emerging markets and those from mixed samples including low-income countries, emerging markets, and advanced economies. Overall, macroprudential policy tightening has

Figure 3.1.1. Average Effects of Macroprudential Tightening on Credit Growth
(Percent)



Source: IMF staff estimates.
Note: The figure reports results from a metaregression in which the dependent variable is the standardized effect on credit. The reported point estimates (bar height) with 90 percent confidence intervals correspond to coefficients on dummy variables identifying the macroprudential measures analyzed. Standard errors are clustered by research study to account for possible dependence across results from the same study. The analysis also adjusts for study overweighting, since some studies report many more results than others. For more details on the specification and methodology, see Araujo and others (forthcoming).

The author of this box is Manasa Patnam.

[1]To ensure the comparability of results across studies, the selected coefficients on macroprudential policy impacts and their standard errors are standardized. In the sample of estimates, credit is typically measured as the nominal or real growth rate of bank credit to households and the private sector or total credit in the economy. Araujo and others (forthcoming) examines a broad range of effects in addition to those on credit, including effects on other outcome variables, effects of each individual tool, and effects at different time horizons.

[2]The regression specification equation (3.1.1) follows the predominant strand of the literature, which measures macroprudential policy in discrete changes taking the values of –1, 0, and 1 to indicate loosening, neutral, and tightening policy actions, respectively. The samples are restricted to estimated effects within a one-year horizon. The classification of tools into the categories (broad-based, housing, liquidity and other) is from IMF (2014). Equation (3.1.1) is estimated using a weighted-least-squares procedure with weights proportional to each estimate's precision because the specification is heteroscedastic to a degree determined by the estimate's standard error.

Box 3.1 *(continued)*

statistically significant effects on credit, reducing it by 0.04 standard deviation, on average.[3] The magnitude of these effects varies depending on the specific macroprudential measure and country sample. Housing and liquidity-based measures appear to have larger average effects in emerging markets, although with wider confidence bands, reflecting the substantial heterogeneity of individual estimates found in this setting.

Araujo and others (forthcoming) also documents that studies using microlevel data find stronger effects of macroprudential policies on credit than studies using aggregate data, which also holds true in the emerging markets context. This could be explained by the stronger identification power provided by microlevel data, or the existence of leakages that reduce the transmission of the microlevel effects of macroprudential policy on bank lending to aggregate credit.

Indeed, using the same meta-analysis framework, Araujo and others (forthcoming) finds that macroprudential tightening tends to be associated with leakages, mainly through increases in cross-border or nonbank lending. This association is consistent with the hypothesis that international banks or other unconstrained institutions may fulfill domestic lending needs when local banks become constrained (Reinhardt and Sowerbutts 2015; Ahnert and others 2018). However, a few studies suggest that, even after possible leakages are factored in, macroprudential tightening still tends to constrain credit growth (for example, Aiyar, Calomiris, and Wieladek 2014; Ahnert and others 2018).

[3]A standardized effect of –0.04 corresponds to about a 0.6 percentage point reduction in year-over-year growth of real credit (measured at quarterly frequency), based on the average standard deviation of this variable (13 percent) in the sample.

Box 3.2. Do Emerging Markets Adjust Macroprudential Regulation in Response to Global Financial Shocks?

This box explores whether policymakers in emerging markets adjust macroprudential regulation in response to global financial shocks. The analysis is based on the following panel regression:

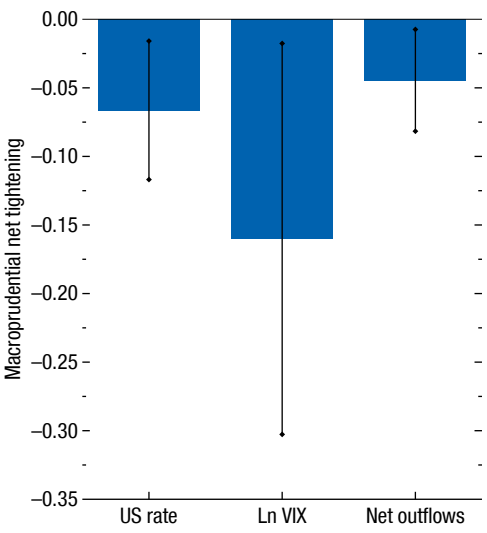
$$\Delta MPru_{i,t} = \alpha_i + \beta \cdot S_{i,t} + \gamma \cdot C_{i,t} + \varepsilon_{i,t},$$

in which $\Delta MPru_{i,t}$ is the number of macroprudential net tightening actions in a given quarter. The vector $S_{i,t}$ includes the three global financial shocks examined in the chapter: US monetary policy shocks, the Chicago Board Options Exchange Volatility Index (VIX), and net capital outflows, instrumented in line with the analysis in the chapter. The regression also includes country fixed effects, α_i, and several control variables, $C_{i,t}$, namely, expected inflation, the output gap, real credit growth, and commodity terms of trade, $TOT_{i,t}$, from Gruss and Kebhaj (2019).

The regression results reveal that emerging markets do tend to adjust macroprudential regulation in response to external financial developments. Figure 3.2.1 shows that the regression coefficients on shocks to US monetary policy, the VIX, and net capital outflows are all negative and statistically significant. These results are robust to excluding macroprudential measures targeted at foreign currency exposures. Online Annex 3.5 reports the regression details.[1]

Therefore, the analysis suggests that policymakers in emerging markets tend to loosen macroprudential policies when global financial conditions tighten, or conversely, they tend to tighten regulation when global financial conditions ease. A similar pattern is taking place during the COVID-19 pandemic, with most emerging markets easing macroprudential regulation as global risk aversion spikes and capital flows recede. More research is needed to determine whether these responses are optimal and which other domestic and external factors should drive decisions to adjust macroprudential regulation.

Figure 3.2.1. Global Financial Shocks and Changes in Macroprudential Regulation



Source: IMF staff calculations.
Note: See Online Annex 3.1 for data sources and country coverage. The bars show the point estimates of the coefficients, and the vertical lines correspond to 90 percent confidence intervals computed with Driscoll-Kraay standard errors. VIX = Chicago Board Options Exchange Volatility Index.

The authors of this box are Katharina Bergant, Francesco Grigoli, Niels-Jakob Hansen, and Damiano Sandri.

[1]All annexes are available at http://www.imf.org/en/Publications/WEO.

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CHAPTER 4

THE MACROECONOMIC EFFECTS OF GLOBAL MIGRATION

The share of immigrants in advanced economies has risen significantly in recent years, while escalating conflicts have caused large refugee flows that have primarily affected emerging market and developing economies. This chapter examines the drivers of migration, its recent evolution, its possible developments going forward, and its economic impact on recipient countries. Four main findings emerge. First, the costs of migration are high and significantly constrain the ability of individuals to move across borders. Second, the pressures from migration on advanced economies will continue to rise, as the population in emerging market and developing economies is expected to continue to grow over the next 30 years. However, higher incomes in emerging market and developing economies would dampen overall emigration pressures. Third, conflicts are an important driver of migration, especially into emerging market and developing economies. In the future, climate-related disasters could possibly intensify emigration, but the evidence of such pressures is limited to date. Fourth, immigration into advanced economies increases output and productivity both in the short and medium term, but these positive effects are not clearly detected for refugee flows in emerging market and developing economies. The findings of this chapter lend support for two main policy conclusions. First, appropriate labor market and integration policies could magnify the positive macroeconomic effects of immigration. That said, distributional dimensions also need to be considered because immigration may affect, at least temporarily, some groups of people native to the country where the immigrants arrive. Second, international cooperation is needed to address large waves of refugee migration, especially into emerging market and developing economies.

This chapter was prepared by Philipp Engler, Keiko Honjo, Margaux MacDonald, Roberto Piazza (lead), and Galen Sher, under the guidance of Florence Jaumotte. It includes contributions from Jorge Alvarez, Hamid Faruqee, Emilio Fernandez-Corugedo, Jaime Guajardo, Xin Li, and Jean-Marc Natal, and was prepared with support from Shan Chen, Jaden Jonghyuk Kim, and Ilse Peirtsegaele. Giovanni Peri was a consultant for the project.

Introduction

Human beings have migrated since the dawn of time. In 2019 270 million people in the world were migrants, defined in this chapter as individuals not living in their country of birth. In absolute terms, the migrant population has increased by almost 120 million since 1990. However, the number of migrants has been strikingly stable in proportion to the world population, hovering at about 3 percent over the past 60 years (De Haas and others 2019). Thus, only a very small fraction of people in the world migrate, one reason being that migration is very costly.

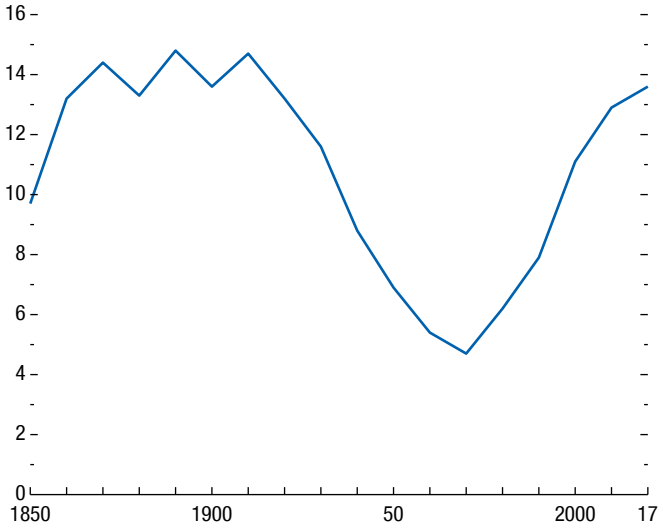
Large episodes of migration toward rich countries—primarily reflecting a search for better economic opportunities—are not new in history and have occurred even when transportation costs were much higher than today (Figure 4.1). Currently, immigrants in advanced economies make up about 12 percent of the population, up from 7 percent in 1990.

Migrants to emerging market and developing economies (EMDEs) constitute only 2 percent of the population and are composed, to a significant extent, of refugees (Figure 4.2). However, average numbers mask significant heterogeneity, with some EMDEs receiving very large inflows of refugees.[1]

In recent years, migration has taken center stage in the political discourse in many countries, especially advanced economies. Opinion surveys indicate that in main destination countries (for example, Germany, United Kingdom, United States), a majority of the public has a positive view of immigration (Pew Research Center 2019). However, there are also misconceptions and concerns about migration among local populations. A common misconception is that the number of immigrants is twice as high as it is in

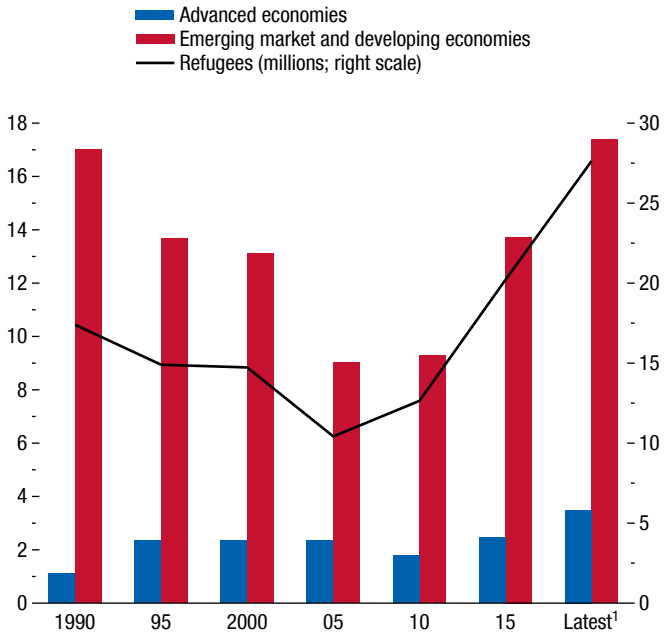
[1]The term "refugee" throughout this chapter refers to refugees, asylum seekers, and populations of concern. The category "other populations of concern" refers to individuals who do not necessarily fall directly into other categories (refugees, asylum seekers, internally displaced persons, returned refugees, and returned internally displaced persons), but to whom the United Nations High Commissioner for Refugees extends protection and assistance services, based on humanitarian or other special grounds.

Figure 4.1. Historical Immigrant Share of the US Population
(Percent)



Sources: US Census Bureau (2006); and Pew Research Center (2019).
Note: Immigrants are defined as the foreign-born population. Their share is for the 50 US states and the District of Columbia.

Figure 4.2. Total and Share of Refugees among All Immigrants
(Percent, unless noted otherwise)



Sources: United Nations; United Nations High Commissioner for Refugees; and IMF staff calculations.
Note: The term "refugee" includes refugees, asylum seekers, and populations of concern.
[1]Refers to the number of refugees in 2018 and to migrants, defined as the foreign-born population in 2019.

reality (Alesina, Stantcheva, and Miano 2019). Concerns include higher competition for jobs in segments of the local labor market, higher demand for public services, potential strains on public finances, and a perceived threat to the native cultural identity and social cohesion.

Migration raises a vast and multifaceted array of macroeconomic issues. Among them, this chapter addresses the following set of questions:

- How has migration evolved over the past decades? What have been its drivers?
- How will migration flows evolve? How will demographic and income developments affect migration flows?
- What are the macroeconomic effects of migration in destination countries? How do policies shape these effects? What is the impact of migration on the global economy?

The chapter begins by presenting recent trends in migration, differentiating between various types of migrants. It then estimates the drivers of migration. Building on the estimated model of drivers, the chapter presents scenarios for the evolution of global migration, then quantifies the macroeconomic effects of migration using empirical estimations and global model simulations. The empirical analysis looks at the effects of large waves of immigration in destination countries. The model simulations present the potential impact of migration at the global level and in source and destination countries.

The main findings of the chapter are as follows:

- Migration flows are shaped by the evolution of demographics at the origin and by income levels at the origin and destination. Conflicts are important drivers of migration between EMDEs. Migration costs are large.
- Migrants as a share of the global population will remain broadly stable under a baseline scenario. However, continued rapid population growth in EMDEs will mean that migration toward advanced economies will continue to rise relative to the size of the native populations, even if higher incomes in the source countries partly attenuate those emigration pressures. Although climate change is expected to increase internal and short-distance migration, its wider implications for international and long-distance migration—such as from EMDEs to advanced economies—is less clear based on existing evidence.

- Large immigration waves raise output and productivity in advanced economies in the short and medium term, pointing to significant dynamic gains for the economy as a whole. Refugee flows into EMDEs do not appear to produce similar rapid gains.
- Active labor market policies, spending on vocational training and adult education, and policies aimed at integrating migrants could boost the macroeconomic gains from immigration. International financial support and policy coordination are needed to address refugee crises and support the integration of refugees in destination countries.
- Migration raises world GDP, in particular by raising productivity. Average per capita incomes of natives increase as their skills are complemented by those of migrants. Remittances from abroad lift income per capita in the origin countries, helping to offset the potentially negative effects of emigration.

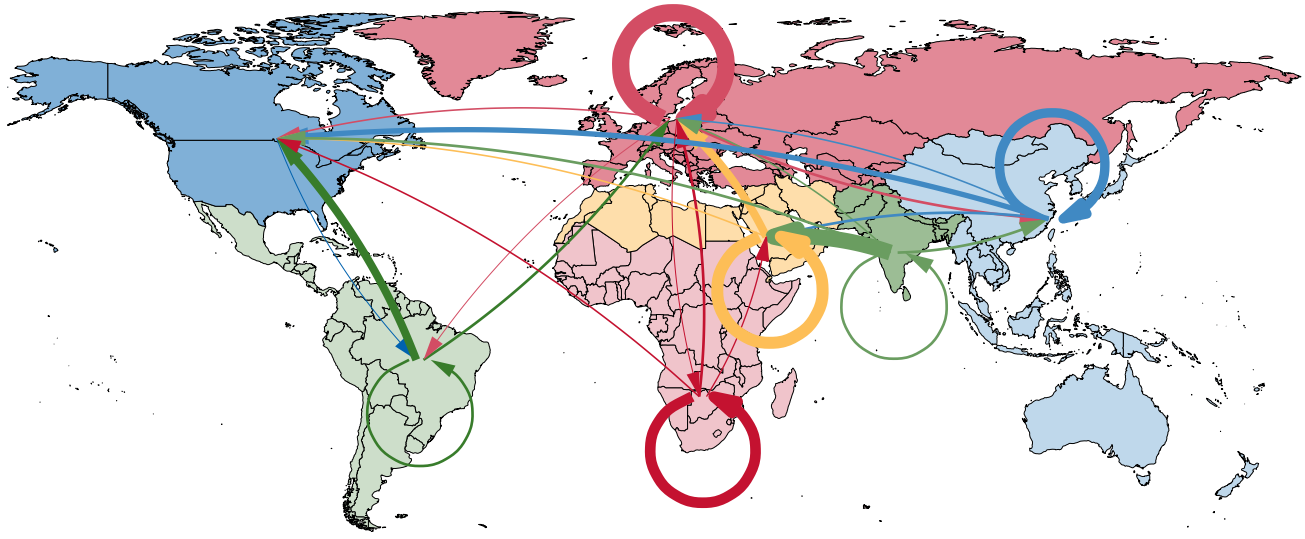
The chapter does not consider all aspects of migration, in particular, its distributional effects. Native workers in recipient countries whose skills are complementary to those of immigrants can be expected to gain from the arrival of immigrants, while native workers with similar skills may face stiffer competition in the labor market. Distributional concerns and fears of deterioration in the provision of public goods may prompt a hostile attitude toward immigration (Halla, Wagner, and Zweimuller 2017). Relative winners and losers will also emerge in source countries. For example, some people in source countries might be at a disadvantage because they could lose services provided by a pool of talented individuals who have decided to emigrate.

While the analysis in this chapter does not address these distributional effects, it nonetheless suggests that average gains from migration are large and, if managed well, potentially have widespread benefits. Policies can help magnify and ensure equitable sharing of these gains. For instance, policies that support education and retraining can both increase the aggregate gains from immigration and facilitate the adjustment of individuals who may face temporary difficulties.

Stylized Facts

Under the surface of a globally stable share of migrants, migration follows uneven and evolving patterns along migration corridors. Migration occurs largely within broadly defined world regions, such as within Europe and central Asia, where it is less constrained by the higher geographical and cultural barriers that characterize migration across continents (Figure 4.3). Nonetheless, large interregional migration

Figure 4.3. Migration Flows between 2010 and 2020



Sources: United Nations; and IMF staff calculations.
Note: Migrants are defined as the foreign-born population in a destination region. For the definition of regions, see Online Annex Table 4.1. This figure shows migration flows larger than 200,000 people between 2010 and 2020. The width of flows is proportional to the number of migrants.

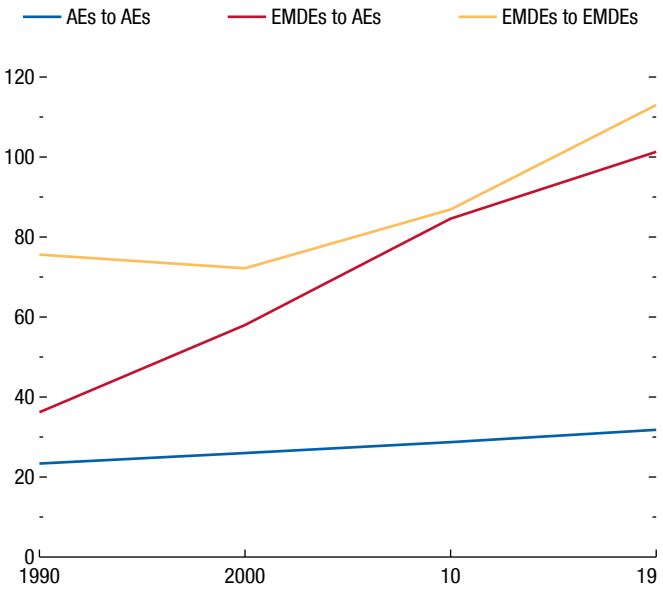
corridors are equally important. Examples include the corridors from Latin America and the Caribbean to North America, from South Asia to the Middle East, and from the Middle East and North Africa to Europe.

Migration from EMDEs toward advanced economies has increased significantly over the past several decades. Figure 4.4 shows that, in absolute terms, migration from EMDEs to advanced economies has now reached almost the same level as migration between EMDEs. Between 1990 and 2019 the share of migrants from EMDEs to advanced economies rose from 4 percent to 9 percent of the advanced economy population, while EMDE-to-EMDE migration remained stable at about 2 percent of the EMDE population. Given the small and falling share of the world population residing in advanced economies, the large increase in the share of immigrants in those countries corresponds to just a one-half percentage point increase in the world share of migrants, which currently stands at 3.5 percent.

Income and demographic developments are associated with migration in general and with the rise in migration from EMDEs to advanced economies in particular. On the income side, two aspects are key to understanding the effect of income on migration: relative income gaps and absolute levels of poverty. Per capita GDP in advanced economies is still almost five times as large as in EMDEs, creating a significant pull effect on immigration. However, growth in EMDEs, especially China and India, has significantly reduced this gap over recent decades and will further reduce it in the future under a baseline scenario (Figure 4.5).

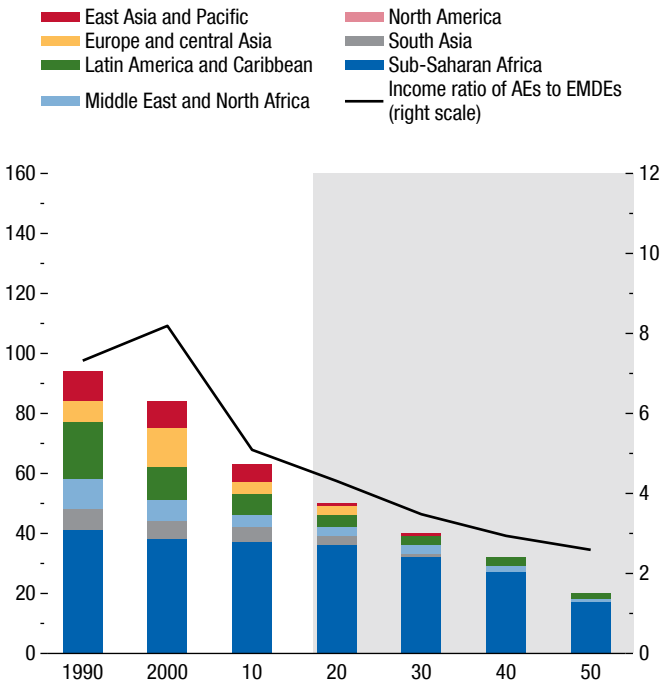
The number of countries with annual income per capita below $7,000 (in 2011 international dollars) has declined dramatically. Sub-Saharan Africa is one exception to this trend—the number of countries there with low per capita incomes is still significant and, though decreasing, could remain high in the coming decades. It is often assumed that higher average income in a country leads to less emigration. While this is true in many cases, it is nonetheless not always correct. Some individuals are too poor to emigrate, and poverty

Figure 4.4. Stock of Migrants, by Corridors
(Millions)



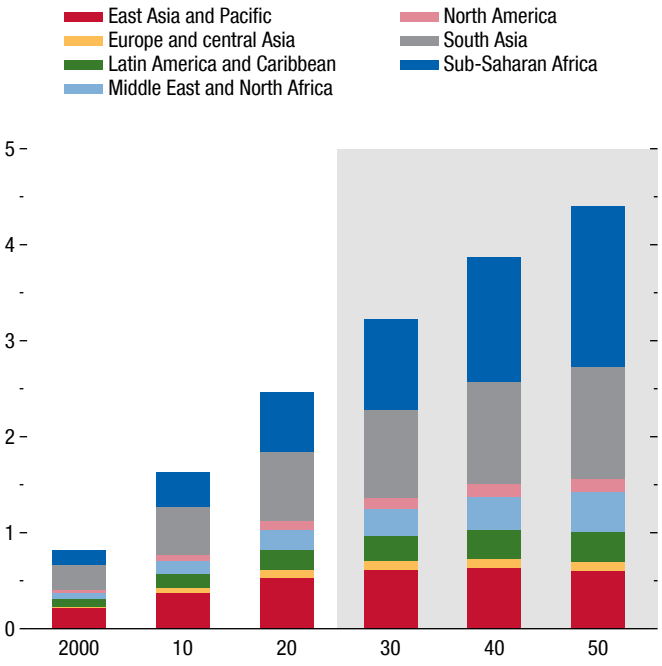
Sources: United Nations; and IMF staff calculations.
Note: Migrants are defined as the foreign-born population. AEs = advanced economies; EMDEs = emerging market and developing economies.

Figure 4.5. Real GDP per Capita below $7,000 and Income Gaps
(Number of countries)



Sources: Penn World Tables (PWT 9.1); and IMF staff estimates.
Note: The figure shows the number of countries with a real GDP per capita below $7,000 measured in 2011 chained purchasing power parity terms (left scale). The income gap is measured as the ratio of the population-weighted average of advanced economies (AEs) and emerging market and developing economies (EMDEs). For the definition of regions, see Online Annex 4.1. The shaded area shows projections based on the baseline scenario in the section of this chapter on future migration pressures.

Figure 4.6. Cumulative Population Change, by Region Relative to 1990
(Billions)



Sources: United Nations; and IMF staff calculations.
Note: For the definition of regions, see Online Annex 4.1. The shaded area shows United Nations projections.

can trap them in their home country. The next section of this chapter provides empirical evidence that, below a threshold of $7,000, an increase in income provides individuals with the means to emigrate toward advanced economies.

Demographic changes are uneven across regions (Figure 4.6). The population in advanced economies has stabilized and in some cases is projected to decline (IMF 2019). By contrast, the population in EMDEs will continue to rise, especially in South Asia, North Africa and the Middle East, Latin America, and most of all, sub-Saharan Africa. These trends will raise the number of potential migrants from EMDEs to advanced economies. Countries with fast-growing populations may face challenges in creating enough well-paying jobs for a young and growing workforce, while countries with aging and shrinking populations may face labor shortages.

Conflict is another important driver of migration and it leads people to seek refuge in other countries. Refugees leave their home under sudden and dire conditions triggered by the eruption of conflict or wars, which occur mostly in EMDEs. In recent periods, large cumulative inflows of refugees, amounting to more than 1 percent of the destination countries' population, have been observed in Germany and Turkey. Extreme cases—those featuring immigration well above 4 percent of the recipient countries' population—have occurred in Colombia (after the Venezuelan crisis) and in Jordan and Lebanon (resulting from the conflict in Syria). Because refugees are often poor and rarely have time to plan their emigration, they tend to travel shorter distances and remain in their home region more often than other migrants (Figure 4.7).

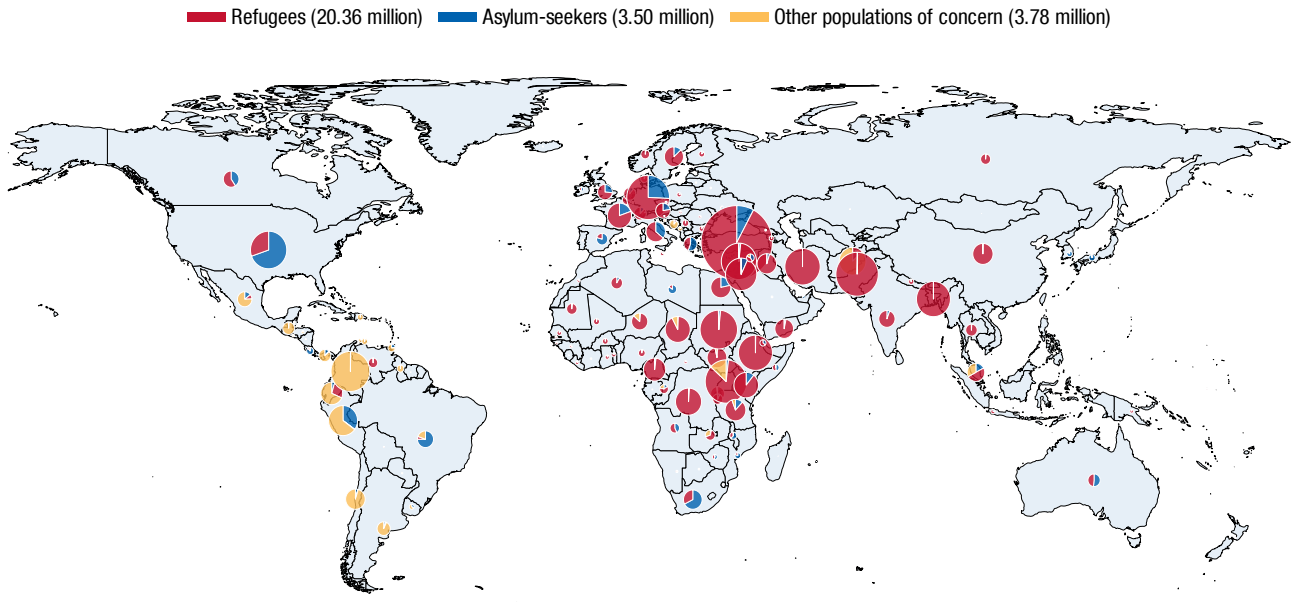
The differences in the conditions underlying the migration decisions of refugees—legal status, ability to choose their geographical relocation, and relative access to formal labor markets—all suggest that the impact of refugees on receiving countries could differ significantly from that of other types of migrants.

Immigration policies also influence the level and composition of migration. Immigration policies at the global level have generally become less restrictive since the end of World War II, although this liberalization trend appears to have slowed more recently, and reversed in some cases (De Haas and others 2019). Liberalization trends are clearly visible in the evolution of policies that regulate the entry and integration of immigrants, while policies concerning internal and border controls have tightened over time (Figure 4.8). Migration policies also attempt to affect the composition of the immigrant pools—for example, policies targeting high-skilled individuals have become common in the past two decades (De Haas, Natter, and Vezzoli 2014). Indeed, migrants from poor to rich countries are usually more educated than the average population in the origin country (Grogger and Hanson 2011). The effectiveness of migration policies in regulating migration flows is the subject of substantial debate in the economic literature (see De Haas and others 2019 for an overview).

The Drivers of Migration

This section looks more systematically at the drivers of international migration using a standard gravity model. The model is based on the idea that migration is a choice that individuals make by weighing the costs and benefits of staying home versus moving to different destination countries (Beine, Bertoli, and Fernández-Huertas Moraga 2016).

Figure 4.7. Refugee Stocks at the End of 2018



Source: United Nations High Commissioner for Refugees.
Note: The category "other populations of concern" refers to stateless persons plus individuals who do not necessarily fall directly into other categories (refugees, asylum seekers, internally displaced persons, returned refugees, and returned internally displaced persons), but to whom the United Nations High Commissioner for Refugees extends protection and assistance services, based on humanitarian or other special grounds.

The benefits to the migrant include a potential wage gain from moving to a richer country. The younger the migrant, the larger these gains because younger migrants have a longer lifetime ahead of them in which to benefit from the extra income. Other possible benefits include escaping a conflict, finding a more generous welfare system abroad, or resorting to migration as a way of adapting to climate change. The costs of migration include overcoming geographical, cultural, and linguistic barriers. In addition, immigration policy restrictions, such as visa requirements and limitations on the right to work, could be significant costs. Destination countries may also create preferential immigration pathways from former colonies, while networks of existing migrants from the same source country, and especially family members, can help new immigrants adjust and provide resources in advance to pay for travel costs.

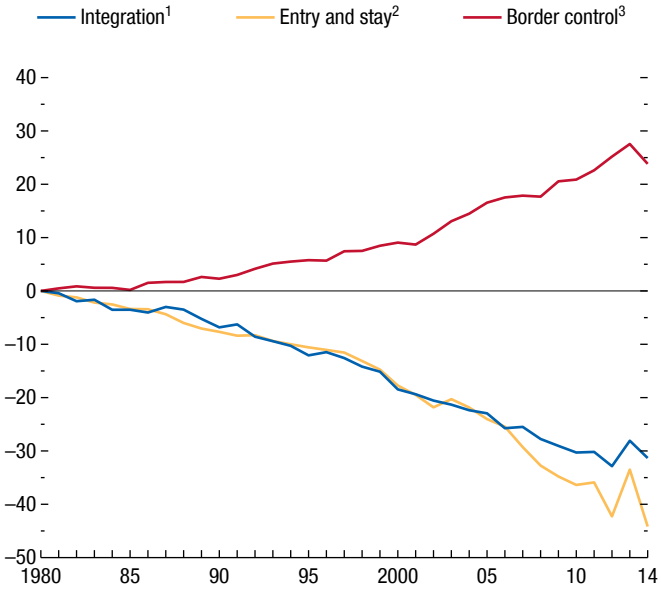
Baseline Drivers

Modeling the number of migrants starts from a simple baseline specification that contains the most important drivers and then adds various extensions (see Online Annex 4.2 for a detailed description of the drivers considered; All annexes are available at www.imf.org/en/Publications/WEO). The number of migrants is obtained from the bilateral migrant stock statistics published by the United Nations Department of Economic and Social Affairs. The data provide the number of international migrants for every origin and destination country pair in the world every five years from 1990 to 2015. The analysis follows the literature that derives net migration flows from the stock data (see Beine, Bertoli, and Fernández-Huertas Moraga 2016 for a review).[2]

The estimated coefficients capture the importance of the different drivers in a typical migration episode. The estimation is carried out both on the entire sample of countries and by splitting the sample into the three main migration corridors depicted in Figure 4.4 (EMDEs to EMDEs, EMDEs to advanced economies, and advanced economies to advanced economies). Figure 4.9 summarizes the contribution of the baseline migration drivers to explaining observed migration

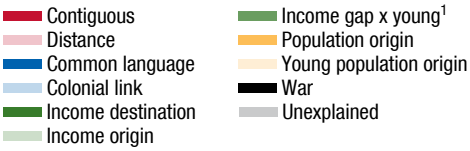
[2]Migration flows defined in this way do not capture some aspects of migration, including seasonal migration. The definition of migrants adopted in this chapter also excludes from the analysis issues related to second-generation immigrants.

Figure 4.8. Restrictiveness of Migration Policies

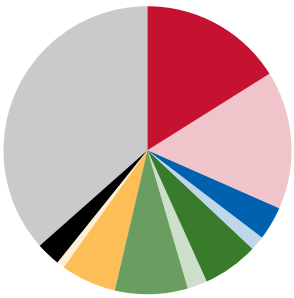


Sources: Determinants of International Migration dataset; and IMF staff calculations.
Note: The indexes are normalized to zero in 1980. Positive (tightening) and negative (loosening) policy changes are cumulated over time and summed across coutries. Depending on their intensity, individual policy changes range between –4 and +4. Missing values are treated as no change (zero).
[1]The index measures postentry rights and other aspects of integration of a target group.
[2]The index covers issues related to entry and stay permits and regularizations.
[3]The index measures the external and internal border controls that aim to secure national territories through surveillance, detention, and sanctions of fraudulent acts.

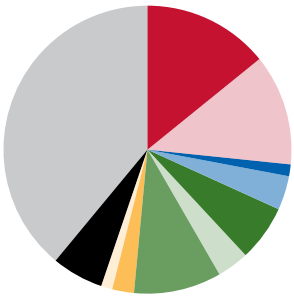
Figure 4.9. Explained and Unexplained Shares of the Variation in Migration



1. From EMDEs to AEs



2. From EMDEs to EMDEs



Source: IMF staff calculations.
Note: The figure shows the increase in *R*-squared with the inclusion of each variable, under all possible model combinations, following the hierarchical partitioning method of Chevan and Sutherland (1991). Fixed effects are partialed out before applying the method. AEs = advanced economies; EMDEs = emerging markets and developing economies.
[1]Denotes the product between the income gap and the share of young population.

flows for the two most relevant migration corridors (EMDEs to EMDEs and EMDEs to advanced economies). The main conclusions are as follows:

- *Migration is difficult and costly*. More than half of the explained variation of migration flows can be attributed to the effect of geographical and cultural barriers. Distance and (lack of) border contiguity between two countries are significant impediments to bilateral migration flows. The lack of a common language or a former colonial link also add important cultural and political barriers to migration.
- *Demography in origin countries matters*. Larger populations in origin countries lead to more emigrants. Holding the population size constant, people in younger societies, on average, do not seem to emigrate more, but they do emigrate more to countries where the income gap is larger.
- *Conflicts are important for EMDE migration*. More intense conflicts drive more emigration, especially toward other EMDEs, although the effect appears to be temporary.
- *Refugees are a much more important component of immigration into EMDEs*, consistent with the evidence on conflict (see the section in this chapter on the impact of large immigration waves).[3]
- *Migrants respond to income levels*. In addition to the interacted effect of income gaps already discussed,

[3]This is in addition to the impact of war in causing a collapse in average income. For more on the role of war and violence in driving emigration, see Beine and Parsons (2015). The effects of war are visible over 5 years but not over 10 years or longer, which suggests that war-related emigration is temporary. Possible explanations include the following: (1) Some migrants return to their home country once the conflict has ended, and (2) Part of the migration after conflicts that are not of extreme intensity reflects the anticipation of emigration decisions that would have occurred anyway later.

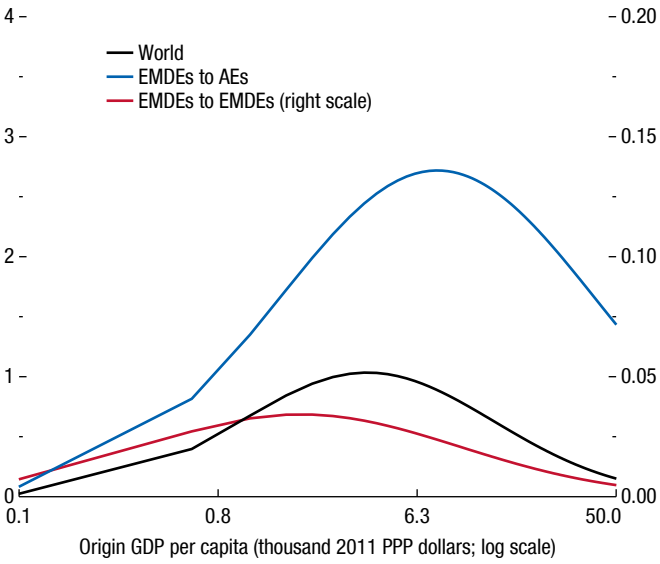
the level of both per capita income at origin and at destination matter on their own. The role of income at origin is more complex than a simple push narrative would suggest, as discussed below.

The black line in Figure 4.10 depicts emigration rates toward an average country as a function of the origin country's per capita income. The blue and red lines indicate what the emigration rate would be toward advanced economies and EMDEs, respectively, if migration costs and other drivers were set equal to the world average. The pull effect of income in destination countries on immigration is evident from the fact that the line for the corridor toward advanced economies is orders of magnitudes higher than the line toward EMDE destinations. In other words, if migration costs to advanced economies were the same as those toward EMDEs, virtually all world migration would be directed toward advanced economies.

Although higher income at destination always increases immigration, it is not necessarily the case that higher income at the origin decreases emigration. Figure 4.10 shows that, for countries at very low levels of per capita income, a marginal rise in income *increases* the emigration rate. This indicates the presence of "poverty traps" that prevent people who are very poor from being able to afford to emigrate.[4] For income levels beyond a certain threshold, a further increase in income instead leads to less emigration. Interestingly, in emigration toward other EMDEs, the threshold—of about $2,000—is significantly lower than in emigration toward advanced economies, for which the threshold is about $7,000. This property gives rise to an important effect that shapes the evolution of emigration corridors: economic growth in countries with income between $2,000 and $7,000 has the effect of reducing emigration toward EMDEs while increasing it toward advanced economies.

The results indicate that both population and economic growth in EMDEs drove the rise of migration from EMDEs to advanced economies between 1990 and 2015 (Figure 4.11). In 1990 there were many countries with initial per capita income below the poverty trap threshold of $7,000 (Figure 4.5). Economic growth in these origin countries thus provided a larger number of individuals with the means to migrate to advanced economies. At the same time, given that many cases income per capita was already above $2000, economic growth reduced emigration to other EMDEs.

Figure 4.10. Income at Origin and Destination and Probability of Emigrating
(Five-year emigration rate; percent)



Source: IMF staff calculations.
Note: The figure shows the partial relationship implied by the baseline estimation, holding other factors constant. The average world emigration flow is equal to 0.5 percent of origin population. AEs = advanced economies; EMDEs = emerging market and developing economies; PPP = purchasing power parity.

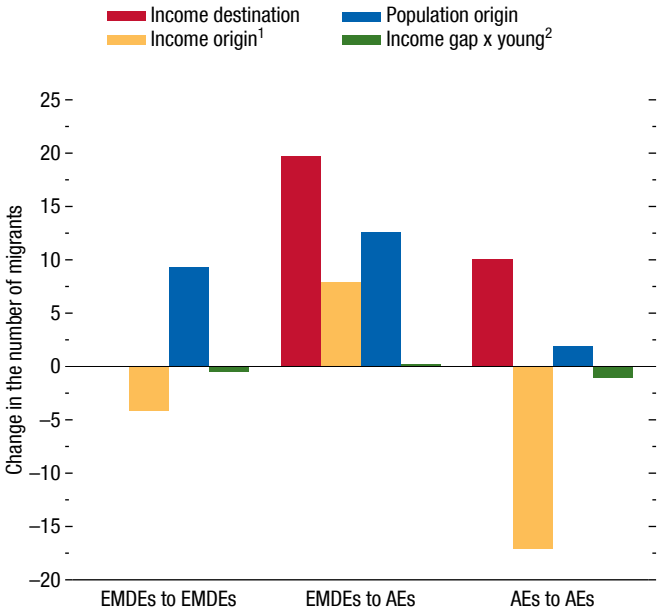
Additional Drivers

The inclusion in the baseline regression of other potential drivers suggests the following:

- A previous stock of migrants from the same origin country significantly increases migration due to network effects (see also Munshi 2003; and Beine, Docquier, and Ozden 2011).
- In Organisation for Economic Co-operation and Development (OECD) countries, tighter immigration policies on entry requirements and fewer

[4]The poverty trap effects are captured by adding to the regression model the square of log income per capita at origin. To exploit the cross-sectional variation that allows the identification of poverty traps, origin fixed effects are not included in the gravity estimation. Poor people may not have enough savings to pay transportation costs and support themselves and their families until a job is found in the destination countries. Borrowing constraints limit the ability of migrants to finance their emigration enterprise through debt. In addition, poorer people usually have lower levels of education, making it more difficult for them to emigrate toward countries whose immigration policies prioritize the attraction of high-skilled migrants (Clemens 2014; Bazzi 2017).

Figure 4.11. Decomposition of Past Migration Flows, 1990–2015
(Millions)



Source: IMF staff calculations.
Note: Derivation of the decomposition appears in Online Annex 4.2.
AEs = advanced economies, EMDEs = emerging market and developing economies.
[1]Includes the poverty trap effect of origin income.
[2]Denotes the product between the income gap and the share of young population.

integration measures are associated with reduced immigration.[5]

- Climate change affects international migration through its impact on income levels (see Chapter 3 of the October 2017 *World Economic Outlook* (WEO)). Natural disasters, particularly extreme temperatures and storms, have additional effects that lead to a further, but small, increase in emigration.
- Currency crises are associated with more emigration beyond their effects on income, but the evidence for banking and debt crises is less clear. This is likely due to the fact that banking crises are more frequent in advanced economies, where emigration is typically smaller. In contrast, currency crises are more frequent in EMDEs.
- There is no evidence for the idea of "welfare shopping" by international migrants if the destination country's government spending is used as a proxy.

[5]The estimated coefficients suggest that the secular relaxation of entry requirements over the past three decades is consistent with an increase in net immigration flows of about 35 percent. It is important to emphasize that these results point mostly to correlation rather than patterns of causation because policies could be endogenous to migration flows (in this case, the actual effect of policies would likely be even larger). These calculations also ignore other effects of immigration policies (De Haas and others 2019).

The gravity model used in this section explains more than 50 percent of variation in migration flows. However, while it does a good job of capturing the drivers of gradual migration flows, including those triggered by non-extreme conflicts, it is less successful in precisely fitting the magnitude of extreme migration events, such as those associated with economic collapses or destructive wars.

Composition of Migration

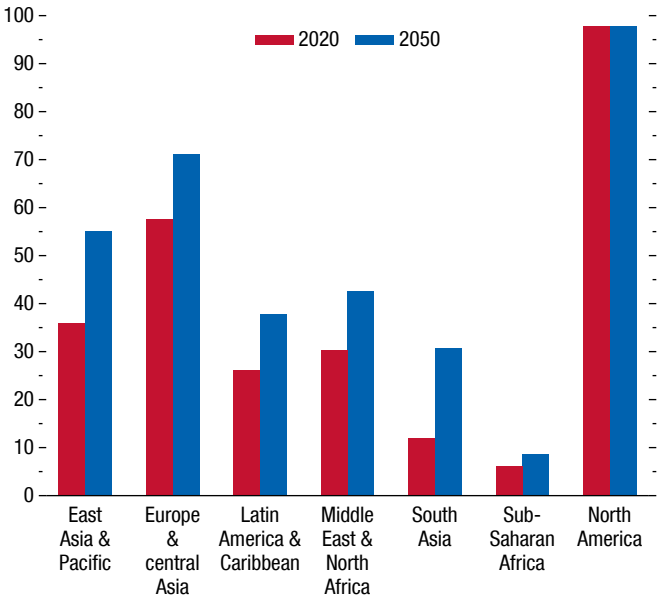
To complement the analysis of the drivers of total migration, this chapter builds on World Bank (2018) and considers which drivers change the skill composition of the pool of migrants. The evidence shows that destination countries where the skill premium is higher attract a relatively more educated group of immigrants. Conversely, origin countries with a relatively lower skill premium feature an emigrant population that is relatively more skilled than the native one. Moreover, most drivers that are associated with lower bilateral migration costs (for example, a common border, a diaspora network in the destination country, and shorter distances) tilt migration toward the lower skilled, consistent with the idea that travel costs are more binding for these workers. However, a common language increases high-skilled immigration, likely because communication abilities are relatively more important in high-skill jobs (Grogger and Hanson 2011; Belot and Hatton 2012).

Future Migration Pressures

Drawing on the estimate of the historical drivers of migration, this section provides three migration scenarios for the period 2020–50. The scenarios provide a general indication of the likely direction and intensity of long-term migration pressures rather than a prediction of future migration. Indeed, future migration is subject to large uncertainties, including those stemming from the difficulty of anticipating the long-term evolution of countries' income levels.

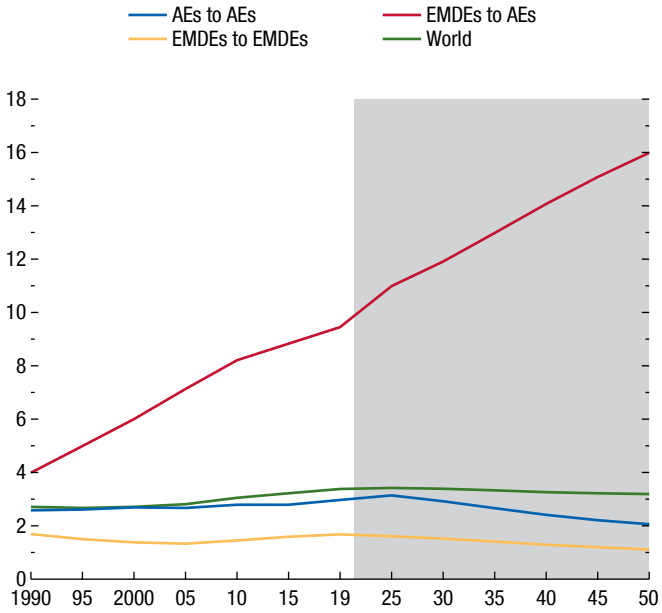
Each of the three scenarios is based on the set of drivers from the baseline regression in the previous section of this chapter. In order to focus on long-term

Figure 4.12. Current and Projected Real GDP Per Capita, by Region
(Share of US GDP per capita)



Sources: Penn World Tables (PWT 9.1); and IMF staff estimates.

Figure 4.13. Migration Corridors
(Percent of total population in destination group)



Sources: United Nations; and IMF staff estimates.
Note: Migrants are defined as foreign-born population. The shaded area shows United Nations projections. AEs = advanced economies; EMDEs = emerging market and developing economies.

effects of drivers, the model is first reestimated using bilateral migration stocks (see Online Annex 4.2). The estimated coefficients are then applied to future values of the migration drivers defined by the three scenarios. The scenarios, which differ from each other on the basis of different assumptions for the evolution of income per capita, are as follows:[6]

- *Baseline scenario*. Starting in 2019 real GDP per capita in the United States is assumed to keep growing at a constant rate of 1.6 percent a year (the average growth over the past decade). All other countries are assumed to follow a convergence path to the United States (Figure 4.12) as determined by country-specific convergence rates estimated in Chapter 3 of the October 2019 WEO for 2008–17.
- *Higher growth in EMDE scenario.* Per capita growth in each EMDE country is assumed to be 1 percentage point higher a year.
- *Climate change scenario*. Warming temperatures, under "High Emission" Scenario 8.5 of the Intergovernmental Panel on Climate Change (IPCC), are assumed to affect per capita GDP according to the nonlinear relationship estimated in the October 2017 WEO. Therefore, this scenario explores the effect of climate change on migration through the income channel.

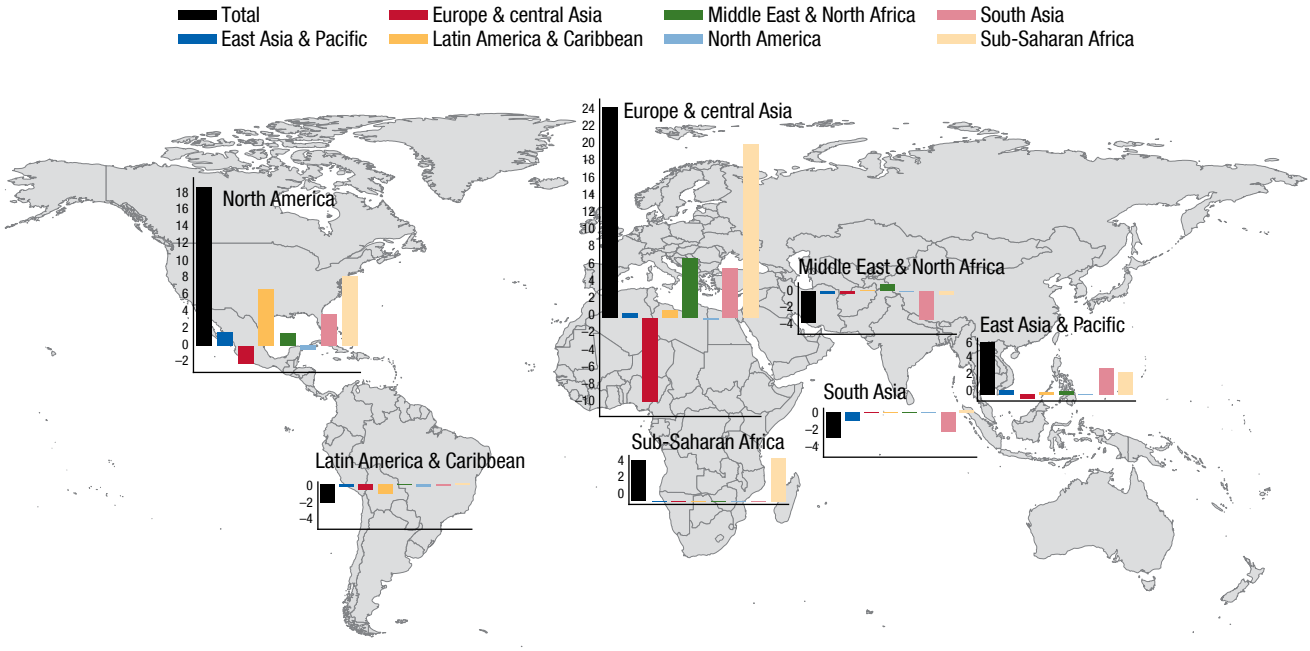
In terms of common assumptions, geographic and linguistic variables are kept constant in all scenarios, and demographic variables evolve according to United Nations population projections.

Baseline Scenario

Under the baseline scenario, the world migrant share between 2020 and 2050 is nearly stable, at just above 3 percent of the world population (Figure 4.13). Therefore, at the global level, there is no surge in migration. However, the share of EMDE immigrants into advanced economies keeps increasing to about 16 percent of the total population of advanced economies, despite the negative effect that income convergence has on EMDE emigration. The increase is driven by the rise in the absolute number of immigrants (a numerator

[6]Beyond income variables, other variables that could increase or decrease future migration pressures include changes in migration policies, the intensity of conflicts, and transportation costs.

Figure 4.14. Change in Migrant Pressures Between 2020 and 2050, Baseline Scenario
(Millions of individuals)



Sources: United Nations; and IMF staff estimates.

effect) caused by growing population in EMDEs. Population aging and the decline of the native population also contribute to the increase in the immigrant share (denominator effect). However, rising population in EMDEs and emigration patterns that continue to shift toward advanced economies cause a fall in the immigrant share in the population of EMDEs.

Figure 4.14 provides more details by presenting absolute changes in migration pressures (expressed in millions of individuals) between 2020 and 2050, disaggregated into broad world regions. A few patterns stand out:

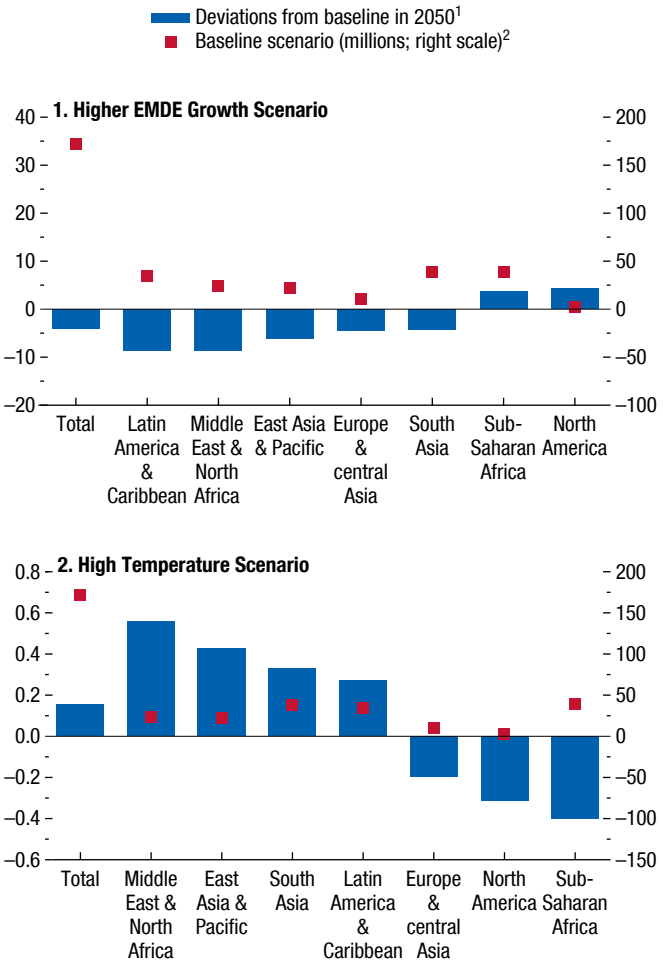
- Migration pressures build up from Africa and the Middle East to Europe. This is largely caused by a population boom in sub-Saharan Africa, where the population would increase by 1 billion between 2020 and 2050, generating out-regional migration pressure of 31 million individuals.[7] In addition, economic growth in sub-Saharan Africa increases emigration from the region toward advanced economies in Europe. This is attributable to the significant number of countries in the region that in 2020 still feature income per capita levels below the poverty trap threshold of $7,000.
- Migration pressures within Europe and central Asia fall, caused by a combination of higher income per capita and falling population in the group of emerging market economies within the region.
- Immigration pressure from south Asia into the Middle East falls because of south Asia's continuing process of income convergence.
- A growing population in Latin America and the Caribbean exerts continuing pressure on immigration to North America, although with less intensity than in the past.

[7]Under the baseline scenario, the emigration rate in sub-Saharan Africa increases from 0.7 percent to just below 2 percent. These figures are in line with Gonzales-Garcia and others (2016). That study, which does not account for poverty trap effects, projects an increase in migration from sub-Saharan Africa to OECD countries of 28 million people between 2013 and 2050.

Alternative Scenarios

Fostering higher growth and more job opportunities in EMDEs is often heralded as a way to enable migrants to stay in their home countries and thereby reduce migration pressure in advanced economies.

Figure 4.15. Alternative Migration Scenarios
(Percent, unless noted elsewhere)



Sources: United Nations; and IMF staff estimates.
Note: EMDE = emerging market and developing economy.
[1]Bars represent percentage deviations in 2050 relative to the baseline scenario.
[2]Squares represent out-regional migration pressures (stocks) in 2050 under the baseline scenario.

The next scenario, depicted in panel 1 of Figure 4.15, examines the impact on out-regional migration of an additional 1 percentage point of annual growth in each EMDE. The panel shows both the baseline scenario (right scale) and the change in migration stocks relative to the baseline scenario (left scale). Migration pressures fall in all emigration-prone regions, including from Africa and the Middle East taken as a whole. The only exception is sub-Saharan Africa, where emigration pressure increases marginally because the higher growth alleviates poverty traps, which are still present in many countries. Given that sub-Saharan Africa is also the region that, under the baseline, provides the single biggest contribution to the increase in future migration pressure, it follows that higher growth in EMDEs does reduce migration overall, but the total effect is not very large.

The third scenario examines the impact of climate change on future migration. Overall, emigration pressures over the next three decades stemming from climate change are modest.[8] Panel 2 of Figure 4.15 shows that climate change adds to emigration pressures for all typical emigration regions except sub-Saharan Africa. There, the additional warming has particularly negative effects on income, worsening the poverty trap and reducing out-regional migration pressures.

Although lower growth or higher temperatures cause a small reduction in out-regional migration pressures from sub-Saharan Africa, their interaction with the poverty trap increases intraregional migration pressures. This conclusion is in line with the climate change literature that finds a significant increase in internal and short-distance migration as a result of climate-related events (Rigaud and others 2018). More generally, the literature on the effects of climate change and natural disasters on international migration is not settled. Some studies find that climate change increases international migration, but a significant number of studies do not find any impact. The apparently conflicting results can be attributed to different research methodologies and to the fact that the response of migration to climate change is context-specific and thus differs across countries (Beine and Jeusette 2018). There are still substantial gaps in the literature about the future effect of climatic events on emigration (Cattaneo and others 2019).

One circumstance that appears relatively established is that climatic developments can trap individuals and *reduce* emigration (Beine and Parsons 2017; Peri and Sasahara 2019). The literature also indicates that fast-onset disaster events, such as floods or hurricanes, lead to migration that occurs over short distances and only temporarily because the displaced individuals return to the disaster zones quickly (see Cattaneo and others 2019 for a survey). However, studies have

[8]There are two reasons for this modest result. First, the scenario ends in 2050, when the increase in temperature is still relatively modest. Second, the presence of poverty traps in hot regions reduces out-regional migration. There are significant uncertainties in the estimate of the impact of climate change on migration, given the lack of historical precedents for a global phenomenon of this type.

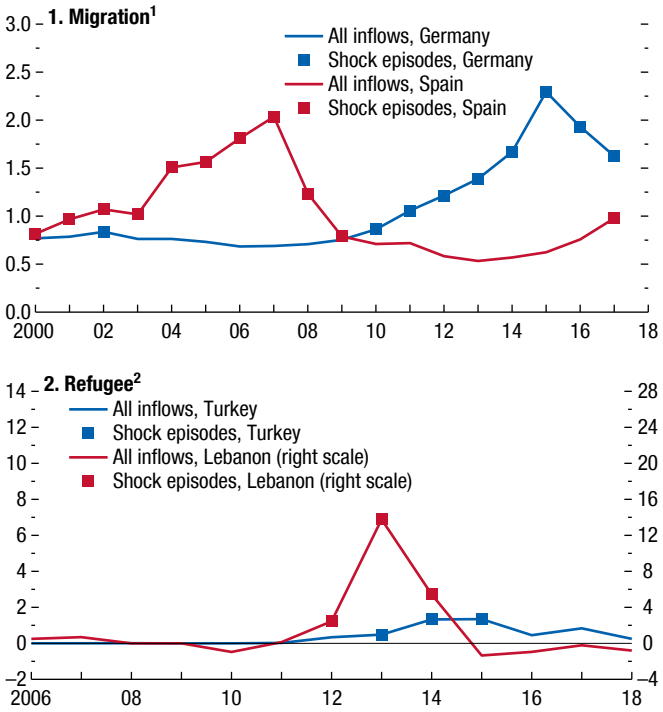
necessarily relied on historical estimates. Warming under the "high-emission" scenario would lead to temperatures that have not been experienced for a very long time, so it is hard to know how migration might react under such a scenario.

The Impact of Large Immigration Waves

The economic impact of migrants on destination countries is estimated based on a data set of large immigration episodes. Examining large waves of migration is of interest because they are more likely to be politically difficult and can test the absorption limit of recipient economies.[9] Most of the impact analysis is performed for migration to advanced economies because of the requirement for annual data. A second exercise also examines the impact of large waves of refugees into EMDEs. The estimation strategy follows three steps for both parts of the analysis, as follows:

- The first step is the selection of immigration episodes. A large episode is characterized by an immigration flow that meets certain minimum size thresholds relative to the recipient country's population. In turn, the thresholds are defined in ways that guarantee that the episode is large, both relative to the country's historical immigration experience, and from the perspective of typical episodes at the world level.[10] Panel 1 of Figure 4.16 presents two episodes of large immigration waves into advanced economies, Germany and Spain (the squares on the lines indicate the inflows identified as "large shock"). Panel 2 of Figure 4.16 depicts cases of refugee immigration into EMDEs for Lebanon and Turkey. Refugee inflows into Turkey peaked at just above 1 percent of the country's population, an example of a typical large episode, on which the estimation focuses. However, there is significant variation within the category of large refugee episodes. Episodes, such as the one in Lebanon, during which inflows reached 15 percent of the domestic population, belong to the top 1 percent of distribution of events and can thus be considered extreme.
- The second step aims to solve a reverse-causality problem, in which good economic conditions may cause large immigration inflows (Card 2001; Peri and Sparber 2009). To address this issue, an instrumental variable is constructed that is independent of economic conditions in the recipient country. The construction exploits two properties of migration patterns: migrants choose their destination partly

Figure 4.16. Episodes of Large Immigration Inflows
(Percent of recipient countries' population)



Sources: Organisation for Economic Co-operation and Development; United Nations High Commissioner for Refugees (UNHCR); IMF World Economic Outlook database; and IMF staff estimates.
[1]Migrants are defined as foreign-born or foreigners, along with acquisition of nationality. Inflows are in gross terms.
[2]Refugees are defined as individuals categorized as either "refugees," "asylum seekers," or "other" by the UNHCR. Inflows are defined as the annual change in stocks due to data constraints.

[9]In addition, difficult conditions in source countries are more likely to trigger sudden migration surges than strong economic growth in the destination country, helping to disentangle the effect of migrants on the economy of recipient countries.

[10]For migration shocks into advanced economies, an episode is large if the annual inflow (as a share of population) is greater than the country's median inflow during 1980–2018 and is also greater than the median inflow (relative to the recipient country's population) experienced by OECD countries during the previous five-year period and the following five-year period. Refugee shocks are instead defined as an inflow (as a share of population) that is within the country's top 10th percentile of inflows during 1980–2018 and is also greater than the top 10th percentile (relative to the recipient country's population) experienced by all countries in the world during the previous five-year period and the following five-year period. Finally, to avoid including episodes characterized by sudden reversals, the refugee inflow shock must be sustained for at least two consecutive years.

based on the presence of networks of past migrants, and refugees locate close to their country of origin (see the previous section of this chapter on the drivers of migration).

- The final step is the choice of the estimation model. A local projection framework (Jordà 2005) provides a convenient way to trace the response of macroeconomic variables to the (instrumented) immigration shocks over time. The model controls for country-specific characteristics that are constant over time and for time-varying components that are common across countries. Further checks are conducted to ensure that the estimations are robust to the inclusion of additional controls (see Online Annex 4.3 for details).

The Effects of Immigration in Advanced Economies

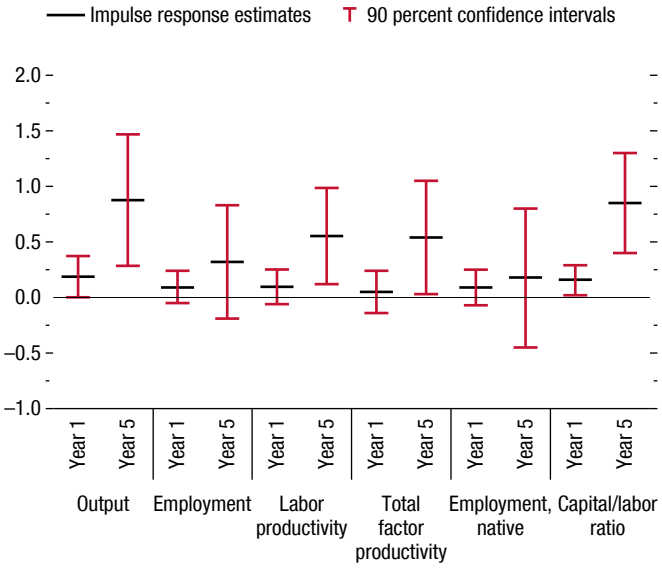
Figure 4.17 presents the responses of various macroeconomic aggregates in the recipient country in the first and fifth year after the immigration shock. The size of the effect indicates the variable's response to a 1 percentage point increase in the ratio of the immigrant flow relative to (the lag of) total employment.

Output increases by almost 1 percent by the fifth year. About two-thirds of this increase is attributed to an increase in labor productivity and the remaining one-third to employment growth (which is borderline insignificant, however). An increase in total factor productivity (TFP) matches the rise in labor productivity. As the capital stock responds immediately to the higher employment and TFP, the capital-labor ratio rises. When breaking down total employment growth into its components, the analysis does not detect any effect on the aggregate growth rate of native employment (see Online Annex 4.3 for additional results).

The positive impact of immigration on productivity in recipient economies is a key empirical finding of studies on immigration (Peri 2011b; Ortega and Peri 2014; Alesina, Harnoss, and Rapoport 2015; Jaumotte, Koloskova, and Saxena 2016). The literature emphasizes that these results can be attributed to the complementarity between native and immigrant workers (see Chapter 4 of the October 2016 WEO). As immigrants enter the labor market, natives move to new occupations, which, in many cases, require proficient linguistic and communication abilities or the performance of more complex tasks. Thus, as immigrants move into occupations that are in short supply, natives upgrade their skills, leading to economy-wide gains from specialization.[11] For similar reasons, most of the literature finds a very limited effect of migration on average wages or employment of native workers. Box 4.1 illustrates the potential labor market effects of complementarity between immigrants and natives in the context of growing automation.

Most of the literature that investigates the productivity impact of immigrants studies long-term effects. The question arises whether the aggregate effect of immigration could be less positive when looking at the short term or at large migration episodes, such as those considered here. The concern is reasonable and motivated by the presence of various economic frictions, including slow adjustments in the labor market and in the capital stock. The results in Figure 4.17 suggest that aggregate gains from immigration materialize

Figure 4.17. Macroeconomic Effects of Migrant Inflows in Advanced Economies
(Percent)



Source: IMF staff estimates.
Note: This figure depicts the effect of a 1 percent increase in the migration inflow to the employment ratio in the destination country on the macroeconomic variables indicated, estimated based on a sample of Organisation for Economic Co-operation and Development countries from 1980–2018 using the local projections method of Jordà (2005). Year 0 is the year before the shock, and year 1 shows the effect of the shock on impact. See Online Annex 4.3 for details of the model specification.

[11]See Peri and Sparber (2009); Hunt and Gauthier-Loiselle (2010); Farré, González, and Ortega (2011); D'Amuri and Peri (2014); Ortega and Peri (2014); Alesina, Harnoss, and Rapoport (2015); Cattaneo, Fiorio, and Peri (2015); Peri, Shih, and Sparber (2015a; 2015b); Aiyar and others (2016); and Jaumotte, Koloskova, and Saxena (2016).

very quickly, even with potentially disruptive inflows. Overall, the immediate response of labor productivity points to the existence of significant dynamic gains from immigration, even in the short term.[12]

The estimated positive macroeconomic effects of immigration in advanced economies are large. Even though data limitations confine the analysis to immigration into advanced economies, other studies that have concentrated on long-term effects (Ortega and Peri 2014) also find a large and positive impact of immigration on income per capita in a broad sample, including EMDEs. However, some caveats should be considered when interpreting the estimated positive effects of immigration. First, although the instrumental variables approach should, in principle, guard against reverse causality issues, this strategy may not work perfectly. The residual presence of reverse causality would likely imply that the positive effects of immigration would be smaller. Second, the increase in the heterogeneity of a society due to immigration may reduce support for the provision of public goods, such as education (Alesina, Baqir, and Easterly 1999; Speciale 2012). Third, in line with previous studies (Åslund and Rooth 2007), this chapter also finds some evidence that aggregate gains could be smaller in the presence of higher initial unemployment in the destination country.

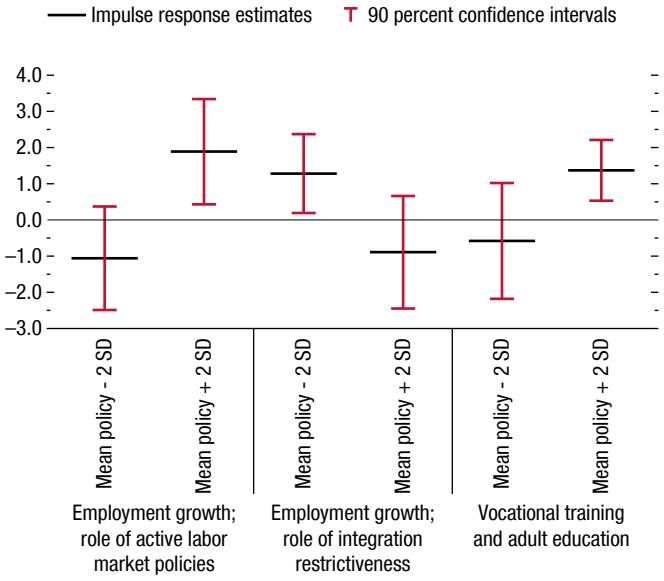
Finally, positive average effects may hide, at a more disaggregated level, the existence of some losers from immigration, especially in the short term. While the large aggregate positive effects presented in this section may suggest that negative effects are limited, a vast literature uses micro data to study the distributional consequences of immigration. Box 4.1 presents a general survey of the literature and Box 4.2 presents an analysis of the impact of immigration on wages in Germany.

The Role of Policies

To examine how policies influence the macroeconomic impacts of immigration, the estimation framework is extended by adding interactions between the immigration shock and different policy indicators. The analysis examines how different policies affect the response of the labor market in terms of total employment growth. Given the potential endogeneity of policies, it is best to interpret this part of the analysis as uncovering correlations more than causal effects. The analysis considers three main policies: (1) higher spending on vocational training and adult education, (2) higher spending on active labor market policies, and (3) tighter policies related to the integration of immigrants.

Figure 4.18 plots the response of employment growth for levels of the policy indicator two standard deviations above or below the cross-country mean of the indicator. The figure shows that higher spending on vocational and adult training and on active labor market policies is associated with greater employment growth after an immigration shock. Conversely, tighter policies on the integration of immigrants are associated with lower employment growth. This latter result is in line with Chapter 2 of the April 2018 WEO, which finds that tighter immigration policies are associated with lower labor force participation.

Figure 4.18. Policies and the Effects of Immigration on Employment Growth
(Percent)



Source: IMF staff estimates.
Note: This figure depicts the effect of a 1 percent increase in the migration-inflow-to-employment ratio in the destination country on employment growth for education spending equal to the mean of the sample plus or minus two standard deviations. The model is estimated based on a sample of Organisation for Economic Co-operation and Development countries during 1980–2018 using the local projections method of Jordà (2005). See Online Annex 4.3 for details of the model specification. The index of integration restrictiveness is calculated from the Immigration Policies in Comparison data set using the methodology in Schmid and Helbling (2016). SD = standard deviation.

[12]Beerli and others (2020) also presents evidence of a fast response of investment to immigration in Switzerland. For the role of capital in capital following migrants, see Klein and Ventura (2009).

The Effects of Refugee Immigration in Emerging Market and Developing Economies

Refugee migration, defined as people fleeing conflict or persecution, is substantially different from economic migration. Given the circumstances surrounding the need to flee, refugees typically leave on short notice, are less likely to target their destination country on the basis of their skills and knowledge of the language, and generally face substantial legal (and in refugee camps, physical) barriers to entering the labor market. Refugees are also more likely to be nonworking individuals. Refugee home and host countries tend to be primarily EMDEs. The empirical evidence shows that labor market outcomes of refugees are significantly worse than those of the native population and initially tend to generate net fiscal costs (Evans and Fitzgerald 2017; Brell, Dustmann, and Preston 2020).

Therefore, it is not surprising that the positive macroeconomic effects of immigration discussed in the previous section are not detectable in refugee immigration in EMDEs, at least in the short term. After a 1 percent increase in the inflow of refugees, there is no detectable short-term effect on output and productivity. However, the estimate presented is not meant to capture the very large cases of refugee inflows, such as the recent episodes of refugee immigration into Colombia, Jordan, and Lebanon. These episodes feature immigration flows greater than 4 percent of the recipient country's population and therefore are extreme compared with a typical large episode considered in this section.

Extreme episodes of refugee immigration are likely to have a significant macroeconomic impact. In EMDEs, refugee inflows can occur at a time when the recipient economy is already suffering from the negative spillovers of conflict in neighboring countries. This may further worsen the capacity of the labor market to absorb the inflow of refugees and increase the burden on public finances (IMF 2017a; 2017b). Labor market integration is facilitated when linguistic and cultural barriers are low and work permits are made available to the refugee population. In these cases, even a very large wave of refugees can be expected to increase GDP and employment, thus attenuating short-term fiscal costs associated with refugee-related spending (see Box 4.3 on the impact of emigration from Venezuela on Latin America and the Caribbean). The integration of refugees in advanced economies is affected by policies as well. Language training, physical and mental health support, shorter refugee recognition processes, and shorter stays in asylum accommodations are all associated with improved labor market outcomes.[13] Regional dispersal policies, whereby asylum seekers are assigned to locations around the country, as well as temporary employment bans, tend to have detrimental effects (Brell, Dustmann, and Preston 2020).

Beyond economics, there are compelling humanitarian reasons to host and support refugees. The costs and difficulties created for host countries call for international coordination in the resettlement of refugees and in the sharing of fiscal costs (United Nations 2016).

Model Simulations

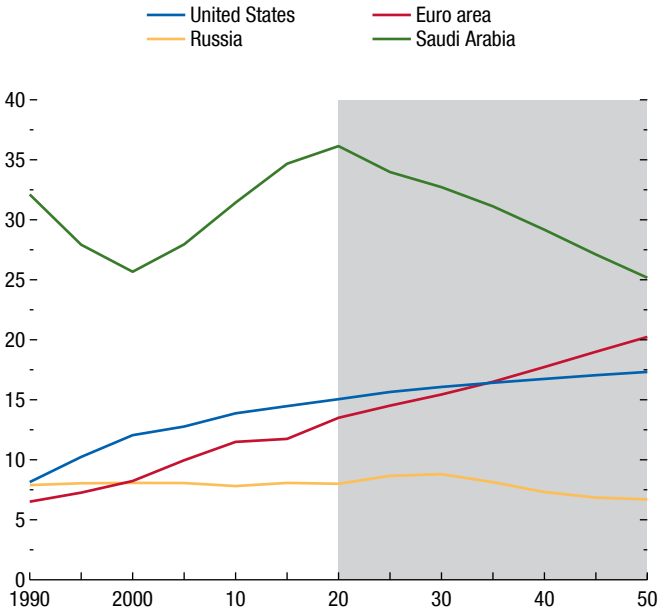
The analysis of episodes of large immigration waves suggests positive economic effects on destination economies. Looking toward the future, one question remains open: what are the long-term macroeconomic implications of future migration trends at the global level and for the countries involved, including source countries? This section uses migration pressures estimated in the baseline scenario earlier in this chapter and simulations of a general equilibrium global model to help shed light on this question.

The model includes all Group of Twenty economies individually plus other regional groups (see Online Annex 4.4 for a complete list of countries and for details on the model calibration). The simulations, conducted through 2050, account for the macroeconomic effects of both future changes in domestic populations and future migration flows between a selected subset of countries. The impact of migration is calibrated according to the following assumptions:

- Total immigration into the subset of receiving countries evolves according to the baseline scenario outlined earlier in this chapter. Figure 4.19 depicts the evolution of immigration shares in the main recipient countries.
- The labor market outcomes of immigrants are calibrated for different countries according to the available evidence. Upon arrival, immigrants have lower productivity than natives (but still higher than the productivity they would have had in the origin

[13]See Joona and Nekby (2012); Aiyar and others (2016); Hainmueller, Hangartner, and Lawrence (2016); Sarvimäki and Hämäläinen (2016); Gathmann and Keller (2018); Battisti, Giesing, and Laurentsyeva (2019); and Lochmann, Rapoport, and Speciale (2019).

Figure 4.19. Simulated Stocks of Immigrants
(Percent of total population)



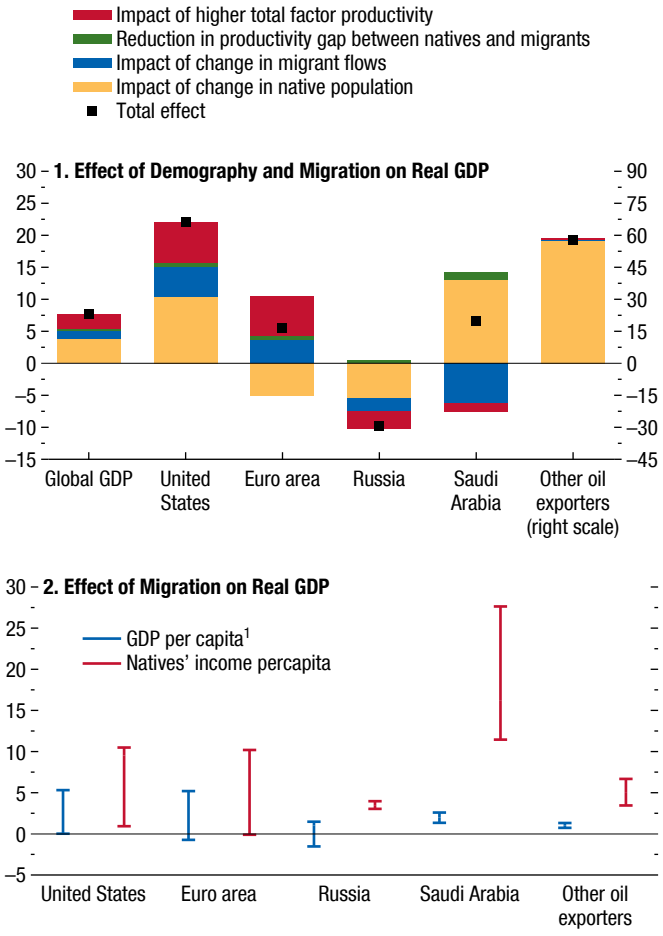
Sources: United Nations; and IMF staff estimates.
Note: Migrants are defined as the foreign-born population.

country) and, correspondingly, earn a lower wage, on average. Over time, the productivity of immigrants catches up with that of natives, and the wage gap closes within 15 years.

- Immigrants remit a fixed share of their labor income to their origin countries. They are subject to the same tax rates as natives, and they receive the same amount of transfers per capita as natives do from the government.[14]
- The model does not allow for an endogenous TFP increase after the arrival of immigrants, in contrast to the empirical findings reported earlier in this chapter. The simulations, therefore, mimic such an effect through an exogenous increase in the recipient economy's TFP. The calibration ranges from a lower bound of zero to an upper bound of a 1 percentage point increase in TFP for every additional 1 percentage point in the share of immigrant-to-total-employment ratio (as in Peri 2011b).

[14]In OECD countries, there are few differences between the benefits received by immigrants and those of native-born individuals. If anything, immigrants receive fewer benefits than do natives (OECD 2013).

Figure 4.20. Macroeconomic Effects of Migration in Recipient Countries
(Percentage points)



Source: IMF staff estimates.
[1]Net of remittances.

Panel 1 of Figure 4.20 presents the simulated effects on GDP at the global level and on the main group of migration recipient economies (all values are expressed in percentage deviations from the baseline). Native population growth increases world GDP by about 4 percent between 2020 and 2050. Abstracting from TFP and wage catch-up effects, migration flows alone (blue bars) are responsible for an additional 2 percent growth in global output. This contribution to global growth occurs because migration allows labor to move from low- to high-productivity countries. An additional, but small, contribution to global GDP comes from the gradual closing of the productivity gap between immigrants and natives (green bars),

but—more important—the positive TFP effect of immigrants (red bars) adds up to 4 percent to global growth. Looking at more disaggregated numbers, the impact on GDP is positive for the United States and the euro area, thanks to the combined effect of a larger labor force, increased investment, and potentially higher TFP. In the euro area, immigration helps to buffer the negative impact on the level of GDP from the decline in the native population. The negative effect on Russia and Saudi Arabia reflects, instead, the underlying reduction in immigration assumed for those countries.

Panel 2 of Figure 4.20 sets aside the effects of the domestic demography and focuses only on the total effect of immigration. Lower bars correspond to the case in which no TFP gains from migration are assumed, while higher bars represent the results with TFP gains. The figure reports, for each destination, the change in per capita income net of remittances sent home by immigrants and the change in per capita income of natives alone. Without TFP effects, small decreases in per capita net income are seen, especially in euro area countries. These reflect the fact that migrants—while more productive in the destination country than in their home country—are initially somewhat less productive than native workers. However, the effects turn positive, even with a relatively modest TFP increase, pointing to the importance of this type of productivity gain from migration. For the same reason, immigration does not have a large negative effect on the per capita incomes of natives and could possibly even increase those incomes substantially.

In principle, the fiscal implications of immigration may raise distributional concerns. However, immigrants are generally found to be associated with small budget surpluses or deficits of about half a percentage point of GDP (OECD 2013). In line with this conclusion, the model simulations find that, although immigrants receive lower labor income than natives and thus pay less in labor taxes, general equilibrium effects (which include an increase in capital income of natives) lead to overall small budget surpluses in destination countries, even without positive TFP effects.

What are the effects of migration on origin countries? In parallel to the rise in the GDP level in immigration countries, GDP falls in emigration economies in Europe, in the rest of the world, and in Mexico. Still, income per capita, including remittances received from abroad, increases (see also Di Giovanni, Levchenko, and Ortega 2014). The positive impact on income per capita in Mexico is particularly strong once migrants are assumed to increase TFP in destination countries. In this case, remittances from Mexican migrants rise, while trade links with North America and higher world prices for oil exports (due to the rise in global GDP) lift the Mexican economy.

The simulations presented in this section paint a generally positive picture of the macroeconomic effects of migration in destination countries. However, it is important to recognize that the analysis does not tackle the distributional implications of migration (see Box 4.1). As with the distributional effects of international trade (see the April 2019 WEO), these can be relevant and may call for policy action. The analysis also does not incorporate some potentially negative effects on origin countries. Large emigration flows, by reducing the GDP level, can contribute to debt sustainability problems. Also, the simulations assume that emigration does not decrease TFP in source countries. However, negative productivity effects on source countries (Atoyan and others 2016) could materialize as, for example, when a "brain drain" leads to the emigration of more educated individuals (Grogger and Hanson 2011). At the same time, it is also possible that, in some cases, the opportunity to emigrate might itself create incentives to accumulate human capital, even among those who end up not emigrating.[15] Migration and technological change interact along several dimensions, some of which are explored in Online Annex 4.5.

Conclusions

Migration generally improves the macroeconomic outcomes of recipient economies. The "dynamic gains" from immigration, in the form of rising TFP and investment, can be attributed to the complementarity between the skills of immigrants and natives. This chapter has found that these aggregate gains are large and quick to materialize.

Migrating is very costly, and as such, only a very small fraction of the world population migrates. While migrants are a remarkably stable share of the world

[15]On the effect of emigration on the income of natives in origin countries see Beine, Docquier, and Rapoport (2008); Docquier, Ozden, and Peri (2013); Dustmann, Frattini, and Rosso (2015); and Anelli and others (2019).

population, migration toward advanced economies has been growing rapidly and will likely continue to do so in the future. Demographic factors will play an important role in determining the size, direction, and impact of future migration. With advanced economies aging rapidly, and population growth continuing in EMDEs, migrants can play an important role in sustaining economic growth in destination economies.

EMDEs are both the origin and destination of most of the world's refugees, an especially vulnerable group of migrants. The conditions under which refugees migrate and the limited opportunities they have to participate in the labor market of their host countries substantially reduce their potential to contribute to their host economy. EMDEs are particularly exposed to migration induced by climate change. While the quantitative effect of climate change on migration across regions is unclear, in poorer countries it is likely to cause significant increases in internal and regional migration flows.

On the policy front, the positive macroeconomic impact of immigration can bring negative distributional consequences for some individuals. This can be addressed through fiscal intervention aimed at achieving a more equitable distribution of aggregate gains. Policy action should also include measures that actively magnify the positive impact of immigration on the economy. Active labor market and retraining policies, together with immigration policies aimed at better integrating migrants, are associated with improved labor market outcomes following large immigration flows. International cooperation needs to complement national policies in addressing the challenges from refugee migration, especially into EMDEs.

Box 4.1. Immigration: Labor Market Effects and the Role of Automation

Three main approaches have been used in the literature to address the challenges associated with empirically estimating the effects of immigration on natives' labor market outcomes (Peri and Sparber 2009; Peri 2014; Foged and Peri 2015; IMF 2015; National Academies of Sciences, Engineering, and Medicine 2017).

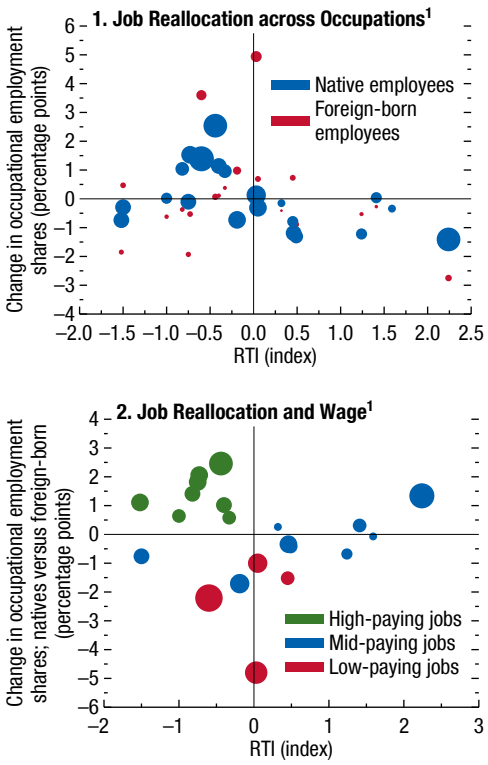
The spatial approach looks at the evolution of natives' wage and employment growth in high-immigration areas (Card 1990; Blau and Kahn 2015; Peri and Yasenov 2015; Borjas 2016). The skill cell approach estimates the effect of immigrants on the wages of other workers with similar skills (Borjas 2003). The production function approach imposes a theoretical structure on the degree of substitutability of different workers (Ottaviano and Peri 2011).

The overall conclusion from these studies is that the impact of immigration on the wages of natives is very small, especially at horizons of 10 years or more. However, the estimated effects are highly differentiated across different subgroups of natives. Low-skilled immigration affects more negatively natives who have not completed high school and possibly those belonging to disadvantaged minorities (Altonji and Card 1991; Borjas, Grogger, and Hanson 2012). Concerning the effects of high-skilled immigration, Peri, Shih, and Sparber (2015a; 2015b) estimate a positive impact on the wages and employment of both tertiary-educated and less-educated natives. Others find negative effects of high-skilled immigration within narrowly defined high-skilled groups (Borjas and Doran 2015). A still relatively unexplored topic is the distributional consequence of the interaction between immigration and automation. Automation and the corresponding loss of jobs at the middle of the income distribution lead to income polarization (Autor and Dorn 2013; Goos, Manning, and Salomons 2014). Basso, Peri, and Rahman (2017) finds that immigration into low-paying service jobs can attenuate the polarizing effects on the income of natives.

An interesting question is whether immigration encourages natives to upgrade their skills to access higher-paying occupations that benefit from automation. Data for 15 European countries are consistent with this possibility. Figure 4.1.1 shows the changes in employment shares of different occupations by the level of their routine task intensity (Autor and Dorn 2013), an index measuring the extent to which tasks are "routine" and thus potentially automatable.[1] Two patterns emerge. First, overall employment shifts away from occupations (many of which are medium-paying) with an initially high routine task intensity (Figure 4.1.1, panel 1). Second, the employment shares of immigrants relative to those of natives grows in low-paying jobs (Figure 4.1.1, panel 2, red bubbles). Instead, again in relative terms, natives upgrade their skills as their employment share in high-paying occupations with lower routine task intensities increases (green bubbles). The adjustment to automation is thus more costly for immigrants.

The authors of this box are Philipp Engler and Roberto Piazza.

Figure 4.1.1. Automation and Labor Market Adjustment



Sources: European Labor Force Survey; Goos, Manning, and Salomons (2014); and IMF staff estimates.
Note: RTI = routine task intensity.
[1]Data are for 15 European countries for 1998–2010. Bubble size represents the employment share in 2010.

Box 4.2. Immigration and Wages in Germany

Foreign labor has supported employment growth in Germany in the aftermath of the global financial crisis, with immigrants more than offsetting well-entrenched negative demographic trends. What was the impact of immigrants on wage growth in Germany? This box provides an answer to this question using both macro- and microeconomic evidence.

The German labor market underwent major reforms in the first half of the 2000s (known as the Hartz I-IV reforms), which led to a structural reduction in the unemployment rate. Once this is taken into account, wage growth in Germany is explained well by inflation expectations, productivity growth, and changes in labor market slack unrelated to immigration. This is in line with the traditional Phillips curve, and indicates that there has been no discernible residual contribution by immigration to wage growth at the macroeconomic level.

Microeconomic evidence from a large administrative panel data set from the Institut für Arbeitsmarkt- und Berufsforschung tends to confirm the outcome of the Phillips curve analysis. After controlling for a wide set of individual characteristics, the business cycle, and endogeneity effects, there is no evidence that large immigration flows during 2012–16 had dampening effects on aggregate wage growth. Controlling for composition effects (immigrants tend to earn lower wages than natives and tend to be younger and less skilled), the marginal impact of immigration on wages is estimated to be slightly positive. Competition effects, which tend to depress the wages of workers who are highly substitutable by immigrants, were present but more than offset by complementarity effects between native and immigrant workers, which tend to boost the wages of native workers who complement immigrants in production. The evidence also suggests that immigration increased wages more in the relatively higher-wage job segment, where the within-sector skills complementarity with migrants is the largest. Negative wage pressures are detected on earlier cohorts of migrants typically active in the same sectors as the new migrants. All in all, taking composition, competition, and complementarity effects into account, the analysis suggests that immigration had negligible effects on the growth of aggregate wages in Germany.

The author of this box is Jean-Marc Natal. See also Klinger and others (2019).

Box 4.3. The Impact of Migration from Venezuela on Latin America and the Caribbean

Venezuela is undergoing an economic and humanitarian crisis of unprecedented scale for a country not at war. Economic activity contracted by about 65 percent between 2013 and 2019, and extreme poverty rose from 10 percent of the population in 2014 to 85 percent in 2018.

In this context, Venezuela is experiencing one of the largest emigrations in history (Figure 4.3.1). The United Nations High Commissioner for Refugees estimates that 4.8 million Venezuelans (15 percent of the population) had emigrated by the end of 2019, with 4 million settling in other countries in Latin America and the Caribbean. Colombia received the largest number, followed by Peru, Ecuador, Chile, and Brazil. Based on current trends, the number of Venezuelan migrants could reach about 10 million in 2024, though this figure is highly uncertain.

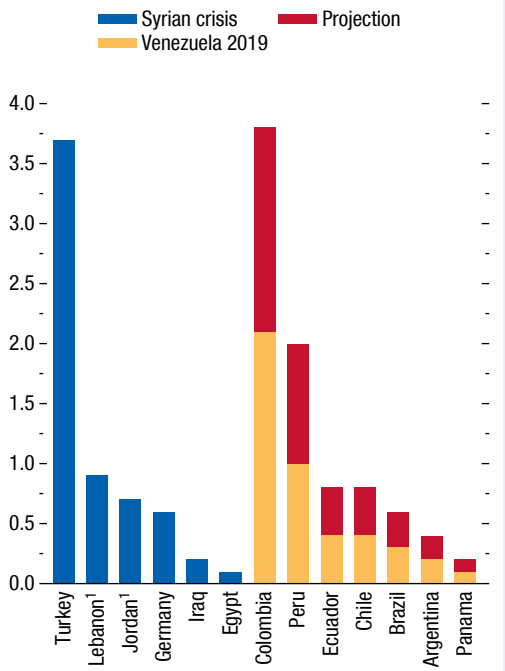
The large migration flows are expected to have mixed effects in recipient countries. In the short term, they are putting pressure on the provision of public services and labor markets. Over the medium term, because immigrants from Venezuela are relatively educated, they would also increase potential growth as the size and skills of the labor force expand. However, there are downside risks to the gains in growth if migrants do not integrate in an orderly manner.

In terms of budgetary pressures, recipient countries are providing support to migrants through humanitarian aid, health care, education, and labor market policies. Using data for Colombia for each of these categories as a benchmark, estimates suggest that public spending related to migration from Venezuela could reach about 0.5 percent of GDP in Colombia by 2024, 0.4 percent in Ecuador, 0.3 percent in Peru, and 0.1 percent in Chile. The impact on the fiscal deficit would be smaller, as tax revenue increases in line with the expanding economy.

Modeling techniques are used to estimate the impact of migration from Venezuela on growth in the recipient economies considering the age, number, and skill levels of migrants. The analysis also accounts for labor market displacements of local workers and skill mismatches, given that most migrants' skills are underutilized in the informal sector. In this setting,

The authors of this box are Jorge Alvarez, Hamid Faruqee, Emilio Fernandez-Corugedo, and Jaime Guajardo.

Figure 4.3.1. Recent Crises: Main Recipients[1]
(Millions of people)



Source: United Nations High Commissioner for Refugees (UNHCR).
Note: [1]Unofficial estimates used by authorities are greater than those the estimates by the UNHCR.

Venezuela's migration is estimated to raise GDP by 3–5 percentage points between 2017 and 2027, driven by an expansion of the labor force and investment. Migration also leads to higher fiscal and current account deficits. The impact is largest for Colombia.

A key policy challenge in the region is how to manage the transition at a time when growth has slowed, social tensions have increased, and several countries need to reduce their fiscal deficits. In the near term, facilitating the integration of migrants into the domestic labor market and easing the process to validate their professional titles or to set up businesses would maximize the impact on growth and minimize the need for public support. Looking further ahead, providing access by migrants to education and health care will be key to ensuring that they have long and productive lives.

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STATISTICAL APPENDIX

The Statistical Appendix presents historical data as well as projections. It comprises seven sections: Assumptions, What's New, Data and Conventions, Country Notes, General Features and Composition of Groups in the *World Economic Outlook* Classification, Key Data Documentation, and Statistical Tables.

The first section summarizes the assumptions underlying the estimates and projections for 2020–21. The second section briefly describes the changes to the database and statistical tables since the October 2019 *World Economic Outlook* (WEO). The third section offers a general description of the data and the conventions used for calculating country group composites. The fourth section presents selected key information for each country. The fifth section summarizes the classification of countries in the various groups presented in the WEO. The sixth section provides information on methods and reporting standards for the member countries' national account and government finance indicators included in the report.

The last, and main, section comprises the statistical tables. (Statistical Appendix A is included here; Statistical Appendix B is available online at www.imf.org/en/Publications/WEO.)

Data in these tables have been compiled on the basis of information available through April 7, 2020. The figures for 2020–21 are shown with the same degree of precision as the historical figures solely for convenience; because they are projections, the same degree of accuracy is not to be inferred.

Assumptions

Real effective *exchange rates* for the advanced economies are assumed to remain constant at their average levels measured during February 17–March 16, 2020. For 2020 and 2021 these assumptions imply average US dollar–special drawing right (SDR) conversion rates of 1.381 and 1.388, US dollar–euro conversion rates of 1.115 and 1.126, and yen–US dollar conversion rates of 106.7 and 104.1, respectively.

It is assumed that the *price of oil* will average $35.61 a barrel in 2020 and $37.87 a barrel in 2021.

National authorities' established *policies* are assumed to be maintained. Box A1 describes the more specific policy assumptions underlying the projections for selected economies.

With regard to *interest rates*, it is assumed that the London interbank offered rate (LIBOR) on six-month US dollar deposits will average 0.7 percent in 2020 and 0.6 percent in 2021, the LIBOR on three-month euro deposits will average –0.4 percent in 2020 and 2021, and the LIBOR on six-month yen deposits will average –0.1 percent in 2020 and 2021.

As a reminder, in regard to the *introduction of the euro*, on December 31, 1998, the Council of the European Union decided that, effective January 1, 1999, the irrevocably fixed conversion rates between the euro and currencies of the member countries adopting the euro are as described in Box 5.4 of the October 1998 WEO. See Box 5.4 of the October 1998 WEO as well for details on how the conversion rates were established.

1 euro	=	13.7603	Austrian schillings
	=	40.3399	Belgian francs
	=	0.585274	Cyprus pound[1]
	=	1.95583	Deutsche marks
	=	15.6466	Estonian krooni[2]
	=	5.94573	Finnish markkaa
	=	6.55957	French francs
	=	340.750	Greek drachmas[3]
	=	0.787564	Irish pound
	=	1,936.27	Italian lire
	=	0.702804	Latvian lat[4]
	=	3.45280	Lithuanian litas[5]
	=	40.3399	Luxembourg francs
	=	0.42930	Maltese lira[1]
	=	2.20371	Netherlands guilders
	=	200.482	Portuguese escudos
	=	30.1260	Slovak koruna[6]
	=	239.640	Slovenian tolars[7]
	=	166.386	Spanish pesetas

[1]Established on January 1, 2008.
[2]Established on January 1, 2011.
[3]Established on January 1, 2001.
[4]Established on January 1, 2014.
[5]Established on January 1, 2015.
[6]Established on January 1, 2009.
[7]Established on January 1, 2007.

What's New

- Due to the high level of uncertainty in current global economic conditions, the April 2020 WEO database and statistical tables contain only these indicators: real GDP growth, consumer price index, current account balance, unemployment, per capita GDP growth, and fiscal balance. Projections for these indicators are provided only through 2021.
- The Timorese authorities have revised the compilation methodology of GDP and, under the new classification, oil and gas revenue before September 2019, which was previously classified as export in national accounts, is now classified as primary income.
- As of February 1, 2020 the United Kingdom is no longer part of the European Union. Data for the United Kingdom are no longer included in the European Union composites.

Data and Conventions

Data and projections for 194 economies form the statistical basis of the WEO database. The data are maintained jointly by the IMF's Research Department and regional departments, with the latter regularly updating country projections based on consistent global assumptions.

Although national statistical agencies are the ultimate providers of historical data and definitions, international organizations are also involved in statistical issues, with the objective of harmonizing methodologies for the compilation of national statistics, including analytical frameworks, concepts, definitions, classifications, and valuation procedures used in the production of economic statistics. The WEO database reflects information from both national source agencies and international organizations.

Most countries' macroeconomic data as presented in the WEO conform broadly to the 2008 version of the *System of National Accounts* (2008 SNA). The IMF's sector statistical standards—the sixth edition of the *Balance of Payments and International Investment Position Manual* (BPM6), the *Monetary and Financial Statistics Manual and Compilation Guide* (MFSMCG), and the *Government Finance Statistics Manual 2014* (GFSM 2014)—have been or are being aligned with the SNA 2008. These standards reflect the IMF's special interest in countries' external positions, financial sector stability, and public sector fiscal positions. The process of adapting country data to the new standards begins in earnest when the manuals are released. However, full concordance with the manuals is ultimately dependent on the provision by national statistical compilers of revised country data; hence, the WEO estimates are only partly adapted to these manuals. Nonetheless, for many countries, conversion to the updated standards will have only a small impact on major balances and aggregates. Many other countries have partly adopted the latest standards and will continue implementation over a period of years.[1]

Composite data for country groups in the WEO are either sums or weighted averages of data for individual countries. Unless noted otherwise, multiyear averages of growth rates are expressed as compound annual rates of change.[2] Arithmetically weighted averages are used for all data for the emerging market and developing economies group—except data on inflation, for which geometric averages are used. The following conventions apply:

Composites for data relating to the domestic economy, whether growth rates or ratios, are weighted by GDP valued at purchasing power parity as a share of total world or group GDP.[3] Annual inflation rates are simple percentage changes from the previous years, except in the case of emerging market and developing economies, for which the rates are based on logarithmic differences.

Composites for real GDP per capita in *purchasing power parity* terms are sums of individual country data after conversion to the international dollar in the years indicated.

[1] Many countries are implementing the SNA 2008 or European System of National and Regional Accounts (ESA) 2010, and a few countries use versions of the SNA older than that from 1993. A similar adoption pattern is expected for the BPM6 and GFSM 2014. Please refer to Table G, which lists the statistical standards each country adheres to.

[2] Averages for real GDP, inflation, GDP per capita, and commodity prices are calculated based on the compound annual rate of change, except in the case of the unemployment rate, which is based on the simple arithmetic average.

[3] See "Revised Purchasing Power Parity Weights" in the July 2014 *WEO Update* for a summary of the revised purchasing-power-parity-based weights as well as Box A2 of the April 2004 WEO and Annex IV of the May 1993 WEO. See also Anne-Marie Gulde and Marianne Schulze-Ghattas, "Purchasing Power Parity Based Weights for the *World Economic Outlook*," in *Staff Studies for the World Economic Outlook* (Washington, DC: International Monetary Fund, December 1993), 106–23.

Unless noted otherwise, composites for all sectors for the euro area are corrected for reporting discrepancies in intra-area transactions. Unadjusted annual GDP data are used for the euro area and for the majority of individual countries, except for Cyprus, Ireland, Portugal, and Spain, which report calendar-adjusted data. For data prior to 1999, data aggregations apply 1995 European currency unit exchange rates.

Composites for fiscal data are sums of individual country data after conversion to US dollars at the average market exchange rates in the years indicated.

Composite unemployment rates are weighted by labor force as a share of group labor force.

Composites relating to external sector statistics are sums of individual country data after conversion to US dollars at the average market exchange rates in the years indicated for balance of payments data.

Composites of changes in foreign trade volumes and prices, however, are arithmetic averages of percent changes for individual countries weighted by the US dollar value of exports or imports as a share of total world or group exports or imports (in the preceding year).

Unless noted otherwise, group composites are computed if 90 percent or more of the share of group weights is represented.

Data refer to calendar years, except in the case of a few countries that use fiscal years; Table F lists the economies with exceptional reporting periods for national accounts and government finance data for each country.

For some countries, the figures for 2019 and earlier are based on estimates rather than actual outturns; Table G lists the latest actual outturns for the indicators in the national accounts, prices, government finance, and balance of payments indicators for each country.

Country Notes

For *Argentina*, fiscal, external debt and financing variables are excluded from publication for 2020–21 as these are to a large extent linked to the ongoing debt restructuring. Regarding historical data, the consumer price data for Argentina before December 2013 reflect the consumer price index (CPI) for the Greater Buenos Aires Area (CPI-GBA), while from December 2013 to October 2015 the data reflect the national CPI (IPCNu). The government that took office in December 2015 discontinued the IPCNu, stating that it was flawed, and released a new CPI for the Greater Buenos Aires Area on June 15, 2016 (a new national CPI has been disseminated starting in June 2017). At its November 9, 2016, meeting, the IMF Executive Board considered the new CPI series to be in line with international standards and lifted the declaration of censure issued in 2013. Given the differences in geographical coverage, weights, sampling, and methodology of these series, the average CPI inflation for 2014, 2015, and 2016 and end-of-period inflation for 2015 and 2016 are not reported in the April 2020 WEO. Also, Argentina's authorities discontinued the publication of labor market data in December 2015 and released new series starting in the second quarter of 2016.

For *Belarus*, projections are based on preliminary assumptions, which are yet to be formally agreed between Belarus and Russia, about parameters of a bilateral agreement on Belarus imports of crude oil.

The fiscal series for the *Dominican Republic* have the following coverage: public debt, debt service and the cyclically-adjusted/structural balances are for the consolidated public sector (which includes central government, the rest of the nonfinancial public sector, and the central bank); and the remaining fiscal series are for the central government.

The fiscal data for *Ecuador* reflect net lending/borrowing for the nonfinancial public sector. Ecuadorian authorities, in the context of the Extended Fund Facility approved in March of 2019 and with technical support from IMF staff, are undertaking revisions of the historical fiscal data for the net lending/borrowing of the nonfinancial public sector, with the view of correcting recently identified statistical errors, mostly in the recording of revenues and expenditures of local governments. Fiscal data reported for 2018 and 2019 reflect the corrected series, while the data for earlier years are still under revision and will be corrected in subsequent WEO releases as the authorities proceed with the corrections in the earlier years, going as far back as 2012. The authorities are also working on reconciling historical revenue and expenditure data with financing.

India's real GDP growth rates are calculated as per national accounts: for 1998 to 2011, with base year 2004/05 and, thereafter, with base year 2011/12.

For *Lebanon*, projections for 2021 are omitted due to an unusually high degree of uncertainty.

Against the backdrop of a civil war and weak capacity, the reliability of *Libya's* data, especially medium-term projections, is low.

Data for *Syria* are excluded from 2011 onward because of the uncertain political situation.

Ukraine's revised national accounts data are available beginning in 2000 and exclude Crimea and Sevastopol from 2010.

Starting from October 2018 *Uruguay*'s public pension system has been receiving transfers in the context of a new law that compensates persons affected by the creation of the mixed pension system. These funds are recorded as revenues, consistent with the IMF's methodology. Therefore, data and projections for 2018–22 are affected by these transfers, which amounted to 1.3 percent of GDP in 2018 and are projected to be 1.2 percent of GDP in 2019, 0.9 percent of GDP in 2020, 0.4 percent of GDP in 2021, 0.2 percent of GDP in 2022, and 0.0 percent of GDP thereafter. Please see IMF Country Report 19/64 for further details.[4] The disclaimer about the public pension system applies only to the revenues and net lending/borrowing series.

The coverage of the fiscal data for *Uruguay* was changed from consolidated public sector to nonfinancial public sector with the October 2019 WEO. In Uruguay, nonfinancial public sector coverage includes central government, local government, social security funds, nonfinancial public corporations, and Banco de Seguros del Estado. Historical data were also revised accordingly. Under this narrower fiscal perimeter—which excludes the central bank—assets and liabilities held by the nonfinancial public sector where the counterpart is the central bank are not netted out in debt figures. In this context, capitalization bonds issued in the past by the government to the central bank are now part of the nonfinancial public sector debt. Gross and net debt estimates for 2008–11 are preliminary.

Projecting the economic outlook in *Venezuela*, including assessing past and current economic developments as the basis for the projections, is complicated by the lack of discussions with the authorities (the last Article IV consultation took place in 2004), incomplete understanding of the reported data, and difficulties in interpreting certain reported economic indicators given economic developments. The fiscal accounts include the budgetary central government; social security; FOGADE (insurance deposit institution); and a sample of public enterprises, including Petróleos de Venezuela, S.A. (PDVSA); and data for 2018–19 are IMF staff estimates. The effects of hyperinflation and the paucity of reported data mean that the IMF staff's projected macroeconomic indicators need to be interpreted with caution. For example, nominal GDP is estimated assuming the GDP deflator rises in line with the IMF staff's projection of average inflation. Public external debt in relation to GDP is projected using the IMF staff's estimate of the average exchange rate for the year. Wide uncertainty surrounds these projections. *Venezuela*'s consumer prices (CPI) are excluded from all WEO group composites.

In 2019 *Zimbabwe* authorities introduced the RTGS dollar, later renamed the Zimbabwe dollar, and are in the process of redenominating their national accounts statistics. Current data are subject to revision. The Zimbabwe dollar previously ceased circulating in 2009 and, between 2009–19, Zimbabwe operated under a multi-currency regime with the US dollar as the unit of account.

Classification of Countries

Summary of the Country Classification

The country classification in the WEO divides the world into two major groups: advanced economies and emerging market and developing economies.[5] This classification is not based on strict criteria, economic or otherwise, and it has evolved over time. The objective is to facilitate analysis by providing a reasonably meaningful method of organizing data. Table A provides an overview of the country classification, showing the number of countries in each group by region and summarizing some key indicators of their relative size (GDP valued at purchasing power parity, total exports of goods and services, and population).

Some countries remain outside the country classification and therefore are not included in the analysis. Cuba and the Democratic People's Republic of Korea are examples of countries that are not IMF members, and the IMF therefore does not monitor their economies.

[4] International Monetary Fund, *Uruguay: Staff Report for the 2018 Article IV Consultation,* Country Report 19/64 (Washington: IMF, 2019).

[5] As used here, the terms "country" and "economy" do not always refer to a territorial entity that is a state as understood by international law and practice. Some territorial entities included here are not states, although their statistical data are maintained on a separate and independent basis.

General Features and Composition of Groups in the *World Economic Outlook* Classification

Advanced Economies

Table B lists the 39 advanced economies. The seven largest in terms of GDP based on market exchange rates—the United States, Japan, Germany, France, Italy, the United Kingdom, and Canada—constitute the subgroup of major advanced economies, often referred to as the Group of Seven. The members of the euro area are also distinguished as a subgroup. Composite data shown in the tables for the euro area cover the current members for all years, even though the membership has increased over time.

Table C lists the member countries of the European Union, not all of which are classified as advanced economies in the WEO.

Emerging Market and Developing Economies

The group of emerging market and developing economies (155) includes all those that are not classified as advanced economies.

The regional breakdowns of emerging market and developing economies are emerging and developing Asia; emerging and developing Europe (sometimes also referred to as "central and eastern Europe"); Latin America and the Caribbean; Middle East and Central Asia (which comprises the regional subgroups Caucasus and Central Asia; and Middle East, North Africa, Afghanistan and Pakistan); and sub-Saharan Africa.

Emerging market and developing economies are also classified according to *analytical criteria* that reflect the composition of export earnings and a distinction between net creditor and net debtor economies. Tables D and E show the detailed composition of emerging market and developing economies in the regional and analytical groups.

The analytical criterion *source of export earnings* distinguishes between the categories *fuel* (Standard International Trade Classification [SITC] 3) and *nonfuel* and then focuses on *nonfuel primary products* (SITCs 0, 1, 2, 4, and 68). Economies are categorized into one of these groups if their main source of export earnings exceeded 50 percent of total exports on average between 2014 and 2018.

The financial criteria focus on *net creditor economies, net debtor economies, heavily indebted poor countries* (HIPCs), and *low-income developing countries* (LIDCs). Economies are categorized as net debtors when their latest net international investment position, where available, was less than zero or their current account balance accumulations from 1972 (or earliest available data) to 2018 were negative. Net debtor economies are further differentiated on the basis of *experience with debt servicing*.[6]

The HIPC group comprises the countries that are or have been considered by the IMF and the World Bank for participation in their debt initiative known as the HIPC Initiative, which aims to reduce the external debt burdens of all the eligible HIPCs to a "sustainable" level in a reasonably short period of time.[7] Many of these countries have already benefited from debt relief and have graduated from the initiative.

The LIDCs are countries that have per capita income levels below a certain threshold (set at $2,700 in 2016 as measured by the World Bank's Atlas method), structural features consistent with limited development and structural transformation, and external financial linkages insufficiently close for them to be widely seen as emerging market economies.

[6] During 2014–18 23 economies incurred external payments arrears or entered into official or commercial bank debt-rescheduling agreements. This group is referred to as *economies with arrears and/or rescheduling during 2014–18*.

[7] See David Andrews, Anthony R. Boote, Syed S. Rizavi, and Sukwinder Singh. "Debt Relief for Low-Income Countries: The Enhanced HIPC Initiative." IMF Pamphlet Series 51 (Washington, DC: International Monetary Fund, November 1999).

Table A. Classification by *World Economic Outlook* Groups and Their Shares in Aggregate GDP, Exports of Goods and Services, and Population, 2019[1]

(Percent of total for group or world)

	Number of Economies	GDP		Exports of Goods and Services		Population	
		Advanced Economies	World	Advanced Economies	World	Advanced Economies	World
Advanced Economies	**39**	**100.0**	**40.3**	**100.0**	**63.0**	**100.0**	**14.2**
United States		37.4	15.1	16.2	10.2	30.7	4.3
Euro Area	19	27.8	11.2	41.6	26.2	31.7	4.5
Germany		7.8	3.1	11.7	7.4	7.8	1.1
France		5.3	2.2	5.7	3.6	6.0	0.9
Italy		4.3	1.7	4.1	2.6	5.6	0.8
Spain		3.4	1.4	3.2	2.0	4.3	0.6
Japan		10.0	4.0	5.9	3.7	11.8	1.7
United Kingdom		5.5	2.2	5.8	3.6	6.2	0.9
Canada		3.3	1.3	3.6	2.2	3.5	0.5
Other Advanced Economies	16	16.0	6.5	27.0	17.0	16.1	2.3
Memorandum							
Major Advanced Economies	7	73.6	29.7	53.0	33.4	71.6	10.2
		Emerging Market and Developing Economies	World	Emerging Market and Developing Economies	World	Emerging Market and Developing Economies	World
Emerging Market and Developing Economies	**155**	**100.0**	**59.7**	**100.0**	**37.0**	**100.0**	**85.8**
Regional Groups							
Emerging and Developing Asia	30	57.2	34.1	49.0	18.1	56.0	48.1
China		32.2	19.2	29.2	10.8	21.6	18.5
India		13.0	7.8	5.7	2.1	20.8	17.9
ASEAN-5	5	9.7	5.8	12.6	4.7	8.8	7.6
Emerging and Developing Europe	16	12.0	7.1	16.9	6.2	5.9	5.0
Russia		5.2	3.1	5.3	2.0	2.3	1.9
Latin America and the Caribbean	33	12.1	7.2	13.7	5.1	9.7	8.3
Brazil		4.1	2.5	2.9	1.1	3.2	2.8
Mexico		3.1	1.8	5.4	2.0	2.0	1.7
Middle East and Central Asia	31	13.5	8.1	15.9	5.9	12.4	10.7
Saudi Arabia		2.2	1.3	3.2	1.2	0.5	0.5
Sub-Saharan Africa	45	5.2	3.1	4.5	1.7	16.0	13.7
Nigeria		1.4	0.9	0.8	0.3	3.1	2.7
South Africa		0.9	0.6	1.2	0.4	0.9	0.8
Analytical Groups[2]							
By Source of Export Earnings							
Fuel	27	16.4	9.8	20.7	7.7	11.7	10.1
Nonfuel	127	83.6	49.9	79.3	29.3	88.3	75.8
Of Which, Primary Products	35	5.0	3.0	5.2	1.9	9.1	7.8
By External Financing Source							
Net Debtor Economies	119	51.6	30.8	50.3	18.6	68.3	58.6
Net Debtor Economies by Debt-Servicing Experience							
Economies with Arrears and/or Rescheduling during 2014–18	23	3.2	1.9	2.5	0.9	7.1	6.1
Other Groups							
Heavily Indebted Poor Countries	39	2.6	1.6	2.0	0.7	12.0	10.3
Low-Income Developing Countries	59	7.7	4.6	7.4	2.7	23.3	20.0

[1]The GDP shares are based on the purchasing-power-parity valuation of economies' GDP. The number of economies comprising each group reflects those for which data are included in the group aggregates.

[2]Syria is omitted from the source of export earnings, and South Sudan and Syria are omitted from the net external position group composites because of insufficient data.

Table B. Advanced Economies by Subgroup

Major Currency Areas		
United States		
Euro Area		
Japan		
Euro Area		
Austria	Greece	Netherlands
Belgium	Ireland	Portugal
Cyprus	Italy	Slovak Republic
Estonia	Latvia	Slovenia
Finland	Lithuania	Spain
France	Luxembourg	
Germany	Malta	
Major Advanced Economies		
Canada	Italy	United States
France	Japan	
Germany	United Kingdom	
Other Advanced Economies		
Australia	Korea	Singapore
Czech Republic	Macao SAR[2]	Sweden
Denmark	New Zealand	Switzerland
Hong Kong SAR[1]	Norway	Taiwan Province of China
Iceland	Puerto Rico	
Israel	San Marino	

[1]On July 1, 1997, Hong Kong was returned to the People's Republic of China and became a Special Administrative Region of China.

[2]On December 20, 1999, Macao was returned to the People's Republic of China and became a Special Administrative Region of China.

Table C. European Union

Austria	France	Malta
Belgium	Germany	Netherlands
Bulgaria	Greece	Poland
Croatia	Hungary	Portugal
Cyprus	Ireland	Romania
Czech Republic	Italy	Slovak Republic
Denmark	Latvia	Slovenia
Estonia	Lithuania	Spain
Finland	Luxembourg	Sweden

Table D. Emerging Market and Developing Economies by Region and Main Source of Export Earnings

	Fuel	Nonfuel Primary Products
Emerging and Developing Asia		
	Brunei Darussalam	Kiribati
	Timor-Leste	Lao P.D.R.
		Marshall Islands
		Papua New Guinea
		Solomon Islands
		Tuvalu
Emerging and Developing Europe		
	Russia	
Latin America and the Caribbean		
	Ecuador	Argentina
	Trinidad and Tobago	Bolivia
	Venezuela	Chile
		Guyana
		Paraguay
		Peru
		Suriname
		Uruguay
Middle East and Central Asia		
	Algeria	Afghanistan
	Azerbaijan	Mauritania
	Bahrain	Somalia
	Iran	Sudan
	Iraq	Tajikistan
	Kazakhstan	Uzbekistan
	Kuwait	
	Libya	
	Oman	
	Qatar	
	Saudi Arabia	
	Turkmenistan	
	United Arab Emirates	
	Yemen	
Sub-Saharan Africa		
	Angola	Burkina Faso
	Chad	Burundi
	Republic of Congo	Central African Republic
	Equatorial Guinea	Democratic Republic of the Congo
	Gabon	Côte d'Ivoire
	Nigeria	Eritrea
	South Sudan	Guinea
		Guinea-Bissau
		Liberia
		Malawi
		Mali
		Sierra Leone
		South Africa
		Zambia
		Zimbabwe

Table E. Emerging Market and Developing Economies by Region, Net External Position, and Status as Heavily Indebted Poor Countries and Low-Income Developing Countries

	Net External Position[1]	Heavily Indebted Poor Countries[2]	Low-Income Developing Countries
Emerging and Developing Asia			
Bangladesh	*		*
Bhutan	*		*
Brunei Darussalam	•		
Cambodia	*		*
China	•		
Fiji	*		
India	*		
Indonesia	*		
Kiribati	•		*
Lao P.D.R.	*		*
Malaysia	*		
Maldives	*		
Marshall Islands	*		
Micronesia	•		
Mongolia	*		
Myanmar	*		*
Nauru	*		
Nepal	•		*
Palau	*		
Papua New Guinea	•		*
Philippines	*		
Samoa	*		
Solomon Islands	•		*
Sri Lanka	*		
Thailand	*		
Timor-Leste	•		*
Tonga	*		
Tuvalu	•		
Vanuatu	*		
Vietnam	*		*
Emerging and Developing Europe			
Albania	*		
Belarus	*		
Bosnia and Herzegovina	*		
Bulgaria	*		
Croatia	*		
Hungary	*		
Kosovo	*		
Moldova	*		*
Montenegro	*		
North Macedonia	*		
Poland	*		
Romania	*		
Russia	•		
Serbia	*		
Turkey	*		
Ukraine	*		
Latin America and the Caribbean			
Antigua and Barbuda	*		
Argentina	•		
Aruba	*		
The Bahamas	*		
Barbados	*		
Belize	*		
Bolivia	*	•	
Brazil	*		
Chile	*		
Colombia	*		
Costa Rica	*		
Dominica	•		
Dominican Republic	*		
Ecuador	*		
El Salvador	*		
Grenada	*		
Guatemala	*		
Guyana	*	•	
Haiti	*	•	*
Honduras	*	•	*
Jamaica	*		
Mexico	*		
Nicaragua	*	•	*
Panama	*		
Paraguay	*		
Peru	*		
St. Kitts and Nevis	*		
St. Lucia	*		
St. Vincent and the Grenadines	*		
Suriname	*		
Trinidad and Tobago	•		
Uruguay	*		
Venezuela	•		

Table E. Emerging Market and Developing Economies by Region, Net External Position, and Status as Heavily Indebted Poor Countries and Low-Income Developing Countries *(continued)*

	Net External Position[1]	Heavily Indebted Poor Countries[2]	Low-Income Developing Countries
Middle East and Central Asia			
Afghanistan	•	•	*
Algeria	•		
Armenia	*		
Azerbaijan	•		
Bahrain	•		
Djibouti	*		*
Egypt	*		
Georgia	*		
Iran	•		
Iraq	•		
Jordan	*		
Kazakhstan	*		
Kuwait	•		
Kyrgyz Republic	*		*
Lebanon	*		
Libya	•		
Mauritania	*	•	*
Morocco	*		
Oman	*		
Pakistan	*		
Qatar	•		
Saudi Arabia	•		
Somalia	*	*	*
Sudan	*	*	*
Syria[3]	. . .		
Tajikistan	*		*
Tunisia	*		
Turkmenistan	•		
United Arab Emirates	•		
Uzbekistan	•		*
Yemen	*		*
Sub-Saharan Africa			
Angola	*		
Benin	*	•	*
Botswana	•		
Burkina Faso	*	•	*
Burundi	*	•	*
Cabo Verde	*		
Cameroon	*	•	*
Central African Republic	*	•	*
Chad	*	•	*
Comoros	*	•	*
Democratic Republic of the Congo	*	•	*
Republic of Congo	*	•	*
Côte d'Ivoire	*	•	*
Equatorial Guinea	•		
Eritrea	•	*	*
Eswatini	•		
Ethiopia	*	•	*
Gabon	•		
The Gambia	*	•	*
Ghana	*	•	*
Guinea	*	•	*
Guinea-Bissau	*	•	*
Kenya	*		*
Lesotho	*		*
Liberia	*	•	*
Madagascar	*	•	*
Malawi	*	•	*
Mali	*	•	*
Mauritius	•		
Mozambique	*	•	*
Namibia	*		
Niger	*	•	*
Nigeria	*		*
Rwanda	*	•	*
São Tomé and Príncipe	*	•	*
Senegal	*	•	*
Seychelles	*		
Sierra Leone	*	•	*
South Africa	•		
South Sudan[3]	. . .		*
Tanzania	*	•	*
Togo	*	•	*
Uganda	*	•	*
Zambia	*	•	*
Zimbabwe	*		*

[1]Dot (star) indicates that the country is a net creditor (net debtor).
[2]Dot instead of star indicates that the country has reached the completion point, which allows it to receive the full debt relief committed to at the decision point.
[3]South Sudan and Syria are omitted from the net external position group composite for lack of a fully developed database.

Table F. Economies with Exceptional Reporting Periods[1]

	National Accounts	Government Finance
The Bahamas		Jul/Jun
Barbados		Apr/Mar
Bhutan	Jul/Jun	Jul/Jun
Botswana		Apr/Mar
Dominica		Jul/Jun
Egypt	Jul/Jun	Jul/Jun
Eswatini		Apr/Mar
Ethiopia	Jul/Jun	Jul/Jun
Haiti	Oct/Sep	Oct/Sep
Hong Kong SAR		Apr/Mar
India	Apr/Mar	Apr/Mar
Iran	Apr/Mar	Apr/Mar
Jamaica		Apr/Mar
Lesotho	Apr/Mar	Apr/Mar
Malawi		Jul/Jun
Marshall Islands	Oct/Sep	Oct/Sep
Mauritius		Jul/Jun
Micronesia	Oct/Sep	Oct/Sep
Myanmar	Oct/Sep	Oct/Sep
Namibia		Apr/Mar
Nauru	Jul/Jun	Jul/Jun
Nepal	Aug/Jul	Aug/Jul
Pakistan	Jul/Jun	Jul/Jun
Palau	Oct/Sep	Oct/Sep
Puerto Rico	Jul/Jun	Jul/Jun
Rwanda		Jul/Jun
St. Lucia		Apr/Mar
Samoa	Jul/Jun	Jul/Jun
Singapore		Apr/Mar
Thailand		Oct/Sep
Trinidad and Tobago		Oct/Sep

[1]Unless noted otherwise, all data refer to calendar years.

Table G. Key Data Documentation

		National Accounts					Prices (CPI)	
Country	Currency	Historical Data Source[1]	Latest Actual Annual Data	Base Year[2]	System of National Accounts	Use of Chain-Weighted Methodology[3]	Historical Data Source[1]	Latest Actual Annual Data
Afghanistan	Afghan afghani	NSO	2018	2002/03	SNA 1993		NSO	2018
Albania	Albanian lek	IMF staff	2018	1996	ESA 2010	From 1996	NSO	2019
Algeria	Algerian dinar	NSO	2019	2001	SNA 1993	From 2005	NSO	2019
Angola	Angolan kwanza	NSO and MEP	2018	2002	ESA 1995		NSO	2019
Antigua and Barbuda	Eastern Caribbean dollar	CB	2018	2006[6]	SNA 1993		CB	2018
Argentina	Argentine peso	NSO	2018	2004	SNA 2008		NSO	2018
Armenia	Armenian dram	NSO	2018	2005	SNA 2008		NSO	2018
Aruba	Aruban Florin	NSO	2017	2000	SNA 1993	From 2000	NSO	2019
Australia	Australian dollar	NSO	2019	2017/18	SNA 2008	From 1980	NSO	2019
Austria	Euro	NSO	2019	2015	ESA 2010	From 1995	NSO	2019
Azerbaijan	Azerbaijan manat	NSO	2018	2005	SNA 1993	From 1994	NSO	2018
The Bahamas	Bahamian dollar	NSO	2018	2012	SNA 1993		NSO	2018
Bahrain	Bahrain dinar	NSO	2018	2010	SNA 2008		NSO	2019
Bangladesh	Bangladesh taka	NSO	2018	2005/06	SNA 1993		NSO	2018
Barbados	Barbados dollar	NSO and CB	2018	2010	SNA 1993		NSO	2018
Belarus	Belarusian ruble	NSO	2018	2014	SNA 2008	From 2005	NSO	2019
Belgium	Euro	CB	2019	2015	ESA 2010	From 1995	CB	2019
Belize	Belize dollar	NSO	2019	2000	SNA 1993		NSO	2019
Benin	CFA franc	NSO	2018	2015	SNA 1993		NSO	2019
Bhutan	Bhutanese ngultrum	NSO	2018/19	2000/01[6]	SNA 1993		CB	2018/19
Bolivia	Bolivian boliviano	NSO	2018	1990	SNA 2008		NSO	2019
Bosnia and Herzegovina	Bosnian convertible marka	NSO	2018	2010	ESA 2010	From 2000	NSO	2018
Botswana	Botswana pula	NSO	2018	2006	SNA 1993		NSO	2019
Brazil	Brazilian real	NSO	2019	1995	SNA 2008		NSO	2019
Brunei Darussalam	Brunei dollar	NSO and GAD	2019	2010	SNA 1993		NSO and GAD	2018
Bulgaria	Bulgarian lev	NSO	2019	2015	ESA 2010	From 1996	NSO	2019
Burkina Faso	CFA franc	NSO and MEP	2018	2015	SNA 1993		NSO	2019
Burundi	Burundi franc	NSO	2015	2005	SNA 1993		NSO	2018
Cabo Verde	Cabo Verdean escudo	NSO	2018	2007	SNA 2008	From 2011	NSO	2019
Cambodia	Cambodian riel	NSO	2018	2000	SNA 1993		NSO	2018
Cameroon	CFA franc	NSO	2018	2005	SNA 2008		NSO	2018
Canada	Canadian dollar	NSO	2019	2012	SNA 2008	From 1980	NSO	2019
Central African Republic	CFA franc	NSO	2017	2005	SNA 1993		NSO	2018
Chad	CFA franc	CB	2017	2005	SNA 1993		NSO	2019
Chile	Chilean peso	CB	2019	2013[6]	SNA 2008	From 2003	NSO	2019
China	Chinese yuan	NSO	2019	2015	SNA 2008		NSO	2018
Colombia	Colombian peso	NSO	2019	2015	SNA 1993	From 2005	NSO	2019
Comoros	Comorian franc	MEP	2018	2007	. . .	From 2007	NSO	2018
Democratic Republic of the Congo	Congolese franc	NSO	2018	2005	SNA 1993		CB	2018
Republic of Congo	CFA franc	NSO	2017	1990	SNA 1993		NSO	2018
Costa Rica	Costa Rican colón	CB	2018	2012	SNA 2008		CB	2019

Table G. Key Data Documentation *(continued)*

	Government Finance					Balance of Payments		
Country	Historical Data Source[1]	Latest Actual Annual Data	Statistics Manual in Use at Source	Subsectors Coverage[4]	Accounting Practice[5]	Historical Data Source[1]	Latest Actual Annual Data	Statistics Manual in Use at Source
Afghanistan	MoF	2018	2001	CG	C	NSO, MoF, and CB	2018	BPM 6
Albania	IMF staff	2018	1986	CG,LG,SS,MPC, NFPC	. . .	CB	2018	BPM 6
Algeria	MoF	2019	1986	CG	C	CB	2019	BPM 6
Angola	MoF	2018	2001	CG,LG	. . .	CB	2018	BPM 6
Antigua and Barbuda	MoF	2018	2001	CG	C	CB	2017	BPM 6
Argentina	MEP	2018	1986	CG,SG,SS	C	NSO	2018	BPM 6
Armenia	MoF	2018	2001	CG	C	CB	2018	BPM 6
Aruba	MoF	2018	2001	CG	Mixed	CB	2018	BPM 5
Australia	MoF	2017/18	2014	CG,SG,LG,TG	A	NSO	2019	BPM 6
Austria	NSO	2019	2014	CG,SG,LG,SS	A	CB	2019	BPM 6
Azerbaijan	MoF	2018	. . .	CG	C	CB	2018	BPM 6
The Bahamas	MoF	2018/19	2014	CG	C	CB	2018	BPM 5
Bahrain	MoF	2018	2001	CG	C	CB	2018	BPM 6
Bangladesh	MoF	2018	. . .	CG	C	CB	2018	BPM 6
Barbados	MoF	2018/19	1986	BCG	C	CB	2018	BPM 5
Belarus	MoF	2018	2001	CG,LG,SS	C	CB	2018	BPM 6
Belgium	CB	2018	ESA 2010	CG,SG,LG,SS	A	CB	2019	BPM 6
Belize	MoF	2019	1986	CG,MPC	Mixed	CB	2019	BPM 6
Benin	MoF	2019	1986	CG	C	CB	2017	BPM 6
Bhutan	MoF	2018/19	1986	CG	C	CB	2018/19	BPM 6
Bolivia	MoF	2018	2001	CG,LG,SS,NMPC, NFPC	C	CB	2018	BPM 6
Bosnia and Herzegovina	MoF	2018	2001	CG,SG,LG,SS	Mixed	CB	2018	BPM 6
Botswana	MoF	2018/19	1986	CG	C	CB	2018	BPM 6
Brazil	MoF	2019	2001	CG,SG,LG,SS, MPC,NFPC	C	CB	2019	BPM 6
Brunei Darussalam	MoF	2019	. . .	CG, BCG	C	NSO, MEP, and GAD	2018	BPM 6
Bulgaria	MoF	2019	2001	CG,LG,SS	C	CB	2019	BPM 6
Burkina Faso	MoF	2018	2001	CG	CB	CB	2018	BPM 6
Burundi	MoF	2015	2001	CG	A	CB	2016	BPM 6
Cabo Verde	MoF	2018	2001	CG	A	NSO	2018	BPM 6
Cambodia	MoF	2018	2001	CG,LG	Mixed	CB	2018	BPM 5
Cameroon	MoF	2018	2001	CG,NFPC	C	MoF	2018	BPM 6
Canada	MoF	2019	2001	CG,SG,LG,SS,other	A	NSO	2019	BPM 6
Central African Republic	MoF	2018	2001	CG	C	CB	2017	BPM 5
Chad	MoF	2018	1986	CG,NFPC	C	CB	2013	BPM 6
Chile	MoF	2018	2001	CG,LG	A	CB	2019	BPM 6
China	MoF	2019	. . .	CG,LG	C	GAD	2019	BPM 6
Colombia	MoF	2018	2001	CG,SG,LG,SS	. . .	CB and NSO	2019	BPM 6
Comoros	MoF	2018	1986	CG	Mixed	CB and IMF staff	2018	BPM 5
Democratic Republic of the Congo	MoF	2018	2001	CG,LG	A	CB	2018	BPM 6
Republic of Congo	MoF	2018	2001	CG	A	CB	2017	BPM 6
Costa Rica	MoF and CB	2018	1986	CG	C	CB	2018	BPM 6

Table G. Key Data Documentation *(continued)*

		National Accounts					Prices (CPI)	
Country	Currency	Historical Data Source[1]	Latest Actual Annual Data	Base Year[2]	System of National Accounts	Use of Chain-Weighted Methodology[3]	Historical Data Source[1]	Latest Actual Annual Data
Côte d'Ivoire	CFA franc	NSO	2017	2015	SNA 1993		NSO	2019
Croatia	Croatian kuna	NSO	2019	2015	ESA 2010		NSO	2019
Cyprus	Euro	NSO	2019	2010	ESA 2010	From 1995	NSO	2019
Czech Republic	Czech koruna	NSO	2019	2010	ESA 2010	From 1995	NSO	2019
Denmark	Danish krone	NSO	2019	2010	ESA 2010	From 1980	NSO	2019
Djibouti	Djibouti franc	NSO	2018	2013	SNA 1993		NSO	2019
Dominica	Eastern Caribbean dollar	NSO	2018	2006	SNA 1993		NSO	2018
Dominican Republic	Dominican peso	CB	2018	2007	SNA 2008	From 2007	CB	2019
Ecuador	US dollar	CB	2019	2007	SNA 1993		NSO and CB	2019
Egypt	Egyptian pound	MEP	2018/19	2016/17	SNA 2008		NSO	2018/19
El Salvador	US dollar	CB	2019	2014	SNA 2008		NSO	2019
Equatorial Guinea	CFA franc	MEP and CB	2017	2006	SNA 1993		MEP	2019
Eritrea	Eritrean nakfa	IMF staff	2018	2011	SNA 1993		NSO	2018
Estonia	Euro	NSO	2019	2015	ESA 2010	From 2010	NSO	2019
Eswatini	Swazi lilangeni	NSO	2018	2011	SNA 1993		NSO	2019
Ethiopia	Ethiopian birr	NSO	2018/19	2015/16	SNA 1993		NSO	2019
Fiji	Fijian dollar	NSO	2018	2014	SNA 1993		NSO	2018
Finland	Euro	NSO	2018	2010	ESA 2010	From 1980	NSO	2019
France	Euro	NSO	2018	2014	ESA 2010	From 1980	NSO	2019
Gabon	CFA franc	MoF	2018	2001	SNA 1993		NSO	2018
The Gambia	Gambian dalasi	NSO	2018	2013	SNA 1993		NSO	2018
Georgia	Georgian lari	NSO	2018	2015	SNA 1993	From 1996	NSO	2018
Germany	Euro	NSO	2019	2015	ESA 2010	From 1991	NSO	2019
Ghana	Ghanaian cedi	NSO	2018	2013	SNA 1993		NSO	2018
Greece	Euro	NSO	2019	2010	ESA 2010	From 1995	NSO	2019
Grenada	Eastern Caribbean dollar	NSO	2018	2006	SNA 1993		NSO	2018
Guatemala	Guatemalan quetzal	CB	2018	2013	SNA 1993	From 2001	NSO	2019
Guinea	Guinean franc	NSO	2018	2010	SNA 1993		NSO	2019
Guinea-Bissau	CFA franc	NSO	2018	2015	SNA 1993		NSO	2018
Guyana	Guyanese dollar	NSO	2018	2006[6]	SNA 1993		NSO	2018
Haiti	Haitian gourde	NSO	2017/18	1986/87	SNA 1993		NSO	2018/19
Honduras	Honduran lempira	CB	2018	2000	SNA 1993		CB	2019
Hong Kong SAR	Hong Kong dollar	NSO	2019	2017	SNA 2008	From 1980	NSO	2019
Hungary	Hungarian forint	NSO	2019	2005	ESA 2010	From 2005	IEO	2019
Iceland	Icelandic króna	NSO	2018	2005	ESA 2010	From 1990	NSO	2018
India	Indian rupee	NSO	2018/19	2011/12	SNA 2008		NSO	2018/19
Indonesia	Indonesian rupiah	NSO	2019	2010	SNA 2008		NSO	2019
Iran	Iranian rial	CB	2018/19	2011/12	SNA 1993		CB	2018/19
Iraq	Iraqi dinar	NSO	2019	2007	SNA 1968/93		NSO	2019
Ireland	Euro	NSO	2019	2017	ESA 2010	From 1995	NSO	2019
Israel	New Israeli shekel	NSO	2019	2015	SNA 2008	From 1995	NSO	2019
Italy	Euro	NSO	2019	2015	ESA 2010	From 1980	NSO	2019
Jamaica	Jamaican dollar	NSO	2018	2007	SNA 1993		NSO	2018

Table G. Key Data Documentation *(continued)*

	Government Finance					Balance of Payments		
Country	Historical Data Source[1]	Latest Actual Annual Data	Statistics Manual in Use at Source	Subsectors Coverage[4]	Accounting Practice[5]	Historical Data Source[1]	Latest Actual Annual Data	Statistics Manual in Use at Source
Côte d'Ivoire	MoF	2018	1986	CG	A	CB	2018	BPM 6
Croatia	MoF	2018	2014	CG,LG	A	CB	2018	BPM 6
Cyprus	NSO	2019	ESA 2010	CG,LG,SS	A	CB	2019	BPM 6
Czech Republic	MoF	2019	2014	CG,LG,SS	A	NSO	2019	BPM 6
Denmark	NSO	2019	2014	CG,LG,SS	A	NSO	2019	BPM 6
Djibouti	MoF	2019	2001	CG	A	CB	2018	BPM 5
Dominica	MoF	2018/19	1986	CG	C	CB	2018	BPM 6
Dominican Republic	MoF	2019	2014	CG,LG,SS,NMPC	A	CB	2018	BPM 6
Ecuador	CB and MoF	2019	1986	CG,SG,LG,SS,NFPC	Mixed	CB	2018	BPM 5
Egypt	MoF	2018/19	2001	CG,LG,SS,MPC	C	CB	2018/19	BPM 5
El Salvador	MoF and CB	2019	1986	CG,LG,SS	C	CB	2019	BPM 6
Equatorial Guinea	MoF and MEP	2017	1986	CG	C	CB	2017	BPM 5
Eritrea	MoF	2018	2001	CG	C	CB	2018	BPM 5
Estonia	MoF	2019	1986/2001	CG,LG,SS	C	CB	2019	BPM 6
Eswatini	MoF	2018/19	2001	CG	A	CB	2018	BPM 6
Ethiopia	MoF	2018/19	1986	CG,SG,LG,NFPC	C	CB	2018/19	BPM 5
Fiji	MoF	2018	1986	CG	C	CB	2018	BPM 6
Finland	MoF	2018	2014	CG,LG,SS	A	NSO	2018	BPM 6
France	NSO	2018	2014	CG,LG,SS	A	CB	2019	BPM 6
Gabon	IMF staff	2018	2001	CG	A	CB	2018	BPM 5
The Gambia	MoF	2018	1986	CG	C	CB and IMF staff	2018	BPM 5
Georgia	MoF	2018	2001	CG,LG	C	NSO and CB	2018	BPM 6
Germany	NSO	2019	ESA 2010	CG,SG,LG,SS	A	CB	2019	BPM 6
Ghana	MoF	2018	2001	CG	C	CB	2018	BPM 5
Greece	NSO	2018	2014	CG,LG,SS	A	CB	2019	BPM 6
Grenada	MoF	2018	2014	CG	CB	CB	2018	BPM 6
Guatemala	MoF	2018	2001	CG	C	CB	2018	BPM 6
Guinea	MoF	2018	2001	CG	C	CB and MEP	2019	BPM 6
Guinea-Bissau	MoF	2018	2001	CG	A	CB	2018	BPM 6
Guyana	MoF	2018	1986	CG,SS,NFPC	C	CB	2018	BPM 6
Haiti	MoF	2018/19	1986	CG	C	CB	2018/19	BPM 5
Honduras	MoF	2019	2014	CG,LG,SS,other	Mixed	CB	2018	BPM 6
Hong Kong SAR	NSO	2018/19	2001	CG	C	NSO	2019	BPM 6
Hungary	MEP and NSO	2019	ESA 2010	CG,LG,SS,NMPC	A	CB	2019	BPM 6
Iceland	NSO	2018	2001	CG,LG,SS	A	CB	2018	BPM 6
India	MoF and IMF staff	2018/19	1986	CG,SG	C	CB	2018/19	BPM 6
Indonesia	MoF	2019	2001	CG,LG	C	CB	2019	BPM 6
Iran	MoF	2018/19	2001	CG	C	CB	2017/18	BPM 5
Iraq	MoF	2018	2001	CG	C	CB	2018	BPM 6
Ireland	MoF and NSO	2018	2001	CG,LG,SS	A	NSO	2019	BPM 6
Israel	MoF and NSO	2019	2014	CG,LG,SS	. . .	NSO	2019	BPM 6
Italy	NSO	2019	2001	CG,LG,SS	A	NSO	2019	BPM 6
Jamaica	MoF	2018/19	1986	CG	C	CB	2018/19	BPM 6

Table G. Key Data Documentation *(continued)*

		National Accounts					Prices (CPI)	
Country	Currency	Historical Data Source[1]	Latest Actual Annual Data	Base Year[2]	System of National Accounts	Use of Chain-Weighted Methodology[3]	Historical Data Source[1]	Latest Actual Annual Data
Japan	Japanese yen	GAD	2019	2011	SNA 2008	From 1980	GAD	2019
Jordan	Jordanian dinar	NSO	2018	2016	SNA 2008		NSO	2018
Kazakhstan	Kazakhstani tenge	NSO	2018	2007	SNA 1993	From 1994	CB	2018
Kenya	Kenyan shilling	NSO	2018	2009	SNA 2008		NSO	2019
Kiribati	Australian dollar	NSO	2017	2006	SNA 2008		IMF Staff	2017
Korea	South Korean won	CB	2019	2015	SNA 2008	From 1980	NSO	2019
Kosovo	Euro	NSO	2019	2016	ESA 2010		NSO	2019
Kuwait	Kuwaiti dinar	MEP and NSO	2018	2010	SNA 1993		NSO and MEP	2019
Kyrgyz Republic	Kyrgyz som	NSO	2018	2005	SNA 1993		NSO	2018
Lao P.D.R.	Lao kip	NSO	2018	2012	SNA 1993		NSO	2019
Latvia	Euro	NSO	2019	2015	ESA 2010	From 1995	NSO	2019
Lebanon	Lebanese pound	NSO	2018	2010	SNA 2008	From 2010	NSO	2018/19
Lesotho	Lesotho loti	NSO	2017/18	2012/13	SNA 2008		NSO	2018
Liberia	US dollar	CB	2018	1992	SNA 1993		CB	2019
Libya	Libyan dinar	MEP	2017	2007	SNA 1993		NSO	2017
Lithuania	Euro	NSO	2019	2015	ESA 2010	From 2005	NSO	2019
Luxembourg	Euro	NSO	2019	2010	ESA 2010	From 1995	NSO	2019
Macao SAR	Macanese pataca	NSO	2019	2017	SNA 2008	From 2001	NSO	2019
Madagascar	Malagasy ariary	NSO	2017	2007	SNA 1993		NSO	2018
Malawi	Malawian kwacha	NSO	2011	2010	SNA 2008		NSO	2019
Malaysia	Malaysian ringgit	NSO	2019	2015	SNA 2008		NSO	2019
Maldives	Maldivian rufiyaa	MoF and NSO	2018	2014	SNA 1993		CB	2018
Mali	CFA franc	NSO	2018	1999	SNA 1993		NSO	2018
Malta	Euro	NSO	2019	2010	ESA 2010	From 2000	NSO	2019
Marshall Islands	US dollar	NSO	2017/18	2003/04	SNA 1993		NSO	2017/18
Mauritania	New Mauritanian ouguiya	NSO	2015	2004	SNA 1993		NSO	2019
Mauritius	Mauritian rupee	NSO	2018	2014	SNA 1993	From 1999	NSO	2018
Mexico	Mexican peso	NSO	2019	2013	SNA 2008		NSO	2019
Micronesia	US dollar	NSO	2017/18	2003/04	SNA 1993		NSO	2017/18
Moldova	Moldovan leu	NSO	2018	1995	SNA 2008		NSO	2018
Mongolia	Mongolian tögrög	NSO	2019	2010	SNA 1993		NSO	2019
Montenegro	Euro	NSO	2018	2006	ESA 2010		NSO	2019
Morocco	Moroccan dirham	NSO	2019	2007	SNA 1993	From 1998	NSO	2019
Mozambique	Mozambican metical	NSO	2019	2014	SNA 1993/ 2008		NSO	2018
Myanmar	Myanmar kyat	MEP	2018/19	2015/16	. . .		NSO	2018/19
Namibia	Namibian dollar	NSO	2018	2000	SNA 1993		NSO	2018
Nauru	Australian dollar	. . .	2017/18	2006/07	SNA 1993		NSO	2016/17
Nepal	Nepalese rupee	NSO	2018/19	2000/01	SNA 1993		CB	2018/19
Netherlands	Euro	NSO	2019	2015	ESA 2010	From 1980	NSO	2019
New Zealand	New Zealand dollar	NSO	2019	2009/10	SNA 2008	From 1987	NSO	2019
Nicaragua	Nicaraguan córdoba	CB	2018	2006	SNA 1993	From 1994	CB	2019
Niger	CFA franc	NSO	2018	2015	SNA 1993		NSO	2018
Nigeria	Nigerian naira	NSO	2018	2010	SNA 2008		NSO	2018
North Macedonia	Macedonian denar	NSO	2019	2005	ESA 2010		NSO	2019
Norway	Norwegian krone	NSO	2018	2017	ESA 2010	From 1980	NSO	2019

Table G. Key Data Documentation *(continued)*

Country	Government Finance					Balance of Payments		
	Historical Data Source[1]	Latest Actual Annual Data	Statistics Manual in Use at Source	Subsectors Coverage[4]	Accounting Practice[5]	Historical Data Source[1]	Latest Actual Annual Data	Statistics Manual in Use at Source
Japan	GAD	2018	2014	CG,LG,SS	A	MoF	2019	BPM 6
Jordan	MoF	2019	2001	CG,NFPC	C	CB	2018	BPM 6
Kazakhstan	NSO	2018	2001	CG,LG	A	CB	2018	BPM 6
Kenya	MoF	2018	2001	CG	C	CB	2018	BPM 6
Kiribati	MoF	2017	1986	CG	C	NSO	2017	BPM 6
Korea	MoF	2017	2001	CG,SS	C	CB	2019	BPM 6
Kosovo	MoF	2019	. . .	CG,LG	C	CB	2019	BPM 6
Kuwait	MoF	2019	2014	CG,SS	Mixed	CB	2018	BPM 6
Kyrgyz Republic	MoF	2018	. . .	CG,LG,SS	C	CB	2018	BPM 5
Lao P.D.R.	MoF	2018	2001	CG	C	CB	2018	BPM 5
Latvia	MoF	2019	ESA 2010	CG,LG,SS	C	CB	2019	BPM 6
Lebanon	MoF	2018	2001	CG	Mixed	CB and IMF staff	2018	BPM 5
Lesotho	MoF	2018/19	2001	CG,LG	C	CB	2018/19	BPM 5
Liberia	MoF	2018	2001	CG	A	CB	2018	BPM 5
Libya	MoF	2018	1986	CG,SG,LG	C	CB	2017	BPM 5
Lithuania	MoF	2018	2014	CG,LG,SS	A	CB	2019	BPM 6
Luxembourg	MoF	2019	2001	CG,LG,SS	A	NSO	2019	BPM 6
Macao SAR	MoF	2018	2014	CG,SS	C	NSO	2018	BPM 6
Madagascar	MoF	2019	1986	CG,LG	C	CB	2018	BPM 5
Malawi	MoF	2018/19	1986	CG	C	NSO and GAD	2018	BPM 6
Malaysia	MoF	2019	2001	CG,SG,LG	C	NSO	2019	BPM 6
Maldives	MoF	2018	1986	CG	C	CB	2018	BPM 6
Mali	MoF	2018	2001	CG	Mixed	CB	2018	BPM 6
Malta	NSO	2018	2001	CG,SS	A	NSO	2018	BPM 6
Marshall Islands	MoF	2017/18	2001	CG,LG,SS	A	NSO	2017/18	BPM 6
Mauritania	MoF	2018	1986	CG	C	CB	2018	BPM 6
Mauritius	MoF	2018/19	2001	CG,LG,NFPC	C	CB	2018	BPM 6
Mexico	MoF	2019	2014	CG,SS,NMPC,NFPC	C	CB	2019	BPM 6
Micronesia	MoF	2017/18	2001	CG,SG,LG,SS	. . .	NSO	2017/18	BPM 5
Moldova	MoF	2018	1986	CG,LG	C	CB	2018	BPM 6
Mongolia	MoF	2019	2001	CG,SG,LG,SS	C	CB	2019	BPM 6
Montenegro	MoF	2019	1986/2001	CG,LG,SS	C	CB	2019	BPM 6
Morocco	MEP	2018	2001	CG	A	GAD	2019	BPM 6
Mozambique	MoF	2018	2001	CG,SG	Mixed	CB	2018	BPM 6
Myanmar	MoF	2018/19	2014	CG,NFPC	C	IMF staff	2018/19	BPM 6
Namibia	MoF	2018/19	2001	CG	C	CB	2018	BPM 6
Nauru	MoF	2018/19	2001	CG	Mixed	IMF staff	2017/18	BPM 6
Nepal	MoF	2018/19	2001	CG	C	CB	2018/19	BPM 5
Netherlands	MoF	2019	2001	CG,LG,SS	A	CB	2018	BPM 6
New Zealand	MoF	2018/19	2014	CG, LG	A	NSO	2019	BPM 6
Nicaragua	MoF	2018	1986	CG,LG,SS	C	IMF staff	2018	BPM 6
Niger	MoF	2018	1986	CG	A	CB	2018	BPM 6
Nigeria	MoF	2018	2001	CG,SG,LG	C	CB	2018	BPM 6
North Macedonia	MoF	2019	1986	CG,SG,SS	C	CB	2019	BPM 6
Norway	NSO and MoF	2019	2014	CG,LG,SS	A	NSO	2018	BPM 6

Table G. Key Data Documentation *(continued)*

		National Accounts					Prices (CPI)	
Country	Currency	Historical Data Source[1]	Latest Actual Annual Data	Base Year[2]	System of National Accounts	Use of Chain-Weighted Methodology[3]	Historical Data Source[1]	Latest Actual Annual Data
Oman	Omani rial	NSO	2018	2010	SNA 1993		NSO	2019
Pakistan	Pakistan rupee	NSO	2017/18	2005/06[6]	. . .		NSO	2017/18
Palau	US dollar	MoF	2017/18	2014/15	SNA 1993		MoF	2017/18
Panama	US dollar	NSO	2018	2007	SNA 1993	From 2007	NSO	2019
Papua New Guinea	Papua New Guinea kina	NSO and MoF	2015	2013	SNA 1993		NSO	2015
Paraguay	Paraguayan guaraní	CB	2018	2014	SNA 2008		CB	2018
Peru	Peruvian sol	CB	2019	2007	SNA 1993		CB	2019
Philippines	Philippine peso	NSO	2019	2000	SNA 2008		NSO	2019
Poland	Polish zloty	NSO	2019	2010	ESA 2010	From 1995	NSO	2019
Portugal	Euro	NSO	2019	2016	ESA 2010	From 1980	NSO	2019
Puerto Rico	US dollar	NSO	2017/18	1954	SNA 1968		NSO	2018/19
Qatar	Qatari riyal	NSO and MEP	2019	2013	SNA 1993		NSO and MEP	2019
Romania	Romanian leu	NSO	2019	2015	ESA 2010	From 2000	NSO	2019
Russia	Russian ruble	NSO	2019	2016	SNA 2008	From 1995	NSO	2019
Rwanda	Rwandan franc	NSO	2018	2014	SNA 2008		NSO	2019
Samoa	Samoan tala	NSO	2018/19	2012/13	SNA 2008		NSO	2018/19
San Marino	Euro	NSO	2018	2007	. . .		NSO	2018
São Tomé and Príncipe	São Tomé and Príncipe dobra	NSO	2018	2008	SNA 1993		NSO	2018
Saudi Arabia	Saudi riyal	NSO	2019	2010	SNA 1993		NSO	2019
Senegal	CFA franc	NSO	2018	2014	SNA 1993		NSO	2018
Serbia	Serbian dinar	NSO	2019	2010	ESA 2010	From 2010	NSO	2019
Seychelles	Seychelles rupee	NSO	2017	2006	SNA 1993		NSO	2019
Sierra Leone	Sierra Leonean leone	NSO	2018	2006	SNA 1993	From 2010	NSO	2018
Singapore	Singapore dollar	NSO	2019	2015	SNA 2008	From 2015	NSO	2019
Slovak Republic	Euro	NSO	2019	2015	ESA 2010	From 1997	NSO	2019
Slovenia	Euro	NSO	2019	2010	ESA 2010	From 2000	NSO	2019
Solomon Islands	Solomon Islands dollar	CB	2019	2004	SNA 1993		NSO	2019
Somalia	US dollar	CB	2018	2013	SNA 1993		CB	2018
South Africa	South African rand	NSO	2019	2010	SNA 2008		NSO	2019
South Sudan	South Sudanese pound	NSO	2017	2010	SNA 1993		NSO	2018
Spain	Euro	NSO	2019	2015	ESA 2010	From 1995	NSO	2019
Sri Lanka	Sri Lankan rupee	NSO	2019	2010	SNA 1993		NSO	2019
St. Kitts and Nevis	Eastern Caribbean dollar	NSO	2018	2006	SNA 1993		NSO	2018
St. Lucia	Eastern Caribbean dollar	NSO	2018	2006	SNA 1993		NSO	2018
St. Vincent and the Grenadines	Eastern Caribbean dollar	NSO	2018	2006	SNA 1993		NSO	2018
Sudan	Sudanese pound	NSO	2016	1982	SNA 1968		NSO	2019
Suriname	Surinamese dollar	NSO	2018	2007	SNA 1993		NSO	2019

Table G. Key Data Documentation *(continued)*

Country	Government Finance					Balance of Payments		
	Historical Data Source[1]	Latest Actual Annual Data	Statistics Manual in Use at Source	Subsectors Coverage[4]	Accounting Practice[5]	Historical Data Source[1]	Latest Actual Annual Data	Statistics Manual in Use at Source
Oman	MoF	2018	2001	CG	C	CB	2018	BPM 5
Pakistan	MoF	2017/18	1986	CG,SG,LG	C	CB	2017/18	BPM 6
Palau	MoF	2017/18	2001	CG	. . .	MoF	2017/18	BPM 6
Panama	MoF	2018	2014	CG,SG,LG,SS,NFPC	C	NSO	2019	BPM 6
Papua New Guinea	MoF	2015	1986	CG	C	CB	2015	BPM 5
Paraguay	MoF	2018	2001	CG,SG,LG,SS,MPC, NFPC	C	CB	2018	BPM 6
Peru	CB and MoF	2019	2001	CG,SG,LG,SS	Mixed	CB	2019	BPM 5
Philippines	MoF	2019	2001	CG,LG,SS	C	CB	2019	BPM 6
Poland	MoF and NSO	2018	ESA 2010	CG,LG,SS	A	CB	2019	BPM 6
Portugal	NSO	2019	2001	CG,LG,SS	A	CB	2019	BPM 6
Puerto Rico	MEP	2015/16	2001	. . .	A	. . .	. . .	. . .
Qatar	MoF	2019	1986	CG	C	CB and IMF staff	2019	BPM 5
Romania	MoF	2019	2001	CG,LG,SS	C	CB	2019	BPM 6
Russia	MoF	2019	2014	CG,SG,SS	Mixed	CB	2019	BPM 6
Rwanda	MoF	2018	1986	CG,LG	Mixed	CB	2018	BPM 6
Samoa	MoF	2018/19	2001	CG	A	CB	2018/19	BPM 6
San Marino	MoF	2018	. . .	CG	. . .	Other	2018	. . .
São Tomé and Príncipe	MoF and Customs	2018	2001	CG	C	CB	2018	BPM 6
Saudi Arabia	MoF	2019	2014	CG	C	CB	2019	BPM 6
Senegal	MoF	2018	2001	CG	C	CB and IMF staff	2018	BPM 6
Serbia	MoF	2019	1986/2001	CG,SG,LG,SS,other	C	CB	2018	BPM 6
Seychelles	MoF	2019	1986	CG,SS	C	CB	2017	BPM 6
Sierra Leone	MoF	2018	1986	CG	C	CB	2018	BPM 5
Singapore	MoF and NSO	2019/20	2014	CG	C	NSO	2019	BPM 6
Slovak Republic	NSO	2019	2001	CG,LG,SS	A	CB	2019	BPM 6
Slovenia	MoF	2019	2001	CG,LG,SS	A	CB	2019	BPM 6
Solomon Islands	MoF	2018	1986	CG	C	CB	2019	BPM 6
Somalia	MoF	2018	2001	CG	C	CB	2018	BPM 5
South Africa	MoF	2019	2001	CG,SG,SS,other	C	CB	2019	BPM 6
South Sudan	MoF and MEP	2018	. . .	CG	C	MoF, NSO, and MEP	2018	BPM 6
Spain	MoF and NSO	2019	ESA 2010	CG,SG,LG,SS	A	CB	2019	BPM 6
Sri Lanka	MoF	2019	2001	CG	C	CB	2019	BPM 6
St. Kitts and Nevis	MoF	2018	1986	CG, SG	C	CB	2018	BPM 6
St. Lucia	MoF	2017/18	1986	CG	C	CB	2018	BPM 6
St. Vincent and the Grenadines	MoF	2018	1986	CG	C	CB	2018	BPM 6
Sudan	MoF	2019	2001	CG	Mixed	CB	2018	BPM 6
Suriname	MoF	2018	1986	CG	Mixed	CB	2019	BPM 5

Table G. Key Data Documentation *(continued)*

		National Accounts					Prices (CPI)	
Country	Currency	Historical Data Source[1]	Latest Actual Annual Data	Base Year[2]	System of National Accounts	Use of Chain-Weighted Methodology[3]	Historical Data Source[1]	Latest Actual Annual Data
Sweden	Swedish krona	NSO	2019	2018	ESA 2010	From 1993	NSO	2019
Switzerland	Swiss franc	NSO	2019	2010	ESA 2010	From 1980	NSO	2019
Syria	Syrian pound	NSO	2010	2000	SNA 1993		NSO	2011
Taiwan Province of China	New Taiwan dollar	NSO	2019	2016	SNA 2008		NSO	2019
Tajikistan	Tajik somoni	NSO	2017	1995	SNA 1993		NSO	2017
Tanzania	Tanzanian shilling	NSO	2018	2015	SNA 2008		NSO	2018
Thailand	Thai baht	MEP	2018	2002	SNA 1993	From 1993	MEP	2019
Timor-Leste	US dollar	NSO	2018	2015[6]	SNA 2008		NSO	2019
Togo	CFA franc	NSO	2016	2007	SNA 1993		NSO	2019
Tonga	Tongan pa'anga	CB	2018	2010	SNA 1993		CB	2018
Trinidad and Tobago	Trinidad and Tobago dollar	NSO	2018	2012	SNA 1993		NSO	2019
Tunisia	Tunisian dinar	NSO	2018	2010	SNA 1993	From 2009	NSO	2018
Turkey	Turkish lira	NSO	2019	2009	ESA 2010	From 2009	NSO	2019
Turkmenistan	New Turkmen manat	NSO	2018	2008	SNA 1993	From 2000	NSO	2018
Tuvalu	Australian dollar	PFTAC advisors	2018	2005	SNA 1993		NSO	2018
Uganda	Ugandan shilling	NSO	2019	2016	SNA 1993		CB	2018/19
Ukraine	Ukrainian hryvnia	NSO	2018	2010	SNA 2008	From 2005	NSO	2019
United Arab Emirates	U.A.E. dirham	NSO	2018	2010	SNA 2008		NSO	2019
United Kingdom	British pound	NSO	2019	2016	ESA 2010	From 1980	NSO	2019
United States	US dollar	NSO	2019	2012	SNA 2008	From 1980	NSO	2019
Uruguay	Uruguayan peso	CB	2018	2005	SNA 1993		NSO	2019
Uzbekistan	Uzbek sum	NSO	2018	2015	SNA 1993		NSO, and IMF staff	2019
Vanuatu	Vanuatu vatu	NSO	2018	2006	SNA 1993		NSO	2018
Venezuela	Venezuelan bolívar soberano	CB	2018	1997	SNA 2008		CB	2019
Vietnam	Vietnamese dong	NSO	2019	2010	SNA 1993		NSO	2018
Yemen	Yemeni rial	IMF staff	2017	1990	SNA 1993		NSO,CB, and IMF staff	2017
Zambia	Zambian kwacha	NSO	2018	2010	SNA 2008		NSO	2019
Zimbabwe	Zimbabwe dollar	NSO	2019	2012	. . .		NSO	2019

Table G. Key Data Documentation *(continued)*

Country	Government Finance					Balance of Payments		
	Historical Data Source[1]	Latest Actual Annual Data	Statistics Manual in Use at Source	Subsectors Coverage[4]	Accounting Practice[5]	Historical Data Source[1]	Latest Actual Annual Data	Statistics Manual in Use at Source
Sweden	MoF	2019	2001	CG,LG,SS	A	NSO	2018	BPM 6
Switzerland	MoF	2017	2001	CG,SG,LG,SS	A	CB	2019	BPM 6
Syria	MoF	2009	1986	CG	C	CB	2009	BPM 5
Taiwan Province of China	MoF	2018	2001	CG,LG,SS	C	CB	2019	BPM 6
Tajikistan	MoF	2017	1986	CG,LG,SS	C	CB	2016	BPM 6
Tanzania	MoF	2018	1986	CG,LG	C	CB	2018	BPM 5
Thailand	MoF	2017/18	2001	CG,BCG,LG,SS	A	CB	2018	BPM 6
Timor-Leste	MoF	2018	2001	CG	C	CB	2019	BPM 6
Togo	MoF	2019	2001	CG	C	CB	2017	BPM 6
Tonga	MoF	2018	2014	CG	C	CB and NSO	2018	BPM 6
Trinidad and Tobago	MoF	2018/19	1986	CG	C	CB	2018	BPM 6
Tunisia	MoF	2018	1986	CG	C	CB	2018	BPM 5
Turkey	MoF	2019	2001	CG,LG,SS,other	A	CB	2019	BPM 6
Turkmenistan	MoF	2018	1986	CG,LG	C	NSO and IMF staff	2015	BPM 6
Tuvalu	MoF	2018	. . .	CG	Mixed	IMF staff	2012	BPM 6
Uganda	MoF	2019	2001	CG	C	CB	2019	BPM 6
Ukraine	MoF	2018	2001	CG,LG,SS	C	CB	2018	BPM 6
United Arab Emirates	MoF	2018	2001	CG,BCG,SG,SS	Mixed	CB	2018	BPM 5
United Kingdom	NSO	2019	2001	CG,LG	A	NSO	2019	BPM 6
United States	MEP	2018	2014	CG,SG,LG	A	NSO	2019	BPM 6
Uruguay	MoF	2018	1986	CG,LG,SS,NFPC, NMPC	C	CB	2018	BPM 6
Uzbekistan	MoF	2018	2014	CG,SG,LG,SS	C	MEP	2018	BPM 6
Vanuatu	MoF	2019	2001	CG	C	CB	2017	BPM 6
Venezuela	MoF	2017	2001	BCG,NFPC	C	CB	2018	BPM 6
Vietnam	MoF	2017	2001	CG,SG,LG	C	CB	2018	BPM 5
Yemen	MoF	2017	2001	CG,LG	C	IMF staff	2017	BPM 5
Zambia	MoF	2018	1986	CG	C	CB	2018	BPM 6
Zimbabwe	MoF	2018	1986	CG	C	CB and MoF	2018	BPM 6

Note: BPM = *Balance of Payments Manual*; CPI = consumer price index; ESA = European System of National Accounts; SNA = System of National Accounts.
[1]CB = central bank; Customs = Customs Authority; GAD = General Administration Department; IEO = international economic organization; MEP = Ministry of Economy, Planning, Commerce, and/or Development; MoF = Ministry of Finance and/or Treasury; NSO = National Statistics Office; PFTAC = Pacific Financial Technical Assistance Centre.
[2]National accounts base year is the period with which other periods are compared and the period for which prices appear in the denominators of the price relationships used to calculate the index.
[3]Use of chain-weighted methodology allows countries to measure GDP growth more accurately by reducing or eliminating the downward biases in volume series built on index numbers that average volume components using weights from a year in the moderately distant past.
[4]BCG = budgetary central government; CG = central government; EUA = extrabudgetary units/accounts; LG = local government; MPC = monetary public corporation, including central bank; NFPC = nonfinancial public corporation; NMPC = nonmonetary financial public corporation; SG = state government; SS = social security fund; TG = territorial governments.
[5]Accounting standard: A = accrual accounting; C = cash accounting; CB = commitments basis accounting; Mixed = combination of accrual and cash accounting.
[6]Base year is not equal to 100 because the nominal GDP is not measured in the same way as real GDP or the data are seasonally adjusted.

Box A1. Economic Policy Assumptions Underlying the Projections for Selected Economies

Fiscal Policy Assumptions

The short-term fiscal policy assumptions used in the *World Economic Outlook* (WEO) are normally based on officially announced budgets, adjusted for differences between the national authorities and the IMF staff regarding macroeconomic assumptions and projected fiscal outturns. When no official budget has been announced, projections incorporate policy measures judged likely to be implemented. The medium-term fiscal projections are similarly based on a judgment about policies' most likely path. For cases in which the IMF staff has insufficient information to assess the authorities' budget intentions and prospects for policy implementation, an unchanged structural primary balance is assumed unless indicated otherwise. Specific assumptions used in regard to some of the advanced economies follow (see also Tables B4 to B6 in the online section of the Statistical Appendix for data on fiscal net lending/borrowing and structural balances).[1]

Australia: Fiscal projections are based on data from the Australian Bureau of Statistics, the fiscal year 2019/20 mid-year reviews of the commonwealth and states, and the IMF staff's estimates and projections.

Austria: Fiscal projections are based on data from Statistics Austria, the authorities' projections, and the IMF staff's estimates and projections.

Belgium: Projections are based on the 2019–22 Stability Programme, the Draft Budgetary Plan for 2020, and other available information on the authorities' fiscal plans, with adjustments for the IMF staff's assumptions.

Brazil: Fiscal projections for 2020 take into account the deficit target proposed in the budget guidance law and reflect policy announcements as of March 31. Those for the medium term assume compliance with the constitutional spending ceiling.

Canada: Projections use the baseline forecasts in the December 2019 federal budget update and the latest provincial budgets. The IMF staff makes some adjustments to these forecasts, including for differences in macroeconomic projections. The IMF staff's forecast also incorporates the most recent data releases from Statistics Canada's National Economic Accounts, including federal, provincial, and territorial budgetary outturns through the first quarter of 2020.

Chile: Projections are based on the authorities' budget projections, adjusted to reflect the IMF staff's projections for GDP and copper prices.

China: Fiscal expansion is expected for 2019 and projected for 2020 owing to a series of tax reforms and expenditure measures in response to the economic slowdown.

Denmark: Estimates for 2019 are aligned with the latest official budget numbers, adjusted where appropriate for the IMF staff's macroeconomic assumptions. For 2020, the projections incorporate key features of the medium-term fiscal plan as embodied in the authorities' latest budget.

France: Estimates for 2019 and projections for 2020 onward are based on the measures of the 2018, 2019, and 2020 budget laws adjusted for differences in assumptions on macroeconomic and financial variables; and in revenue projections. Historical fiscal data reflect the May 2019 revisions and update of the historical fiscal accounts, debt data, and national accounts.

Germany: The IMF staff's projections for 2020 and beyond are based on the 2020 draft budgetary plan and data updates from the national statistical agency and ministry of finance, adjusted for the differences in the IMF staff's macroeconomic framework and assumptions concerning revenue elasticities. The estimate of gross debt includes portfolios of impaired assets and noncore business transferred to institutions that are winding up as well as other financial sector and EU support operations.

Greece: The general government primary balance estimate for 2019 is based on the preliminary budget execution data by the Greek authorities. Historical data since 2010 reflect adjustments in line with the primary balance definition under the enhanced surveillance framework for Greece.

[1] The output gap is actual minus potential output, as a percentage of potential output. Structural balances are expressed as a percentage of potential output. The structural balance is the actual net lending/borrowing minus the effects of cyclical output from potential output, corrected for one-time and other factors, such as asset and commodity prices and output composition effects. Changes in the structural balance consequently include effects of temporary fiscal measures, the impact of fluctuations in interest rates and debt-service costs, and other noncyclical fluctuations in net lending/borrowing. The computations of structural balances are based on the IMF staff's estimates of potential GDP and revenue and expenditure elasticities. (See Annex I of the October 1993 WEO.) Net debt is calculated as gross debt minus financial assets corresponding to debt instruments. Estimates of the output gap and of the structural balance are subject to significant margins of uncertainty.

Box A1 *(continued)*

Hong Kong Special Administrative Region: Projections are based on the authorities' medium-term fiscal projections on expenditures.

Hungary: Fiscal projections include the IMF staff's projections of the macroeconomic framework and fiscal policy plans announced in the 2020 budget.

India: Historical data are based on budgetary execution data. Projections are based on available information on the authorities' fiscal plans, with adjustments for the IMF staff's assumptions. Subnational data are incorporated with a lag of up to one year; general government data are thus finalized well after central government data. IMF and Indian presentations differ, particularly regarding disinvestment and license-auction proceeds, net versus gross recording of revenues in certain minor categories, and some public-sector lending.

Indonesia: IMF projections are based on moderate tax policy and administration reforms and a gradual increase in social and capital spending over the medium term in line with fiscal space.

Ireland: Fiscal projections are based on the country's Budget 2020.

Israel: Historical data are based on Government Finance Statistics data prepared by the Central Bureau of Statistics. Projections assume that a 2020 budget will be approved shortly and that the announced fiscal package will be implemented.

Italy: Fiscal plans included in the government's 2020 budget and announced measures since the outbreak of COVID-19 inform the IMF staff's estimates and projections. The IMF staff assumes that the automatic value-added tax hikes for future years will be canceled. The stock of maturing postal saving bonds is included in the debt projections.

Japan: The projections incorporate a stimulus package to be released in early April, whose size and composition are estimated by Staff.

Korea: The medium-term forecast incorporates the medium-term path for the overall balance in the 2020 budget and medium-term fiscal plan announced by the government.

Mexico: Fiscal projections for 2020 are informed by the approved budget but take into account the likely effects of the COVID-19 pandemic on fiscal outturns; projections for 2021 assume compliance with rules established in the Fiscal Responsibility Law.

Netherlands: Fiscal projections for 2019–21 are based on the authorities' Bureau for Economic Policy Analysis budget projections, after differences in macroeconomic assumptions are adjusted for. Historical data were revised following the June 2014 Central Bureau of Statistics release of revised macro data because of the adoption of the European System of National and Regional Accounts (ESA 2010) and the revisions of data sources.

New Zealand: Fiscal projections are based on the fiscal year 2019/20 budget, the Half Year Economic and Fiscal Update 2019, and the IMF staff's estimates.

Portugal: The projections for the current year are based on the authorities' approved budget, adjusted to reflect the IMF staff's macroeconomic forecast. Projections thereafter are based on the assumption of unchanged policies.

Puerto Rico: Fiscal projections are based on the Puerto Rico Fiscal and Economic Growth Plans (FEGPs), which were prepared in October 2018, and are certified by the Financial Oversight and Management Board. In line with these plans' assumptions, IMF projections assume federal aid for rebuilding after Hurricane Maria, which devastated the island in September 2017. The projections also assume revenue losses from elimination of federal funding for the Affordable Care Act starting in 2020 for Puerto Rico; elimination of federal tax incentives starting in 2018 that had neutralized the effects of Puerto Rico's Act 154 on foreign firms; and the effects of the Tax Cuts and Jobs Act, which reduce the tax advantage of US firms producing in Puerto Rico. Given sizable policy uncertainty, some FEGP and IMF assumptions may differ, in particular those relating to the effects of the corporate tax reform, tax compliance, and tax adjustments (fees and rates); reduction of subsidies and expenses, freezing of payroll operational costs, and improvement of mobility; reduction of expenses; and increased health care efficiency. On the expenditure side, measures include extension of Act 66, which freezes much government spending, through 2020; reduction of operating costs; decreases in government subsidies; and spending cuts in education. Although IMF policy assumptions are similar to those in the FEGP scenario with full measures, the IMF's projections of fiscal revenues, expenditures, and balance are different from the FEGPs'. This stems from two main differences in methodologies: first, while IMF projections are on an accrual basis, the FEGPs' are on a cash basis. Second, the IMF and FEGPs make very different macroeconomic assumptions.

Box A1 *(continued)*

Russia: Projections for 2019–21 are based on the new oil price rule, with adjustments by the IMF staff.

Saudi Arabia: The IMF staff baseline fiscal projections are based on the IMF staff's understanding of government policies as announced in the 2020 budget and recent government measures announced during March 2020 to address the adverse impact of COVID-19 and the sharp decline in oil prices. Exported oil revenues are based on WEO baseline oil prices and staff's understanding of current oil export policy.

Singapore: For fiscal year 2020, projections are based on budget, February 18, 2020, and supplementary budget, March 26, 2020. Staff assumes that support packages in fiscal year 2020 are only for one year and assumes unchanged policies for the remainder of the projection period.

South Africa: Fiscal assumptions are mostly based on the 2020 Budget Review. Nontax revenue excludes transactions in financial assets and liabilities, as they involve primarily revenues associated with realized exchange rate valuation gains from the holding of foreign currency deposits, sale of assets, and conceptually similar items.

Spain: For 2020, fiscal projections are the IMF staff's projections, which assume no policy change except the public wage and pension measures included in the authorities' draft budgetary plan as well as the measures adopted on March 30th in response to the COVID-19 crisis. Fiscal projections for 2021 are the IMF staff's projections with an unchanged policy stance.

Sweden: Fiscal estimates for 2019 are based on the budget, as official fiscal data for 2019 are not yet released. Projections for 2020 are based on the budget. The IMF staff make fiscal projections for 2021 assuming convergence to Sweden's medium-term surplus target of 0.3 percent of GDP. The impact of cyclical developments on the fiscal accounts is calculated using the 2014 Organisation for Economic Co-operation and Development elasticity[2] to take into account output and employment gaps.

Switzerland: The authorities' announced discretionary stimulus—as reflected in the fiscal projections for 2020—which is permitted within the context of the debt brake rule in the event of "exceptional circumstances."

[2] R. W. Price, T. Dang, and Y. Guillemette. "New Tax and Expenditure Elasticity Estimates for EU Budget Surveillance." OECD Economics Department Working Paper 1174 (Paris: OECD Publishing, 2014).

Turkey: The basis for the projections in the WEO and *Fiscal Monitor* is the IMF-defined fiscal balance, which excludes some revenue and expenditure items that are included in the authorities' headline balance.

United Kingdom: Fiscal projections are based on the Budget Statement 2020. Expenditure projections are based on the budgeted nominal values, adjusted to account for subsequent announcements of measures to respond to the outbreak of coronavirus. Revenue projections are adjusted for differences between the IMF staff's forecasts of macroeconomic variables (such as GDP growth and inflation) and the forecasts of these variables assumed in the authorities' fiscal projections (which did not incorporate the impact of the outbreak of coronavirus). The IMF staff's data exclude public sector banks and the effect of transferring assets from the Royal Mail Pension Plan to the public sector in April 2012. Real government consumption and investment are part of the real GDP path, which, according to the IMF staff, may or may not be the same as projected by the UK Office for Budget Responsibility. Fiscal year GDP is different from current year GDP. The fiscal accounts are presented in fiscal-year terms. Projections take into account revisions to the accounting (including on student loans) implemented on September 24, 2019.

United States: Fiscal projections are based on the January 2020 Congressional Budget Office baseline adjusted for the IMF staff's policy and macroeconomic assumptions. Projections incorporate the effects of the Coronavirus Preparedness and Response Supplemental Appropriations Act; the Families First Coronavirus Response Act; and the Coronavirus Aid; Relief, and Economic Security Act; all signed in March 2020. Finally, fiscal projections are adjusted to reflect the IMF staff's forecasts for key macroeconomic and financial variables and different accounting treatment of financial sector support and of defined-benefit pension plans and are converted to a general government basis. Data are compiled using System of National Accounts 2008, and when translated into government finance statistics, this is in accordance with the *Government Finance Statistics Manual 2014*. Because of data limitations, most series begin in 2001.

Monetary Policy Assumptions

Monetary policy assumptions are based on the established policy framework in each country. In most cases, this implies a nonaccommodative stance over

Box A1 *(continued)*

the business cycle: official interest rates will increase when economic indicators suggest that inflation will rise above its acceptable rate or range; they will decrease when indicators suggest inflation will not exceed the acceptable rate or range, that output growth is below its potential rate, and that the margin of slack in the economy is significant. On this basis, the London interbank offered rate on six-month US dollar deposits is assumed to average 0.0 percent in 2020 and –1.3 percent in 2021 (see Table 1.1). The rate on three-month euro deposits is assumed to average –1.5 percent in 2020 and –1.8 percent in 2021. The rate on six-month Japanese yen deposits is assumed to average –0.7 percent in 2020 and –0.1 percent in 2021.

Argentina: Monetary policy assumptions are consistent with the current monetary policy framework, which targets zero-based money growth in seasonally adjusted terms.

Australia: Monetary policy assumptions are in line with market expectations.

Brazil: Monetary policy assumptions are consistent with gradual convergence of inflation toward the middle of the target range.

Canada: Monetary policy assumptions are based on the IMF staff's analysis.

Chile: GDP growth rate.

China: Monetary policy is expected to be loosened.

Denmark: Monetary policy is to maintain the peg to the euro.

Euro area: Monetary policy assumptions for euro area member countries are in line with market expectations.

Greece: Interest rates based on WEO LIBOR with an assumption of a spread for Greece. Broad money projections based on MFI balance sheets and deposit flow assumptions.

Hong Kong Special Administrative Region: The IMF staff assumes that the currency board system will remain intact.

India: Monetary policy projections are consistent with achieving the Reserve Bank of India's inflation target over the medium term.

Indonesia: Monetary policy assumptions are in line with the maintenance of inflation within the central bank's targeted band.

Israel: Based on gradual normalization of monetary policy.

Japan: Monetary policy assumptions are in line with market expectations.

Korea: The projections assume the policy rate evolves in line with market expectations.

Mexico: Monetary policy assumptions are consistent with attaining the inflation target.

Netherlands: Monetary projections are based on the IMF staff-estimated six-month euro LIBOR projections.

New Zealand: Growth of nominal GDP.

Portugal: Desk spreadsheet, given inputs from other sectors.

Russia: Monetary projections assume that the Central Bank of the Russian Federation is moving toward a neutral monetary policy stance.

Saudi Arabia: Monetary policy projections are based on the continuation of the exchange rate peg to the US dollar.

Singapore: Broad money is projected to grow in line with the projected growth in nominal GDP.

South Africa: Monetary policy assumptions are consistent with maintaining inflation within the 3 percent to 6 percent target band.

Sweden: Monetary projections are in line with Riksbank projections.

Switzerland: The projections assume no change in the policy rate in 2019–20.

Turkey: The outlook for monetary and financial conditions assumes further monetary policy easing in 2020.

United Kingdom: The short-term interest rate path is based on market interest rate expectations.

United States: The IMF staff expects the Federal Open Market Committee to continue to adjust the federal funds target rate, in line with the broader macroeconomic outlook.

List of Tables

Output

Inflation

Current Account Transactions

Table A1. Summary of World Output[1]

(Annual percent change)

	Average									Projections	
	2002–11	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
World	**4.1**	**3.5**	**3.5**	**3.6**	**3.5**	**3.4**	**3.9**	**3.6**	**2.9**	**–3.0**	**5.8**
Advanced Economies	**1.7**	**1.2**	**1.4**	**2.1**	**2.3**	**1.7**	**2.5**	**2.2**	**1.7**	**–6.1**	**4.5**
United States	1.8	2.2	1.8	2.5	2.9	1.6	2.4	2.9	2.3	–5.9	4.7
Euro Area	1.1	–0.9	–0.2	1.4	2.1	1.9	2.5	1.9	1.2	–7.5	4.7
Japan	0.6	1.5	2.0	0.4	1.2	0.5	2.2	0.3	0.7	–5.2	3.0
Other Advanced Economies[2]	2.9	2.0	2.4	2.9	2.1	2.2	2.8	2.3	1.6	–5.2	4.4
Emerging Market and Developing Economies	**6.5**	**5.3**	**5.1**	**4.7**	**4.3**	**4.6**	**4.8**	**4.5**	**3.7**	**–1.0**	**6.6**
Regional Groups											
Emerging and Developing Asia	8.6	7.0	6.9	6.8	6.8	6.8	6.7	6.3	5.5	1.0	8.5
Emerging and Developing Europe	4.8	3.0	3.1	1.9	0.9	1.8	4.0	3.2	2.1	–5.2	4.2
Latin America and the Caribbean	3.6	2.9	2.9	1.3	0.3	–0.6	1.3	1.1	0.1	–5.2	3.4
Middle East and Central Asia	5.6	4.9	3.0	3.1	2.6	5.0	2.3	1.8	1.2	–2.8	4.0
Sub-Saharan Africa	5.9	4.7	5.2	5.1	3.2	1.4	3.0	3.3	3.1	–1.6	4.1
Analytical Groups											
By Source of Export Earnings											
Fuel	5.7	5.0	2.6	2.2	0.4	2.2	0.9	0.8	0.0	–4.4	3.9
Nonfuel	6.7	5.4	5.7	5.3	5.2	5.2	5.7	5.3	4.4	–0.4	7.1
Of Which, Primary Products	4.6	2.5	4.1	2.2	3.0	1.8	2.8	1.9	1.1	–3.5	4.6
By External Financing Source											
Net Debtor Economies	5.3	4.4	4.7	4.5	4.2	4.1	4.8	4.5	3.5	–1.4	5.7
Net Debtor Economies by Debt-Servicing Experience											
Economies with Arrears and/or Rescheduling during 2014–18	4.5	1.5	3.0	1.8	0.6	2.8	3.1	3.9	3.8	–1.3	3.0
Other Groups[3]											
European Union	1.5	–0.7	0.0	1.7	2.5	2.2	2.9	2.3	1.7	–7.1	4.8
Low-Income Developing Countries	6.4	4.7	6.0	6.1	4.6	3.8	4.8	5.1	5.1	0.4	5.6
Middle East and North Africa	5.3	4.8	2.5	2.7	2.4	5.5	1.7	1.0	0.3	–3.3	4.2
Memorandum											
Median Growth Rate											
Advanced Economies	2.1	1.0	1.3	2.5	2.3	2.2	3.0	2.7	1.9	–6.7	5.0
Emerging Market and Developing Economies	4.7	4.2	4.0	3.8	3.3	3.3	3.7	3.5	3.0	–2.7	4.3
Low-Income Developing Countries	5.3	5.1	5.1	5.0	3.9	4.2	4.5	4.0	4.7	0.4	4.3
Output per Capita[4]											
Advanced Economies	1.1	0.7	0.9	1.6	1.8	1.2	2.1	1.8	1.3	–6.5	4.1
Emerging Market and Developing Economies	4.8	3.6	3.6	3.2	2.8	3.1	3.3	3.2	2.3	–2.4	5.3
Low-Income Developing Countries	3.8	1.8	3.6	3.8	2.1	1.4	2.5	2.8	2.8	–1.8	3.3
World Growth Rate Based on Market Exchange Rates	**2.7**	**2.5**	**2.6**	**2.8**	**2.8**	**2.6**	**3.3**	**3.1**	**2.4**	**–4.2**	**5.4**
Value of World Output (billions of US dollars)											
At Market Exchange Rates	53,885	74,769	76,958	79,035	74,785	75,958	80,633	85,611	87,156	83,003	89,707
At Purchasing Power Parities	75,089	100,155	105,368	111,066	115,999	121,090	128,047	135,762	142,006	138,352	149,128

[1]Real GDP.
[2]Excludes the United States, euro area countries, and Japan.
[3]Beginning with the April 2020 WEO, the United Kingdom is excluded from the European Union group.
[4]Output per capita is in international currency at purchasing power parity.

Table A2. Advanced Economies: Real GDP[1]

(Annual percent change)

	Average									Projections		Fourth Quarter[2]		
													Projections	
	2002–11	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2019:Q4	2020:Q4	2021:Q4
Real GDP														
Advanced Economies	**1.7**	**1.2**	**1.4**	**2.1**	**2.3**	**1.7**	**2.5**	**2.2**	**1.7**	**–6.1**	**4.5**	**1.5**	**–5.2**	**4.4**
United States	1.8	2.2	1.8	2.5	2.9	1.6	2.4	2.9	2.3	–5.9	4.7	2.3	–5.4	4.9
Euro Area	1.1	–0.9	–0.2	1.4	2.1	1.9	2.5	1.9	1.2	–7.5	4.7	1.0	–5.9	3.6
Germany	1.1	0.4	0.4	2.2	1.7	2.2	2.5	1.5	0.6	–7.0	5.2	0.5	–5.2	3.6
France	1.3	0.3	0.6	1.0	1.1	1.1	2.3	1.7	1.3	–7.2	4.5	0.9	–5.0	2.7
Italy	0.2	–3.0	–1.8	–0.0	0.8	1.3	1.7	0.8	0.3	–9.1	4.8	0.1	–7.2	3.9
Spain	1.6	–3.0	–1.4	1.4	3.8	3.0	2.9	2.4	2.0	–8.0	4.3	1.8	–7.0	3.7
Netherlands	1.3	–1.0	–0.1	1.4	2.0	2.2	2.9	2.6	1.8	–7.5	3.0	1.6	–6.6	2.1
Belgium	1.8	0.7	0.5	1.6	2.0	1.5	2.0	1.5	1.4	–6.9	4.6	1.2	–5.2	2.9
Austria	1.7	0.7	0.0	0.7	1.0	2.1	2.5	2.4	1.6	–7.0	4.5	0.9	–6.6	6.1
Ireland	2.3	0.2	1.4	8.5	25.1	3.7	8.2	8.3	5.5	–6.8	6.3	6.3	–5.5	4.0
Portugal	0.4	–4.1	–0.9	0.8	1.8	2.0	3.5	2.6	2.2	–8.0	5.0	2.2	–10.2	8.1
Greece	0.4	–7.3	–3.2	0.7	–0.4	–0.2	1.5	1.9	1.9	–10.0	5.1	1.0	–11.4	11.6
Finland	1.8	–1.4	–0.9	–0.4	0.5	2.7	3.1	1.6	1.0	–6.0	3.1	0.6	–3.6	1.0
Slovak Republic	4.9	1.9	0.7	2.8	4.8	2.1	3.0	4.0	2.3	–6.2	5.0	1.9	–5.1	4.6
Lithuania	4.3	3.8	3.6	3.5	2.0	2.6	4.2	3.6	3.9	–8.1	8.2	3.5	–4.2	3.8
Slovenia	2.5	–2.6	–1.0	2.8	2.2	3.1	4.8	4.1	2.4	–8.0	5.4	0.6	0.2	–0.1
Luxembourg	2.7	–0.4	3.7	4.3	4.3	4.6	1.8	3.1	2.3	–4.9	4.8	3.1	–3.4	3.3
Latvia	3.7	4.1	2.3	1.9	3.3	1.8	3.8	4.3	2.2	–8.6	8.3	1.0	–9.9	16.7
Estonia	3.6	3.1	1.3	3.0	1.8	2.6	5.7	4.8	4.3	–7.5	7.9	4.0	–14.1	23.2
Cyprus	3.0	–3.4	–6.6	–1.9	3.4	6.7	4.4	4.1	3.2	–6.5	5.6	3.2	–1.2	0.4
Malta	2.1	2.8	4.8	8.8	10.9	5.8	6.5	7.3	4.4	–2.8	7.0	4.3	–3.8	9.0
Japan	0.6	1.5	2.0	0.4	1.2	0.5	2.2	0.3	0.7	–5.2	3.0	–0.7	–3.2	3.4
United Kingdom	1.5	1.5	2.1	2.6	2.4	1.9	1.9	1.3	1.4	–6.5	4.0	1.1	–5.3	3.8
Korea	4.6	2.4	3.2	3.2	2.8	2.9	3.2	2.7	2.0	–1.2	3.4	2.3	–1.3	3.2
Canada	2.0	1.8	2.3	2.9	0.7	1.0	3.2	2.0	1.6	–6.2	4.2	1.5	–5.4	4.0
Australia	3.1	3.8	2.1	2.6	2.3	2.8	2.5	2.7	1.8	–6.7	6.1	2.2	–7.2	8.4
Taiwan Province of China	4.7	2.2	2.5	4.7	1.5	2.2	3.3	2.7	2.7	–4.0	3.5	3.5	–6.6	7.7
Singapore	6.6	4.5	4.8	3.9	3.0	3.2	4.3	3.4	0.7	–3.5	3.0	1.1	–3.1	2.8
Switzerland	1.9	1.0	1.9	2.5	1.3	1.7	1.9	2.7	0.9	–6.0	3.8	1.5	–7.4	8.0
Sweden	2.4	–0.6	1.1	2.7	4.4	2.4	2.4	2.2	1.2	–6.8	5.2	0.8	–4.8	4.1
Hong Kong SAR	4.5	1.7	3.1	2.8	2.4	2.2	3.8	2.9	–1.2	–4.8	3.9	–2.8	0.6	0.3
Czech Republic	3.1	–0.8	–0.5	2.7	5.3	2.5	4.4	2.8	2.6	–6.5	7.5	2.0	–6.0	10.0
Norway	1.5	2.7	1.0	2.0	2.0	1.1	2.3	1.3	1.2	–6.3	2.9	1.8	–8.5	5.9
Israel	3.6	2.4	4.3	3.8	2.3	4.0	3.6	3.4	3.5	–6.3	5.0	3.7	–6.7	6.6
Denmark	0.8	0.2	0.9	1.6	2.3	3.2	2.0	2.4	2.4	–6.5	6.0	2.3	–4.1	4.0
New Zealand	2.7	2.5	2.2	3.2	4.1	4.2	3.8	3.2	2.2	–7.2	5.9	1.6	–7.0	7.0
Puerto Rico	–0.0	0.0	–0.3	–1.2	–1.0	–1.3	–2.7	–4.9	2.0	–6.0	1.5	. . .	. . .	. . .
Macao SAR	13.2	9.2	11.2	–1.2	–21.6	–0.7	9.9	5.4	–4.7	–29.6	32.0	. . .	. . .	. . .
Iceland	2.4	1.3	4.1	2.1	4.7	6.6	4.5	3.8	1.9	–7.2	6.0	4.1	–4.9	–1.6
San Marino	–0.0	–7.2	–0.8	–0.7	2.7	2.3	0.4	1.7	1.1	–12.2	5.4	. . .	. . .	. . .
Memorandum														
Major Advanced Economies	1.4	1.4	1.4	1.9	2.1	1.5	2.3	2.0	1.6	–6.2	4.5	1.4	–5.2	4.2

[1]In this and other tables, when countries are not listed alphabetically, they are ordered on the basis of economic size.
[2]From the fourth quarter of the preceding year.

Table A3. Emerging Market and Developing Economies: Real GDP

(Annual percent change)

	Average									Projections	
	2002–11	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Emerging and Developing Asia	**8.6**	**7.0**	**6.9**	**6.8**	**6.8**	**6.8**	**6.7**	**6.3**	**5.5**	**1.0**	**8.5**
Bangladesh	6.0	6.3	6.0	6.3	6.8	7.2	7.6	8.0	7.9	2.0	9.5
Bhutan	8.8	6.5	3.6	4.0	6.2	7.4	6.3	3.7	5.3	2.7	2.9
Brunei Darussalam	1.5	0.9	–2.1	–2.5	–0.4	–2.5	1.3	0.1	3.9	1.3	3.5
Cambodia	7.9	7.3	7.4	7.1	7.0	6.9	7.0	7.5	7.0	–1.6	6.1
China	10.7	7.9	7.8	7.3	6.9	6.8	6.9	6.7	6.1	1.2	9.2
Fiji	1.4	1.4	4.7	5.6	4.7	2.5	5.4	3.5	0.5	–5.8	7.0
India[1]	7.7	5.5	6.4	7.4	8.0	8.3	7.0	6.1	4.2	1.9	7.4
Indonesia	5.7	6.0	5.6	5.0	4.9	5.0	5.1	5.2	5.0	0.5	8.2
Kiribati	1.0	4.7	4.2	–0.7	10.4	5.1	0.9	2.3	2.3	0.0	2.2
Lao P.D.R.	7.5	7.8	8.0	7.6	7.3	7.0	6.8	6.3	4.7	0.7	5.6
Malaysia	5.1	5.5	4.7	6.0	5.0	4.4	5.7	4.7	4.3	–1.7	9.0
Maldives	7.0	2.5	7.3	7.3	2.9	6.3	6.8	6.9	5.7	–8.1	13.2
Marshall Islands	1.0	–2.4	3.7	–0.9	1.6	1.3	4.1	3.6	2.4	–0.2	3.2
Micronesia	0.3	–1.9	–3.7	–2.3	4.6	0.9	2.7	0.2	1.2	–0.4	1.4
Mongolia	7.5	12.3	11.6	7.9	2.4	1.2	5.3	7.2	5.1	–1.0	8.0
Myanmar	10.0	6.5	7.9	8.2	7.5	6.4	5.8	6.4	6.5	1.8	7.5
Nauru	. . .	10.4	31.0	27.2	3.4	3.0	–5.5	5.7	1.0	–1.7	1.3
Nepal	3.8	4.8	4.1	6.0	3.3	0.6	8.2	6.7	7.1	2.5	5.0
Palau	0.2	2.1	–1.3	5.5	8.2	0.0	–3.4	5.2	0.5	–11.9	14.4
Papua New Guinea	3.8	4.7	3.8	13.5	9.5	4.1	3.5	–0.8	5.0	–1.0	2.9
Philippines	4.8	6.7	7.1	6.1	6.1	6.9	6.7	6.2	5.9	0.6	7.6
Samoa	3.3	–4.1	–0.4	0.1	4.3	8.1	1.0	–2.2	3.5	–3.7	0.5
Solomon Islands	5.6	4.6	3.0	2.3	2.5	3.2	3.7	3.9	1.2	–2.1	3.8
Sri Lanka	6.2	9.1	3.4	5.0	5.0	4.5	3.6	3.3	2.3	–0.5	4.2
Thailand	4.3	7.2	2.7	1.0	3.1	3.4	4.1	4.2	2.4	–6.7	6.1
Timor-Leste[2]	3.5	6.0	2.1	4.5	3.1	3.6	–3.8	–0.8	3.1	–3.0	3.8
Tonga	1.2	–1.1	–0.6	2.5	4.0	5.1	2.7	0.4	–0.1	–1.2	1.2
Tuvalu	1.4	–3.9	4.9	1.2	9.2	5.9	4.6	3.7	6.0	–1.0	3.5
Vanuatu	3.4	1.8	2.0	2.3	0.2	3.5	4.4	2.8	2.9	–3.3	4.9
Vietnam	6.8	5.5	5.6	6.4	7.0	6.7	6.9	7.1	7.0	2.7	7.0
Emerging and Developing Europe	**4.8**	**3.0**	**3.1**	**1.9**	**0.9**	**1.8**	**4.0**	**3.2**	**2.1**	**–5.2**	**4.2**
Albania	5.0	1.4	1.0	1.8	2.2	3.3	3.8	4.1	2.2	–5.0	8.0
Belarus[1]	7.5	1.7	1.0	1.7	–3.8	–2.5	2.5	3.1	1.2	–6.0	3.5
Bosnia and Herzegovina	3.7	–0.7	2.4	1.1	3.1	3.2	3.1	3.6	2.7	–5.0	3.5
Bulgaria	4.3	0.4	0.3	1.9	4.0	3.8	3.5	3.1	3.4	–4.0	6.0
Croatia	2.1	–2.2	–0.5	–0.1	2.4	3.5	3.1	2.7	2.9	–9.0	4.9
Hungary	1.8	–1.5	2.0	4.2	3.8	2.2	4.3	5.1	4.9	–3.1	4.2
Kosovo	4.0	2.8	3.4	1.2	4.1	4.1	4.2	3.8	4.0	–5.0	7.5
Moldova	5.1	–0.6	9.0	5.0	–0.3	4.4	4.7	4.0	3.6	–3.0	4.1
Montenegro	3.5	–2.7	3.5	1.8	3.4	2.9	4.7	5.1	3.6	–9.0	6.5
North Macedonia	3.5	–0.5	2.9	3.6	3.9	2.8	1.1	2.7	3.6	–4.0	7.0
Poland	4.2	1.6	1.4	3.3	3.8	3.1	4.9	5.1	4.1	–4.6	4.2
Romania	3.9	2.1	3.5	3.4	3.9	4.8	7.1	4.4	4.1	–5.0	3.9
Russia	4.8	3.7	1.8	0.7	–2.0	0.3	1.8	2.5	1.3	–5.5	3.5
Serbia	4.7	–0.7	2.9	–1.6	1.8	3.3	2.0	4.4	4.2	–3.0	7.5
Turkey	5.8	4.8	8.5	5.2	6.1	3.2	7.5	2.8	0.9	–5.0	5.0
Ukraine[1]	4.0	0.2	–0.0	–6.6	–9.8	2.4	2.5	3.3	3.2	–7.7	3.6
Latin America and the Caribbean	**3.6**	**2.9**	**2.9**	**1.3**	**0.3**	**–0.6**	**1.3**	**1.1**	**0.1**	**–5.2**	**3.4**
Antigua and Barbuda	1.7	3.4	–0.6	3.8	3.8	5.5	3.1	7.4	5.3	–10.0	8.0
Argentina	4.5	–1.0	2.4	–2.5	2.7	–2.1	2.7	–2.5	–2.2	–5.7	4.4
Aruba	–0.1	–1.4	4.2	0.9	–0.4	0.5	2.3	1.2	0.4	–13.7	12.1
The Bahamas	0.5	3.1	–3.0	0.7	0.6	0.4	0.1	1.6	1.8	–8.3	6.7
Barbados	0.8	–0.4	–1.4	–0.1	2.4	2.5	0.5	–0.6	–0.1	–7.6	7.1
Belize	3.4	2.4	1.3	3.6	2.8	0.1	1.9	2.1	0.3	–12.0	7.6
Bolivia	4.2	5.1	6.8	5.5	4.9	4.3	4.2	4.2	2.8	–2.9	2.9
Brazil	3.9	1.9	3.0	0.5	–3.6	–3.3	1.3	1.3	1.1	–5.3	2.9
Chile	4.5	5.3	4.0	1.8	2.3	1.7	1.2	3.9	1.1	–4.5	5.3
Colombia	4.6	3.9	5.1	4.5	3.0	2.1	1.4	2.5	3.3	–2.4	3.7

Table A3. Emerging Market and Developing Economies: Real GDP *(continued)*

(Annual percent change)

	Average									Projections	
	2002–11	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Latin America and the Caribbean (continued)	**3.6**	**2.9**	**2.9**	**1.3**	**0.3**	**–0.6**	**1.3**	**1.1**	**0.1**	**–5.2**	**3.4**
Costa Rica	4.4	4.8	2.3	3.5	3.6	4.2	3.9	2.7	2.1	–3.3	3.0
Dominica	2.4	–1.1	–0.6	4.4	–2.6	2.5	–9.5	0.5	9.2	–4.7	3.4
Dominican Republic	4.6	2.9	3.6	7.2	6.5	7.0	4.7	7.0	5.1	–1.0	4.0
Ecuador	4.5	5.6	4.9	3.8	0.1	–1.2	2.4	1.3	0.1	–6.3	3.9
El Salvador	1.9	2.8	2.2	1.7	2.4	2.5	2.3	2.4	2.4	–5.4	4.5
Grenada	2.1	–1.2	2.4	7.3	6.4	3.7	4.4	4.1	3.1	–8.0	6.1
Guatemala	3.6	3.1	3.5	4.4	4.1	2.7	3.0	3.1	3.6	–2.0	5.5
Guyana	2.7	5.0	5.0	3.9	3.1	3.4	2.1	4.1	4.7	52.8	6.3
Haiti	0.7	2.9	4.2	2.8	1.2	1.5	1.2	1.5	–1.2	–4.0	1.2
Honduras	4.2	4.1	2.8	3.1	3.8	3.9	4.8	3.7	2.7	–2.4	4.1
Jamaica	0.6	–0.5	0.2	0.6	0.9	1.5	0.7	1.9	1.0	–5.6	3.5
Mexico	1.9	3.6	1.4	2.8	3.3	2.9	2.1	2.1	–0.1	–6.6	3.0
Nicaragua	3.2	6.5	4.9	4.8	4.8	4.6	4.6	–4.0	–3.9	–6.0	0.0
Panama	6.9	9.8	6.9	5.1	5.7	5.0	5.6	3.7	3.0	–2.0	4.0
Paraguay	4.2	–0.5	8.4	4.9	3.1	4.3	5.0	3.7	0.2	–1.0	4.0
Peru	6.2	6.0	5.8	2.4	3.3	4.1	2.5	4.0	2.2	–4.5	5.2
St. Kitts and Nevis	1.7	–2.2	5.4	6.3	1.0	2.8	–2.0	2.9	2.9	–8.1	8.5
St. Lucia	2.7	–0.1	–2.0	1.3	0.1	3.4	3.5	2.6	1.7	–8.5	6.9
St. Vincent and the Grenadines	2.7	1.4	1.8	1.2	1.3	1.9	1.0	2.2	0.4	–4.5	5.4
Suriname	5.1	2.7	2.9	0.3	–3.4	–5.6	1.8	2.6	2.3	–4.9	4.9
Trinidad and Tobago	5.3	–0.7	2.2	–0.9	1.8	–6.3	–2.3	–0.2	–0.0	–4.5	2.6
Uruguay	4.1	3.5	4.6	3.2	0.4	1.7	2.6	1.6	0.2	–3.0	5.0
Venezuela	3.2	5.6	1.3	–3.9	–6.2	–17.0	–15.7	–19.6	–35.0	–15.0	–5.0
Middle East and Central Asia	**5.6**	**4.9**	**3.0**	**3.1**	**2.6**	**5.0**	**2.3**	**1.8**	**1.2**	**–2.8**	**4.0**
Afghanistan	. . .	14.0	5.7	2.7	1.0	2.2	2.9	2.7	3.0	–3.0	4.5
Algeria	3.8	3.4	2.8	3.8	3.7	3.2	1.3	1.4	0.7	–5.2	6.2
Armenia	7.6	7.1	3.4	3.6	3.3	0.2	7.5	5.2	7.6	–1.5	4.8
Azerbaijan	13.5	2.2	5.8	2.8	1.0	–3.1	0.2	1.5	2.3	–2.2	0.7
Bahrain	5.3	3.7	5.4	4.4	2.9	3.5	3.8	2.0	1.8	–3.6	3.0
Djibouti	4.1	4.8	5.0	7.1	7.7	6.7	5.4	8.4	7.5	1.0	8.5
Egypt	4.7	2.2	3.3	2.9	4.4	4.3	4.1	5.3	5.6	2.0	2.8
Georgia	6.5	6.4	3.6	4.4	3.0	2.9	4.8	4.8	5.1	–4.0	3.0
Iran	4.9	–7.7	–0.3	3.2	–1.6	12.5	3.7	–5.4	–7.6	–6.0	3.1
Iraq	13.7	13.9	7.6	0.7	2.5	15.2	–2.5	–0.6	3.9	–4.7	7.2
Jordan	5.8	2.1	2.4	3.4	2.6	2.1	2.1	1.9	2.0	–3.7	3.7
Kazakhstan	7.7	4.8	6.0	4.2	1.2	1.1	4.1	4.1	4.5	–2.5	4.1
Kuwait	5.5	6.6	1.2	0.5	0.6	2.9	–4.7	1.2	0.7	–1.1	3.4
Kyrgyz Republic	4.1	–0.1	10.9	4.0	3.9	4.3	4.7	3.5	4.5	–4.0	8.0
Lebanon[1]	5.4	2.5	3.8	2.5	0.2	1.5	0.9	–1.9	–6.5	–12.0	. . .
Libya[1]	–8.6	124.7	–36.8	–53.0	–13.0	–7.4	64.0	17.9	9.9	–58.7	80.7
Mauritania	4.3	4.5	4.2	4.3	5.4	1.3	3.5	2.1	5.9	–2.0	4.2
Morocco	4.7	3.0	4.5	2.7	4.5	1.0	4.2	3.0	2.2	–3.7	4.8
Oman	2.8	9.1	5.1	1.4	4.7	4.9	0.3	1.8	0.5	–2.8	3.0
Pakistan	4.7	3.8	3.7	4.1	4.1	4.6	5.2	5.5	3.3	–1.5	2.0
Qatar	14.1	4.7	4.4	4.0	3.7	2.1	1.6	1.5	0.1	–4.3	5.0
Saudi Arabia	4.5	5.4	2.7	3.7	4.1	1.7	–0.7	2.4	0.3	–2.3	2.9
Somalia	. . .	1.2	1.9	2.4	3.5	2.9	1.4	2.8	2.9	–2.5	2.9
Sudan[3]	3.7	–17.0	2.0	4.7	1.9	3.5	0.7	–2.3	–2.5	–7.2	–3.0
Syria[4]	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Tajikistan	7.7	7.5	7.4	6.7	6.0	6.9	7.1	7.3	7.5	1.0	5.5
Tunisia	3.6	4.1	2.8	2.9	1.2	1.2	1.9	2.7	1.0	–4.3	4.1
Turkmenistan	12.7	11.1	10.2	10.3	6.5	6.2	6.5	6.2	6.3	1.8	6.4
United Arab Emirates	4.4	4.5	5.1	4.3	5.1	3.1	0.5	1.7	1.3	–3.5	3.3
Uzbekistan	7.2	7.4	7.6	7.2	7.4	6.1	4.5	5.4	5.6	1.8	7.0
Yemen	2.5	2.4	4.8	–0.2	–28.0	–9.4	–5.1	0.8	2.1	–3.0	6.1

Table A3. Emerging Market and Developing Economies: Real GDP *(continued)*

(Annual percent change)

	Average									Projections	
	2002–11	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Sub-Saharan Africa	**5.9**	**4.7**	**5.2**	**5.1**	**3.2**	**1.4**	**3.0**	**3.3**	**3.1**	**–1.6**	**4.1**
Angola	8.7	8.5	5.0	4.8	0.9	–2.6	–0.2	–1.2	–1.5	–1.4	2.6
Benin	3.6	4.8	7.2	6.4	1.8	3.3	5.7	6.7	6.4	4.5	6.0
Botswana	4.7	4.5	11.3	4.1	–1.7	4.3	2.9	4.5	3.0	–5.4	6.8
Burkina Faso	5.9	6.5	5.8	4.3	3.9	6.0	6.2	6.8	5.7	2.0	5.8
Burundi	4.0	4.4	5.9	4.5	–3.9	–0.6	0.5	1.6	1.8	–5.5	4.2
Cabo Verde	5.2	1.1	0.8	0.6	1.0	4.7	3.7	5.1	5.5	–4.0	5.5
Cameroon	3.9	4.5	5.4	5.9	5.7	4.6	3.5	4.1	3.7	–1.2	4.1
Central African Republic	2.5	5.1	–36.4	0.1	4.3	4.7	4.5	3.8	3.0	1.0	4.0
Chad	8.6	8.8	5.8	6.9	1.8	–5.6	–2.4	2.3	3.0	–0.2	6.1
Comoros	2.9	3.2	4.5	2.1	1.3	3.5	4.2	3.6	1.9	–1.2	3.1
Democratic Republic of the Congo	5.6	7.1	8.5	9.5	6.9	2.4	3.7	5.8	4.4	–2.2	3.5
Republic of Congo	4.6	3.8	3.3	6.8	2.6	–2.8	–1.8	1.6	–0.9	–2.3	3.4
Côte d'Ivoire	0.6	10.9	9.3	8.8	8.8	7.2	7.4	6.8	6.9	2.7	8.7
Equatorial Guinea	10.6	8.3	–4.1	0.4	–9.1	–8.8	–5.7	–5.8	–6.1	–5.5	2.3
Eritrea	2.8	1.9	–10.5	30.9	–20.6	7.4	–10.0	13.0	3.8	0.1	5.9
Eswatini	3.7	5.4	3.9	0.9	2.3	1.3	2.0	2.4	1.0	–0.9	1.8
Ethiopia	8.9	8.7	9.9	10.3	10.4	8.0	10.2	7.7	9.0	3.2	4.3
Gabon	1.9	5.3	5.5	4.4	3.9	2.1	0.5	0.8	3.4	–1.2	3.6
The Gambia	2.0	5.2	2.9	–1.4	4.1	1.9	4.8	6.5	6.0	2.5	6.5
Ghana	6.7	8.5	7.2	2.9	2.2	3.4	8.1	6.3	6.1	1.5	5.9
Guinea	3.3	5.9	3.9	3.7	3.8	10.8	10.3	6.2	5.6	2.9	7.6
Guinea-Bissau	3.7	–1.7	3.3	1.0	6.1	5.3	4.8	3.8	4.6	–1.5	3.0
Kenya	4.4	4.6	5.9	5.4	5.7	5.9	4.9	6.3	5.6	1.0	6.1
Lesotho	4.4	6.1	3.9	2.8	3.3	3.4	–1.0	0.4	1.2	–5.2	5.1
Liberia	2.5	8.4	8.8	0.7	0.0	–1.6	2.5	1.2	–2.5	–2.5	4.0
Madagascar	2.2	3.0	2.3	3.3	3.1	4.0	3.9	4.6	4.8	0.4	5.0
Malawi	5.8	1.9	5.2	5.7	2.9	2.3	4.0	3.2	4.5	1.0	2.5
Mali	4.6	–0.7	2.2	6.8	6.6	5.9	5.0	5.2	5.1	1.5	4.1
Mauritius	4.1	3.5	3.4	3.7	3.6	3.8	3.8	3.8	3.5	–6.8	5.9
Mozambique	7.6	7.3	7.0	7.4	6.7	3.8	3.7	3.4	2.2	2.2	4.7
Namibia	4.3	5.1	5.6	5.8	4.5	–0.3	–0.1	0.3	–1.4	–2.5	3.2
Niger	4.4	10.6	5.6	6.6	4.4	5.7	5.0	7.0	5.8	1.0	8.1
Nigeria	8.7	4.3	5.4	6.3	2.7	–1.6	0.8	1.9	2.2	–3.4	2.4
Rwanda	8.1	8.6	4.7	6.2	8.9	6.0	6.1	8.6	10.1	3.5	6.7
São Tomé and Príncipe	5.4	3.1	4.8	6.5	3.8	4.2	3.9	3.0	1.3	–6.0	5.5
Senegal	3.7	5.1	2.8	6.6	6.4	6.4	7.4	6.4	5.3	3.0	5.5
Seychelles	2.8	3.7	6.0	4.5	4.9	4.6	4.4	3.8	3.9	–10.8	8.0
Sierra Leone	7.8	15.2	20.7	4.6	–20.5	6.4	3.8	3.5	5.1	–2.3	4.0
South Africa	3.5	2.2	2.5	1.8	1.2	0.4	1.4	0.8	0.2	–5.8	4.0
South Sudan	. . .	–52.4	29.3	2.9	–0.2	–16.7	–5.5	–1.1	11.3	4.9	3.2
Tanzania	6.8	5.1	6.8	6.7	6.2	6.9	6.8	7.0	6.3	2.0	4.6
Togo	2.8	6.5	6.1	5.9	5.7	5.6	4.4	4.9	5.3	1.0	4.0
Uganda	7.7	2.2	4.7	4.6	5.7	2.3	5.0	6.3	4.9	3.5	4.3
Zambia	7.5	7.6	5.1	4.7	2.9	3.8	3.5	4.0	1.5	–3.5	2.3
Zimbabwe[1]	–2.6	16.7	2.0	2.4	1.8	0.7	4.7	3.5	–8.3	–7.4	2.5

[1]See country-specific notes for Belarus, India, Lebanon, Libya, Ukraine, and Zimbabwe in the "Country Notes" section of the Statistical Appendix.
[2]In this table only, the data for Timor-Leste are based on non-oil GDP.
[3]Data for 2011 exclude South Sudan after July 9. Data for 2012 and onward pertain to the current Sudan.
[4]Data for Syria are excluded for 2011 onward owing to the uncertain political situation.

Table A4. Summary of Inflation

(Percent)

	Average									Projections	
	2002–11	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Consumer Prices											
Advanced Economies	**2.0**	**2.0**	**1.4**	**1.4**	**0.3**	**0.8**	**1.7**	**2.0**	**1.4**	**0.5**	**1.5**
United States	2.4	2.1	1.5	1.6	0.1	1.3	2.1	2.4	1.8	0.6	2.2
Euro Area[1]	2.1	2.5	1.3	0.4	0.2	0.2	1.5	1.8	1.2	0.2	1.0
Japan	–0.2	–0.1	0.3	2.8	0.8	–0.1	0.5	1.0	0.5	0.2	0.4
Other Advanced Economies[2]	2.3	2.1	1.7	1.5	0.5	0.9	1.8	1.9	1.4	0.7	1.3
Emerging Market and Developing Economies[3]	**6.5**	**5.8**	**5.5**	**4.7**	**4.7**	**4.3**	**4.3**	**4.8**	**5.0**	**4.6**	**4.5**
Regional Groups											
Emerging and Developing Asia	4.6	4.6	4.6	3.4	2.7	2.8	2.4	2.6	3.2	3.0	2.9
Emerging and Developing Europe	10.0	6.2	5.6	6.5	10.5	5.5	5.4	6.1	6.5	5.1	5.0
Latin America and the Caribbean	5.6	4.6	4.6	4.9	5.5	5.6	6.0	6.2	7.1	6.2	5.9
Middle East and Central Asia	7.7	9.4	8.8	6.6	5.5	5.5	6.7	9.9	8.5	8.4	8.7
Sub-Saharan Africa	9.3	9.1	6.5	6.3	6.9	10.7	10.7	8.3	8.4	9.3	7.6
Analytical Groups											
By Source of Export Earnings											
Fuel	9.3	8.0	8.1	6.5	8.6	7.1	5.4	7.0	6.8	6.6	6.9
Nonfuel	5.7	5.3	4.9	4.2	3.8	3.7	4.0	4.3	4.7	4.3	4.0
Of Which, Primary Products[4]	6.4	6.9	6.5	6.9	5.2	6.0	10.9	13.2	16.5	15.9	13.5
By External Financing Source											
Net Debtor Economies	7.2	6.9	6.2	5.6	5.3	5.1	5.5	5.4	5.2	4.7	4.7
Net Debtor Economies by Debt-Servicing Experience											
Economies with Arrears and/or Rescheduling during 2014–18	9.2	7.7	6.5	10.3	14.7	9.8	18.5	18.0	14.0	11.2	10.4
Other Groups											
European Union[5]	2.4	2.6	1.4	0.4	0.1	0.2	1.6	1.9	1.4	0.6	1.2
Low-Income Developing Countries	9.8	9.6	7.9	7.1	6.6	8.8	9.4	8.9	8.5	9.7	8.2
Middle East and North Africa	7.4	9.7	9.4	6.5	5.6	5.2	6.7	11.0	9.0	8.2	9.1
Memorandum											
Median Inflation Rate											
Advanced Economies	2.3	2.6	1.4	0.7	0.1	0.6	1.6	1.8	1.5	0.5	1.4
Emerging Market and Developing Economies[3]	5.2	4.6	3.8	3.1	2.7	2.7	3.3	2.9	2.6	3.0	3.0

[1]Based on Eurostat's harmonized index of consumer prices.
[2]Excludes the United States, euro area countries, and Japan.
[3]Excludes Venezuela but includes Argentina from 2017 onward. See country-specific notes for Venezuela and Argentina in the "Country Notes" section of the Statistical Appendix.
[4]Includes Argentina from 2017 onward. See country-specific note for Argentina in the "Country Notes" section of the Statistical Appendix.
[5]Beginning with the April 2020 WEO, the United Kingdom is excluded from the European Union group.

Table A5. Advanced Economies: Consumer Prices[1]

(Annual percent change)

	Average									Projections		End of Period[2]	Projections	
	2002–11	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2019	2020	2021
Advanced Economies	**2.0**	**2.0**	**1.4**	**1.4**	**0.3**	**0.8**	**1.7**	**2.0**	**1.4**	**0.5**	**1.5**	**1.5**	**0.4**	**1.7**
United States	2.4	2.1	1.5	1.6	0.1	1.3	2.1	2.4	1.8	0.6	2.2	1.9	0.8	2.4
Euro Area[3]	2.1	2.5	1.3	0.4	0.2	0.2	1.5	1.8	1.2	0.2	1.0	1.3	–0.1	1.3
Germany	1.7	2.1	1.6	0.8	0.7	0.4	1.7	2.0	1.3	0.3	1.2	1.5	0.2	1.3
France	1.9	2.2	1.0	0.6	0.1	0.3	1.2	2.1	1.3	0.3	0.7	1.6	–0.7	1.3
Italy	2.3	3.3	1.2	0.2	0.1	–0.1	1.3	1.2	0.6	0.2	0.7	0.5	0.2	0.7
Spain	2.8	2.4	1.4	–0.2	–0.5	–0.2	2.0	1.7	0.7	–0.3	0.7	0.8	–1.0	1.4
Netherlands	1.9	2.8	2.6	0.3	0.2	0.1	1.3	1.6	2.7	0.5	1.2	2.8	0.8	1.3
Belgium	2.2	2.6	1.2	0.5	0.6	1.8	2.2	2.3	1.2	0.3	1.1	0.9	–0.2	1.4
Austria	2.0	2.6	2.1	1.5	0.8	1.0	2.2	2.1	1.5	0.4	1.7	1.8	0.3	1.9
Ireland	2.0	1.9	0.5	0.3	–0.0	–0.2	0.3	0.7	0.9	0.4	1.7	0.0	1.5	1.8
Portugal	2.4	2.8	0.4	–0.2	0.5	0.6	1.6	1.2	0.3	–0.2	1.4	0.4	–0.2	1.6
Greece	3.4	1.0	–0.9	–1.4	–1.1	0.0	1.1	0.8	0.5	–0.5	1.0	1.1	–0.6	1.4
Finland	1.8	3.2	2.2	1.2	–0.2	0.4	0.8	1.2	1.1	0.9	1.7	1.1	0.8	2.0
Slovak Republic	3.8	3.7	1.5	–0.1	–0.3	–0.5	1.4	2.5	2.8	1.1	1.4	3.2	0.4	1.8
Lithuania	3.3	3.2	1.2	0.2	–0.7	0.7	3.7	2.5	2.2	–0.3	1.7	2.7	–0.3	1.7
Slovenia	3.5	2.6	1.8	0.2	–0.5	–0.1	1.4	1.7	1.6	0.4	1.4	1.8	0.2	1.8
Luxembourg	2.8	2.9	1.7	0.7	0.1	0.0	2.1	2.0	1.7	0.7	1.5	1.8	0.6	1.3
Latvia	5.5	2.3	0.0	0.7	0.2	0.1	2.9	2.6	2.7	–0.3	3.0	2.1	0.5	2.4
Estonia	4.2	4.2	3.2	0.5	0.1	0.8	3.7	3.4	2.3	1.5	2.0	1.8	1.5	2.0
Cyprus	2.6	3.1	0.4	–0.3	–1.5	–1.2	0.7	0.8	0.6	0.7	1.0	0.8	0.8	1.0
Malta	2.4	3.2	1.0	0.8	1.2	0.9	1.3	1.7	1.5	0.6	1.9	1.3	0.3	2.0
Japan	–0.2	–0.1	0.3	2.8	0.8	–0.1	0.5	1.0	0.5	0.2	0.4	0.5	–0.0	0.4
United Kingdom	2.4	2.8	2.6	1.5	0.0	0.7	2.7	2.5	1.8	1.2	1.5	1.4	1.0	1.9
Korea	3.2	2.2	1.3	1.3	0.7	1.0	1.9	1.5	0.4	0.3	0.4	0.7	–0.3	0.9
Canada	2.1	1.5	0.9	1.9	1.1	1.4	1.6	2.3	1.9	0.6	1.3	2.1	0.2	1.6
Australia	2.9	1.7	2.5	2.5	1.5	1.3	2.0	1.9	1.6	1.4	1.8	1.8	1.2	2.0
Taiwan Province of China	1.1	1.6	1.0	1.3	–0.6	1.0	1.1	1.5	0.5	0.5	1.5	1.1	0.5	1.5
Singapore	2.0	4.6	2.4	1.0	–0.5	–0.5	0.6	0.4	0.6	–0.2	0.5	0.8	–0.4	0.9
Switzerland	0.8	–0.7	–0.2	–0.0	–1.1	–0.4	0.5	0.9	0.4	–0.4	0.6	0.2	–0.0	0.4
Sweden	1.8	0.9	0.4	0.2	0.7	1.1	1.9	2.0	1.7	0.5	1.5	1.7	0.4	1.5
Hong Kong SAR	1.1	4.1	4.3	4.4	3.0	2.4	1.5	2.4	2.9	2.0	2.5	2.9	2.0	2.5
Czech Republic	2.3	3.3	1.4	0.4	0.3	0.7	2.5	2.2	2.9	2.1	2.0	3.2	2.0	2.0
Norway	1.8	0.7	2.1	2.0	2.2	3.6	1.9	2.8	2.2	2.4	2.2	1.4	2.4	2.2
Israel	2.4	1.7	1.5	0.5	–0.6	–0.5	0.2	0.8	0.8	–1.9	0.5	0.6	–1.5	0.3
Denmark	2.0	2.4	0.5	0.4	0.2	0.0	1.1	0.7	0.7	0.7	1.2	0.8	0.7	1.2
New Zealand	2.8	1.0	1.1	1.2	0.3	0.6	1.9	1.6	1.6	1.2	1.4	1.9	1.0	1.5
Puerto Rico	3.0	1.3	1.1	0.6	–0.8	–0.3	1.8	1.3	0.7	–1.5	0.6	0.7	–1.5	0.6
Macao SAR	3.0	6.1	5.5	6.0	4.6	2.4	1.2	3.0	2.8	2.0	2.3	2.6	2.0	2.3
Iceland	6.0	5.2	3.9	2.0	1.6	1.7	1.8	2.7	3.0	2.3	2.5	2.0	2.6	2.5
San Marino	. . .	2.8	1.6	1.1	0.1	0.6	1.0	1.8	1.0	0.3	1.5	1.0	0.3	1.5
Memorandum														
Major Advanced Economies	1.9	1.9	1.3	1.5	0.3	0.8	1.8	2.1	1.5	0.5	1.6	1.5	0.5	1.8

[1]Movements in consumer prices are shown as annual averages.
[2]Monthly year-over-year changes and, for several countries, on a quarterly basis.
[3]Based on Eurostat's harmonized index of consumer prices.

Table A6. Emerging Market and Developing Economies: Consumer Prices[1]

(Annual percent change)

	Average									Projections		End of Period[2]	Projections	
	2002–11	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2019	2020	2021
Emerging and Developing Asia	**4.6**	**4.6**	**4.6**	**3.4**	**2.7**	**2.8**	**2.4**	**2.6**	**3.2**	**3.0**	**2.9**	**4.5**	**1.7**	**3.2**
Bangladesh	7.3	6.2	7.5	7.0	6.2	5.7	5.6	5.6	5.7	5.5	5.6	5.7	5.5	5.6
Bhutan	5.0	10.1	6.6	8.7	5.5	3.2	5.4	2.7	2.6	3.1	3.5	2.7	3.4	3.5
Brunei Darussalam	0.4	0.1	0.4	–0.2	–0.3	–0.4	–1.3	1.1	–0.5	0.9	1.0	–0.1	0.9	1.0
Cambodia	5.7	2.9	3.0	3.9	1.2	3.0	2.9	2.4	2.4	1.5	1.9	2.7	0.9	2.8
China	2.6	2.6	2.6	2.0	1.4	2.0	1.6	2.1	2.9	3.0	2.6	4.5	1.0	3.0
Fiji	4.0	3.4	2.9	0.5	1.4	3.9	3.4	4.1	1.9	1.2	1.5	1.9	1.2	1.5
India	7.0	10.0	9.4	5.8	4.9	4.5	3.6	3.4	4.5	3.3	3.6	5.8	2.7	3.8
Indonesia	7.9	4.0	6.4	6.4	6.4	3.5	3.8	3.3	2.8	2.9	2.9	2.6	3.1	3.0
Kiribati	2.6	–3.0	–1.5	2.1	0.6	1.9	0.4	0.6	–1.9	1.8	1.7	–1.2	1.5	1.9
Lao P.D.R.	7.6	4.3	6.4	4.1	1.3	1.8	0.7	2.0	3.3	6.5	4.9	6.3	6.3	3.5
Malaysia	2.4	1.7	2.1	3.1	2.1	2.1	3.8	1.0	0.7	0.1	2.8	1.0	0.1	2.8
Maldives	5.0	10.9	3.8	2.1	1.9	0.8	2.3	1.4	1.3	1.5	1.5	1.3	1.4	2.1
Marshall Islands	. . .	4.3	1.9	1.1	–2.2	–1.5	0.1	0.8	0.6	–0.9	2.2	0.6	–0.9	2.2
Micronesia	3.5	6.3	2.2	0.7	–0.2	–0.6	0.1	1.5	1.8	2.0	2.0	1.8	2.0	2.0
Mongolia	9.3	14.3	10.5	12.3	5.7	0.7	4.3	6.8	7.3	5.6	6.5	5.2	6.0	7.0
Myanmar	16.6	0.4	5.8	5.1	7.3	9.1	4.6	5.9	8.6	6.2	6.3	9.5	5.4	6.1
Nauru	. . .	0.3	–1.1	0.3	9.8	8.2	5.1	0.5	3.9	1.5	1.7	2.3	1.3	1.6
Nepal	6.8	8.3	9.9	9.0	7.2	9.9	4.5	4.1	4.6	6.7	6.7	6.0	7.5	6.0
Palau	3.0	5.4	2.8	4.0	2.2	–1.3	0.9	1.6	0.7	0.5	1.5	0.7	0.5	1.5
Papua New Guinea	6.0	4.5	5.0	5.2	6.0	6.7	5.4	4.7	3.8	4.7	5.9	3.4	5.2	6.2
Philippines	5.0	3.0	2.6	3.6	0.7	1.3	2.9	5.2	2.5	1.7	2.9	2.5	2.6	3.0
Samoa	5.8	6.2	–0.2	–1.2	1.9	0.1	1.3	3.7	2.2	2.3	1.6	–0.1	1.7	1.4
Solomon Islands	8.5	5.9	5.4	5.2	–0.6	0.5	0.5	2.7	2.2	2.4	3.0	2.2	1.7	4.1
Sri Lanka	9.0	7.5	6.9	2.8	2.2	4.0	6.6	4.3	4.3	4.7	4.6	4.8	4.5	4.8
Thailand	2.8	3.0	2.2	1.9	–0.9	0.2	0.7	1.1	0.7	–1.1	0.6	0.9	–1.1	0.7
Timor-Leste	5.5	10.9	9.5	0.8	0.6	–1.5	0.5	2.3	0.1	0.9	1.9	0.3	1.5	2.4
Tonga	7.5	1.1	2.1	1.2	–1.1	2.6	7.4	3.6	4.7	2.0	1.2	3.2	0.9	1.5
Tuvalu	2.8	1.4	2.0	1.1	3.1	3.5	4.1	2.1	2.2	1.9	2.6	2.2	1.9	2.6
Vanuatu	2.6	1.3	1.5	0.8	2.5	0.8	3.1	2.3	2.1	1.8	1.8	2.3	1.6	2.0
Vietnam	9.6	9.1	6.6	4.1	0.6	2.7	3.5	3.5	2.8	3.2	3.9	5.2	2.0	4.3
Emerging and Developing Europe	**10.0**	**6.2**	**5.6**	**6.5**	**10.5**	**5.5**	**5.4**	**6.1**	**6.5**	**5.1**	**5.0**	**5.2**	**5.3**	**5.0**
Albania	3.1	2.0	1.9	1.6	1.9	1.3	2.0	2.0	1.4	2.4	2.7	1.1	2.6	2.9
Belarus	19.5	59.2	18.3	18.1	13.5	11.8	6.0	4.9	5.6	5.6	5.6	4.7	6.5	4.9
Bosnia and Herzegovina	2.9	2.1	–0.1	–0.9	–1.0	–1.6	0.8	1.4	0.7	–0.6	1.4	0.8	–0.6	1.2
Bulgaria[3]	5.6	2.4	0.4	–1.6	–1.1	–1.3	1.2	2.6	2.5	1.0	1.9	3.1	1.0	2.4
Croatia	2.7	3.4	2.2	–0.2	–0.5	–1.1	1.1	1.5	0.8	1.3	1.2	1.4	1.1	1.2
Hungary	5.1	5.7	1.7	–0.2	–0.1	0.4	2.4	2.8	3.4	3.3	3.2	4.0	3.0	3.1
Kosovo	2.3	2.5	1.8	0.4	–0.5	0.3	1.5	1.1	2.7	1.3	1.6	1.2	1.6	1.9
Moldova	9.3	4.6	4.6	5.1	9.6	6.4	6.6	3.1	4.8	2.8	2.3	7.5	0.5	6.0
Montenegro	5.4	4.1	2.2	–0.7	1.5	–0.3	2.4	2.6	0.4	0.7	0.9	1.1	0.4	1.2
North Macedonia	2.0	3.3	2.8	–0.3	–0.3	–0.2	1.4	1.5	0.8	–0.9	0.8	0.4	–0.4	1.0
Poland	2.6	3.7	0.9	–0.0	–0.9	–0.6	2.0	1.6	2.3	3.2	2.6	3.4	2.1	2.5
Romania	9.4	3.3	4.0	1.1	–0.6	–1.6	1.3	4.6	3.8	2.2	1.5	4.0	1.4	1.9
Russia	11.2	5.1	6.8	7.8	15.5	7.0	3.7	2.9	4.5	3.1	3.0	3.0	3.8	2.9
Serbia	9.3	7.3	7.7	2.1	1.4	1.1	3.1	2.0	1.9	1.4	1.9	1.9	1.5	2.0
Turkey	13.2	8.9	7.5	8.9	7.7	7.8	11.1	16.3	15.2	12.0	12.0	11.8	12.0	12.0
Ukraine[4]	10.7	0.6	–0.3	12.1	48.7	13.9	14.4	10.9	7.9	4.5	7.2	4.1	7.7	5.9
Latin America and the Caribbean[5]	**5.6**	**4.6**	**4.6**	**4.9**	**5.5**	**5.6**	**6.0**	**6.2**	**7.1**	**6.2**	**5.9**	**7.2**	**5.6**	**5.7**
Antigua and Barbuda	2.3	3.4	1.1	1.1	1.0	–0.5	2.4	1.2	1.4	1.4	1.7	1.6	1.3	2.0
Argentina[4]	10.7	10.0	10.6	. . .	. . .	. . .	25.7	34.3	53.5	. . .	. . .	53.8	. . .	. . .
Aruba	3.5	0.6	–2.4	0.4	0.5	–0.9	–1.0	3.6	4.3	1.5	2.0	5.2	–0.7	3.3
The Bahamas	2.3	1.9	0.4	1.2	1.9	–0.3	1.5	2.3	1.3	2.4	2.8	1.8	2.9	2.7
Barbados	4.7	4.5	1.8	1.8	–1.1	1.5	4.4	3.7	4.1	4.5	1.6	7.2	0.7	2.4
Belize	2.6	1.2	0.5	1.2	–0.9	0.7	1.1	0.3	0.6	1.0	1.4	1.2	0.8	2.0
Bolivia	5.4	4.5	5.7	5.8	4.1	3.6	2.8	2.3	1.8	2.3	4.4	1.5	4.1	3.8
Brazil	6.6	5.4	6.2	6.3	9.0	8.7	3.4	3.7	3.7	3.6	3.3	4.3	3.0	3.3
Chile	3.2	3.0	1.8	4.7	4.3	3.8	2.2	2.3	2.3	3.4	2.9	3.0	2.5	3.0
Colombia	5.1	3.2	2.0	2.9	5.0	7.5	4.3	3.2	3.5	3.5	3.2	3.8	3.2	3.0

Table A6. Emerging Market and Developing Economies: Consumer Prices[1] *(continued)*

(Annual percent change)

	Average									Projections		End of Period[2]	Projections	
	2002–11	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2019	2020	2021
Latin America and the Caribbean (continued)[5]	**5.6**	**4.6**	**4.6**	**4.9**	**5.5**	**5.6**	**6.0**	**6.2**	**7.1**	**6.2**	**5.9**	**7.2**	**5.6**	**5.7**
Costa Rica	9.7	4.5	5.2	4.5	0.8	–0.0	1.6	2.2	2.1	1.5	2.3	1.5	2.0	2.5
Dominica	2.2	1.4	–0.0	0.8	–0.9	0.0	0.6	1.4	1.6	1.8	1.9	1.8	1.8	2.0
Dominican Republic	12.1	3.7	4.8	3.0	0.8	1.6	3.3	3.6	1.8	3.5	3.6	3.7	3.0	4.0
Ecuador	5.2	5.1	2.7	3.6	4.0	1.7	0.4	–0.2	0.3	–0.0	1.2	–0.1	0.1	2.3
El Salvador	3.6	1.7	0.8	1.1	–0.7	0.6	1.0	1.1	0.1	0.1	0.6	–0.0	0.4	0.8
Grenada	3.1	2.4	–0.0	–1.0	–0.6	1.7	0.9	0.8	0.8	0.2	1.2	0.9	0.3	1.3
Guatemala	6.7	3.8	4.3	3.4	2.4	4.4	4.4	3.8	3.7	1.8	1.8	3.4	1.6	3.1
Guyana	6.1	2.4	1.9	0.7	–0.9	0.8	1.9	1.3	2.1	1.8	3.0	2.1	1.9	3.9
Haiti	13.1	6.8	6.8	3.9	7.5	13.4	14.7	12.9	17.3	22.2	21.3	20.1	23.0	20.0
Honduras	7.3	5.2	5.2	6.1	3.2	2.7	3.9	4.3	4.4	3.2	3.0	4.1	2.4	4.2
Jamaica	11.6	6.9	9.3	8.3	3.7	2.3	4.4	3.7	3.9	5.1	5.2	6.2	4.9	5.4
Mexico	4.4	4.1	3.8	4.0	2.7	2.8	6.0	4.9	3.6	2.7	2.8	2.8	2.4	3.0
Nicaragua	8.4	7.2	7.1	6.0	4.0	3.5	3.9	4.9	5.4	4.5	4.0	6.1	3.8	4.0
Panama	3.1	5.7	4.0	2.6	0.1	0.7	0.9	0.8	–0.4	–0.9	0.5	–0.1	–1.0	1.0
Paraguay	7.9	3.7	2.7	5.0	3.1	4.1	3.6	4.0	2.8	2.9	3.2	2.8	3.0	3.3
Peru	2.5	3.7	2.8	3.2	3.5	3.6	2.8	1.3	2.1	1.7	1.8	1.9	1.6	2.0
St. Kitts and Nevis	3.7	0.8	1.1	0.2	–2.3	–0.7	0.7	–1.0	–0.2	0.9	1.7	0.4	1.4	2.0
St. Lucia	2.4	4.2	1.5	3.5	–1.0	–3.1	0.1	2.4	0.7	0.2	1.8	0.7	0.7	2.0
St. Vincent and the Grenadines	3.1	2.6	0.8	0.2	–1.7	–0.2	2.2	2.3	0.9	0.9	1.6	0.5	1.5	2.0
Suriname	11.7	5.0	1.9	3.4	6.9	55.5	22.0	6.9	4.4	27.9	22.7	4.2	49.4	6.7
Trinidad and Tobago	6.9	9.3	5.2	5.7	4.7	3.1	1.9	1.0	1.0	–1.0	1.3	0.4	–1.0	1.3
Uruguay	9.1	8.1	8.6	8.9	8.7	9.6	6.2	7.6	7.9	8.8	7.9	8.8	8.0	7.5
Venezuela[4]	23.4	21.1	40.6	62.2	121.7	254.9	438.1	65,374.1	19,906.0	15,000.0	15,000.0	9,585.5	15,000.0	15,000.0
Middle East and Central Asia	**7.7**	**9.4**	**8.8**	**6.6**	**5.5**	**5.5**	**6.7**	**9.9**	**8.5**	**8.4**	**8.7**	**7.2**	**9.7**	**8.0**
Afghanistan	11.1	6.4	7.4	4.7	–0.7	4.4	5.0	0.6	2.3	4.7	4.5	2.8	4.5	5.0
Algeria	3.6	8.9	3.3	2.9	4.8	6.4	5.6	4.3	2.0	3.5	3.7	2.4	3.3	4.0
Armenia	4.8	2.5	5.8	3.0	3.7	–1.4	1.0	2.4	1.4	0.8	2.0	0.7	1.5	2.5
Azerbaijan	8.0	1.0	2.4	1.4	4.0	12.4	12.8	2.3	2.6	3.3	3.2	2.7	3.3	3.2
Bahrain	1.9	2.8	3.3	2.7	1.8	2.8	1.4	2.1	1.0	2.6	2.5	1.7	2.4	2.4
Djibouti	4.0	4.2	1.1	1.3	–0.8	2.7	0.6	0.1	3.3	2.9	2.8	3.3	3.5	2.0
Egypt	8.8	8.6	6.9	10.1	11.0	10.2	23.5	20.9	13.9	5.9	8.2	9.4	6.2	9.0
Georgia	7.0	–0.9	–0.5	3.1	4.0	2.1	6.0	2.6	4.9	4.6	3.7	7.0	3.5	3.0
Iran	15.6	30.6	34.7	15.6	11.9	9.1	9.6	31.2	41.1	34.2	33.5	26.4	42.0	25.0
Iraq	. . .	6.1	1.9	2.2	1.4	0.5	0.1	0.4	–0.2	0.8	1.0	0.1	1.0	1.0
Jordan	4.3	4.5	4.8	2.9	–0.9	–0.8	3.3	4.5	0.3	0.2	1.6	0.6	1.4	1.0
Kazakhstan	8.6	5.1	5.8	6.7	6.7	14.6	7.4	6.0	5.2	6.9	6.8	5.4	8.1	6.5
Kuwait	3.6	3.2	2.7	3.1	3.7	3.5	1.5	0.6	1.1	0.5	2.3	1.5	0.6	2.5
Kyrgyz Republic	8.3	2.8	6.6	7.5	6.5	0.4	3.2	1.5	1.1	10.6	7.2	3.1	12.0	7.0
Lebanon[4]	3.1	6.6	4.8	1.8	–3.7	–0.8	4.5	4.6	2.9	17.0	. . .	7.0	17.5	. . .
Libya[4]	2.9	6.1	2.6	2.4	14.8	24.0	28.0	–1.2	4.6	22.3	15.1	4.6	22.3	15.1
Mauritania	6.6	4.9	4.1	3.8	0.5	1.5	2.3	3.1	2.3	3.9	4.5	2.7	5.0	4.0
Morocco	1.8	1.3	1.9	0.4	1.5	1.6	0.8	1.9	–0.0	0.3	1.3	–0.3	0.3	1.3
Oman	3.4	2.9	1.2	1.0	0.1	1.1	1.6	0.9	0.1	1.0	3.4	0.1	1.0	3.4
Pakistan	9.0	11.0	7.4	8.6	4.5	2.9	4.1	3.9	6.7	11.1	8.0	8.0	9.8	7.4
Qatar	5.1	1.8	3.2	4.2	1.0	2.7	0.5	0.2	–0.6	–1.2	2.4	. . .	. . .	. . .
Saudi Arabia	2.6	2.9	3.5	2.2	1.3	2.0	–0.9	2.5	–1.2	0.9	2.0	0.2	0.9	2.0
Somalia	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	3.1	3.0	2.5
Sudan[6]	12.4	35.6	36.5	36.9	16.9	17.8	32.4	63.3	51.0	81.3	91.1	57.0	96.1	94.0
Syria[7]	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Tajikistan	11.1	5.8	5.0	6.1	5.8	5.9	7.3	3.8	7.8	8.1	6.9	8.0	7.4	6.9
Tunisia	3.5	4.6	5.3	4.6	4.4	3.6	5.3	7.3	6.7	6.2	4.9	6.1	6.0	4.8
Turkmenistan	6.6	5.3	6.8	6.0	7.4	3.6	8.0	13.3	5.1	8.0	6.0	6.3	8.0	6.0
United Arab Emirates	5.3	0.7	1.1	2.3	4.1	1.6	2.0	3.1	–1.9	–1.0	1.5	–1.9	–1.0	1.5
Uzbekistan	13.1	11.9	11.7	9.1	8.5	8.8	13.9	17.5	14.5	12.6	10.6	15.2	11.2	9.1
Yemen	11.7	9.9	11.0	8.2	22.0	21.3	30.4	27.6	10.0	26.7	5.0	6.2	46.0	5.0

Table A6. Emerging Market and Developing Economies: Consumer Prices[1] *(continued)*

(Annual percent change)

	Average									Projections		End of Period[2]	Projections	
	2002–11	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2019	2020	2021
Sub-Saharan Africa	**9.3**	**9.1**	**6.5**	**6.3**	**6.9**	**10.7**	**10.7**	**8.3**	**8.4**	**9.3**	**7.6**	**9.4**	**8.4**	**7.4**
Angola	31.5	10.3	8.8	7.3	9.2	30.7	29.8	19.6	17.1	20.7	22.3	16.9	21.0	24.0
Benin	3.0	6.7	1.0	–1.1	0.2	–0.8	1.8	0.8	–0.9	–0.8	0.6	0.3	–0.8	0.6
Botswana	8.7	7.5	5.9	4.4	3.1	2.8	3.3	3.2	2.8	2.1	2.6	2.2	2.1	2.6
Burkina Faso	2.6	3.8	0.5	–0.3	0.9	–0.2	0.4	2.0	–3.2	3.2	2.1	–2.6	3.2	2.1
Burundi	9.1	18.2	7.9	4.4	5.6	5.5	16.6	–2.8	–0.7	8.0	6.0	5.1	10.4	2.5
Cabo Verde	2.5	2.5	1.5	–0.2	0.1	–1.4	0.8	1.3	1.1	1.3	1.4	1.9	1.3	1.4
Cameroon	2.4	2.4	2.1	1.9	2.7	0.9	0.6	1.1	2.5	2.8	2.3	2.4	2.4	2.1
Central African Republic	3.0	5.5	7.0	14.9	1.4	4.9	4.2	1.6	2.7	1.2	2.5	–2.8	3.5	2.5
Chad	2.2	7.5	0.2	1.7	4.8	–1.6	–0.9	4.0	–1.0	2.2	2.9	–1.7	2.3	2.9
Comoros	3.8	5.9	0.4	–0.0	0.9	0.8	0.1	1.7	3.3	3.0	2.1	5.1	–5.5	3.8
Democratic Republic of the Congo	19.1	0.9	0.9	1.2	0.7	3.2	35.8	29.3	4.8	11.0	10.5	5.5	12.0	9.0
Republic of Congo	3.0	5.0	4.6	0.9	3.2	3.2	0.4	1.2	2.2	2.1	2.6	3.8	2.5	2.7
Côte d'Ivoire	3.0	1.3	2.6	0.4	1.2	0.7	0.7	0.4	0.8	1.2	1.4	1.6	1.2	1.4
Equatorial Guinea	5.2	3.4	3.2	4.3	1.7	1.4	0.7	1.3	0.6	1.7	1.7	4.1	2.1	2.2
Eritrea	17.1	4.8	5.9	10.0	28.5	–5.6	–13.3	–14.4	–16.4	4.5	2.4	27.2	4.0	2.0
Eswatini	7.1	8.9	5.6	5.7	5.0	7.8	6.2	4.8	2.6	3.6	4.5	2.0	3.9	5.0
Ethiopia	15.3	24.1	8.1	7.4	9.6	6.6	10.7	13.8	15.8	15.4	9.1	19.5	10.2	8.0
Gabon	1.1	2.7	0.5	4.5	–0.1	2.1	2.7	4.8	2.0	3.0	3.0	1.0	3.0	3.0
The Gambia	7.0	4.6	5.2	6.3	6.8	7.2	8.0	6.5	7.1	6.7	6.0	7.7	6.2	5.8
Ghana	13.4	7.1	11.7	15.5	17.2	17.5	12.4	9.8	7.2	9.7	8.5	7.9	9.9	8.2
Guinea	17.6	15.2	11.9	9.7	8.2	8.2	8.9	9.8	9.5	8.5	8.0	9.1	8.1	8.0
Guinea-Bissau	2.5	2.1	0.8	–1.0	1.5	2.7	–0.2	0.4	0.2	0.8	1.5	–0.1	1.1	1.5
Kenya	7.8	9.4	5.7	6.9	6.6	6.3	8.0	4.7	5.2	5.1	5.0	5.8	4.5	5.0
Lesotho	6.8	5.5	5.0	4.6	4.3	6.2	4.5	4.7	5.2	3.6	3.6	4.3	3.0	4.2
Liberia	9.6	6.8	7.6	9.9	7.7	8.8	12.4	23.5	27.0	13.8	13.5	20.3	15.0	12.0
Madagascar	10.4	5.7	5.8	6.1	7.4	6.1	8.6	8.6	5.6	5.5	6.5	4.0	6.0	5.9
Malawi	8.1	21.3	28.3	23.8	21.9	21.7	11.5	9.2	9.4	14.0	10.7	11.5	15.7	7.8
Mali	2.5	5.3	–2.4	2.7	1.4	–1.8	1.8	1.7	–0.6	0.6	1.5	–1.3	1.5	1.7
Mauritius	5.8	3.9	3.5	3.2	1.3	1.0	3.7	3.2	0.5	4.7	7.0	0.9	8.5	5.6
Mozambique	11.2	2.6	4.3	2.6	3.6	19.9	15.1	3.9	2.8	5.2	5.7	3.5	6.0	5.5
Namibia	6.6	6.7	5.6	5.3	3.4	6.7	6.1	4.3	3.7	2.4	3.2	2.6	2.4	3.2
Niger	2.4	0.5	2.3	–0.9	1.0	0.2	0.2	2.8	–2.5	4.4	1.7	–2.3	2.3	2.0
Nigeria	12.2	12.2	8.5	8.0	9.0	15.7	16.5	12.1	11.4	13.4	12.4	12.0	13.9	11.3
Rwanda	8.1	6.3	4.2	1.8	2.5	5.7	4.8	1.4	2.4	6.9	5.4	6.7	5.0	5.0
São Tomé and Príncipe	16.7	10.6	8.1	7.0	5.3	5.4	5.7	8.3	8.4	7.9	7.0	7.7	8.0	6.0
Senegal	2.1	1.4	0.7	–1.1	0.9	1.2	1.1	0.5	1.0	2.0	1.9	0.6	1.9	2.0
Seychelles	7.3	7.1	4.3	1.4	4.0	–1.0	2.9	3.7	1.8	4.5	3.1	1.7	4.8	3.4
Sierra Leone	8.7	6.6	5.5	4.6	6.7	10.9	18.2	16.0	14.8	15.4	15.2	13.9	17.0	13.5
South Africa	5.9	5.6	5.8	6.1	4.6	6.3	5.3	4.6	4.1	2.4	3.2	3.7	0.0	4.3
South Sudan	. . .	45.1	–0.0	1.7	52.8	379.8	187.9	83.5	51.2	8.1	24.5	30.0	39.7	16.7
Tanzania	7.4	16.0	7.9	6.1	5.6	5.2	5.3	3.5	3.4	3.9	4.3	3.8	4.1	4.3
Togo	2.4	2.6	1.8	0.2	1.8	0.9	–0.2	0.9	0.7	2.0	2.0	–0.3	4.8	–0.3
Uganda	7.7	12.7	4.9	3.1	5.4	5.5	5.6	2.6	2.9	3.9	4.8	3.6	3.9	4.4
Zambia	14.2	6.6	7.0	7.8	10.1	17.9	6.6	7.0	9.8	13.4	12.1	11.7	12.7	11.4
Zimbabwe[4]	–0.8	3.7	1.6	–0.2	–2.4	–1.6	0.9	10.6	255.3	319.0	3.7	521.1	154.3	3.0

[1]Movements in consumer prices are shown as annual averages.
[2]Monthly year-over-year changes and, for several countries, on a quarterly basis.
[3]Based on Eurostat's harmonized index of consumer prices.
[4]See country-specific notes for Argentina, Lebanon, Libya, Ukraine, Venezuela, and Zimbabwe in the "Country Notes" section of the Statistical Appendix.
[5]Excludes Venezuela but includes Argentina from 2017 onward. See country-specific notes for Venezuela and Argentina in the "Country Notes" section of the Statistical Appendix.
[6]Data for 2011 exclude South Sudan after July 9. Data for 2012 and onward pertain to the current Sudan.
[7]Data for Syria are excluded for 2011 onward owing to the uncertain political situation.

Table A7. Summary of Current Account Balances

(Percent of GDP)

	2012	2013	2014	2015	2016	2017	2018	2019	Projections 2020	Projections 2021
Advanced Economies	**0.1**	**0.5**	**0.5**	**0.7**	**0.8**	**0.8**	**0.7**	**0.7**	**0.1**	**0.1**
United States	–2.6	–2.1	–2.1	–2.2	–2.3	–2.3	–2.4	–2.3	–2.6	–2.8
Euro Area	1.0	2.1	2.4	2.8	3.3	3.1	3.1	2.7	2.6	2.7
Germany	7.1	6.6	7.2	8.6	8.5	7.8	7.4	7.1	6.6	6.7
France	–1.0	–0.5	–1.0	–0.4	–0.5	–0.7	–0.6	–0.8	–0.7	–0.6
Italy	–0.2	1.1	1.9	1.4	2.6	2.6	2.5	3.0	3.1	3.0
Spain	0.1	2.0	1.7	2.0	3.2	2.7	1.9	2.0	2.2	2.4
Japan	1.0	0.9	0.8	3.1	4.0	4.1	3.5	3.6	1.7	1.9
United Kingdom	–3.4	–4.8	–4.7	–4.9	–5.2	–3.5	–3.9	–3.8	–4.4	–4.5
Canada	–3.5	–3.1	–2.3	–3.5	–3.1	–2.8	–2.5	–2.0	–3.7	–2.3
Other Advanced Economies[1]	4.1	5.0	5.1	5.7	5.3	4.5	4.6	5.4	4.0	4.3
Emerging Market and Developing Economies	**1.2**	**0.6**	**0.6**	**–0.2**	**–0.3**	**0.0**	**–0.1**	**0.1**	**–0.9**	**–0.6**
Regional Groups										
Emerging and Developing Asia	0.9	0.7	1.5	2.0	1.4	0.9	–0.1	0.6	0.1	0.5
Emerging and Developing Europe	–0.6	–1.2	–0.2	1.1	–0.2	–0.4	1.7	1.4	–0.4	–0.5
Latin America and the Caribbean	–2.5	–2.9	–3.1	–3.3	–2.0	–1.6	–2.4	–1.7	–1.5	–1.6
Middle East and Central Asia	11.4	8.8	5.2	–3.9	–4.1	–0.7	2.5	0.4	–5.7	–4.6
Sub-Saharan Africa	–1.6	–2.1	–3.5	–5.8	–3.8	–2.2	–2.5	–4.0	–4.7	–4.2
Analytical Groups										
By Source of Export Earnings										
Fuel	9.7	7.3	5.1	–1.5	–1.6	1.7	5.5	2.4	–3.6	–2.6
Nonfuel	–1.1	–1.2	–0.5	0.1	–0.0	–0.3	–1.1	–0.3	–0.5	–0.3
Of Which, Primary Products	–3.3	–4.3	–2.8	–3.3	–2.4	–2.8	–3.8	–2.4	–1.4	–1.6
By External Financing Source										
Net Debtor Economies	–2.9	–2.6	–2.4	–2.4	–1.7	–1.7	–2.2	–1.6	–2.0	–1.9
Net Debtor Economies by Debt-Servicing Experience										
Economies with Arrears and/or Rescheduling during 2014–18	–5.9	–5.7	–3.6	–5.2	–5.6	–4.6	–3.9	–4.1	–6.5	–6.1
Memorandum										
World	**0.5**	**0.5**	**0.5**	**0.3**	**0.4**	**0.5**	**0.4**	**0.4**	**–0.4**	**–0.2**
European Union[2]	2.2	2.9	2.9	3.3	3.5	3.4	3.2	2.9	2.7	2.9
Low-Income Developing Countries	–1.8	–2.0	–2.0	–3.8	–2.3	–2.0	–2.5	–3.0	–4.3	–3.4
Middle East and North Africa	13.5	10.6	6.0	–4.3	–4.2	–0.2	3.6	1.0	–6.0	–4.8

[1]Excludes the Group of Seven (Canada, France, Germany, Italy, Japan, United Kingdom, United States) and euro area countries.
[2]Beginning with the April 2020 WEO, the United Kingdom is excluded from the European Union group.

Table A8. Advanced Economies: Balance on Current Account

(Percent of GDP)

									Projections	
	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Advanced Economies	**0.1**	**0.5**	**0.5**	**0.7**	**0.8**	**0.8**	**0.7**	**0.7**	**0.1**	**0.1**
United States	–2.6	–2.1	–2.1	–2.2	–2.3	–2.3	–2.4	–2.3	–2.6	–2.8
Euro Area[1]	1.0	2.1	2.4	2.8	3.3	3.1	3.1	2.7	2.6	2.7
Germany	7.1	6.6	7.2	8.6	8.5	7.8	7.4	7.1	6.6	6.7
France	–1.0	–0.5	–1.0	–0.4	–0.5	–0.7	–0.6	–0.8	–0.7	–0.6
Italy	–0.2	1.1	1.9	1.4	2.6	2.6	2.5	3.0	3.1	3.0
Spain	0.1	2.0	1.7	2.0	3.2	2.7	1.9	2.0	2.2	2.4
Netherlands	10.2	9.8	8.2	6.3	8.1	10.8	10.9	10.9	9.0	9.4
Belgium	–0.1	1.0	0.8	1.4	0.6	1.2	–1.4	–1.2	–0.7	–1.1
Austria	1.5	1.9	2.5	1.7	2.7	1.6	2.3	2.6	1.9	2.0
Ireland	–3.4	1.6	1.1	4.4	–4.2	0.5	10.6	–9.5	6.3	5.3
Portugal	–1.6	1.6	0.2	0.2	1.2	1.3	0.4	–0.1	0.3	–0.4
Greece	–2.4	–2.6	–2.3	–1.5	–2.3	–2.5	–3.5	–2.1	–6.5	–3.4
Finland	–2.1	–1.8	–1.3	–0.9	–2.0	–0.8	–1.4	–0.1	–3.5	–3.0
Slovak Republic	0.9	1.9	1.1	–2.1	–2.7	–1.9	–2.6	–3.2	–3.0	–2.4
Lithuania	–1.4	0.8	3.2	–2.8	–0.8	0.6	0.3	4.3	6.0	4.5
Slovenia	1.3	3.3	5.1	3.8	4.8	6.3	6.1	6.6	0.8	3.2
Luxembourg	5.6	5.4	5.2	5.1	4.9	4.9	4.8	4.5	4.0	4.4
Latvia	–3.6	–2.7	–2.3	–0.9	1.4	1.0	–0.7	–0.5	–2.2	–1.5
Estonia	–1.9	0.3	0.7	1.8	1.7	2.7	2.0	1.7	–2.7	–1.9
Cyprus	–3.9	–1.5	–4.1	–0.4	–4.2	–5.1	–4.4	–6.7	–8.3	–5.6
Malta	1.7	2.7	8.7	2.8	3.8	10.5	10.4	8.4	3.3	6.1
Japan	1.0	0.9	0.8	3.1	4.0	4.1	3.5	3.6	1.7	1.9
United Kingdom	–3.4	–4.8	–4.7	–4.9	–5.2	–3.5	–3.9	–3.8	–4.4	–4.5
Korea	3.8	5.6	5.6	7.2	6.5	4.6	4.5	3.7	4.9	4.8
Canada	–3.5	–3.1	–2.3	–3.5	–3.1	–2.8	–2.5	–2.0	–3.7	–2.3
Australia	–4.3	–3.4	–3.1	–4.6	–3.3	–2.6	–2.1	0.5	–0.6	–1.8
Taiwan Province of China	8.7	9.7	11.3	13.6	13.1	14.1	11.6	10.5	8.2	8.3
Singapore	17.6	15.7	18.0	18.7	17.6	16.3	17.2	17.0	14.8	15.7
Switzerland	10.7	11.6	8.6	11.3	9.9	6.4	8.2	12.2	7.2	8.8
Sweden	5.5	5.2	4.5	4.1	3.5	3.1	1.7	3.9	2.2	4.0
Hong Kong SAR	1.6	1.5	1.4	3.3	4.0	4.6	3.7	6.2	6.0	5.0
Czech Republic	–1.6	–0.5	0.2	0.2	1.6	1.7	0.3	–0.0	–2.1	–0.9
Norway	12.6	10.3	10.8	8.0	4.5	4.6	7.1	4.0	–1.3	0.1
Israel	0.4	3.0	4.0	5.1	3.3	2.3	2.6	3.5	3.5	3.2
Denmark	6.3	7.8	8.9	8.2	7.8	7.8	7.0	7.9	4.8	5.3
New Zealand	–3.9	–3.2	–3.1	–2.8	–2.0	–2.7	–3.8	–3.0	–4.5	–3.2
Puerto Rico	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Macao SAR	39.3	40.2	34.2	25.3	28.1	32.3	34.6	34.8	13.1	30.0
Iceland	–3.8	5.8	3.9	5.1	7.6	3.8	3.1	5.8	2.1	3.4
San Marino	. . .	. . .	. . .	. . .	. . .	–0.1	–1.6	0.7	–4.5	–1.4
Memorandum										
Major Advanced Economies	–0.9	–0.7	–0.6	–0.5	–0.2	–0.2	–0.4	–0.4	–0.9	–0.9
Euro Area[2]	2.3	2.9	3.0	3.4	3.6	3.6	3.6	3.1	3.1	3.3

[1]Data corrected for reporting discrepancies in intra-area transactions.
[2]Data calculated as the sum of the balances of individual euro area countries.

Table A9. Emerging Market and Developing Economies: Balance on Current Account

(Percent of GDP)

	2012	2013	2014	2015	2016	2017	2018	2019	Projections 2020	Projections 2021
Emerging and Developing Asia	**0.9**	**0.7**	**1.5**	**2.0**	**1.4**	**0.9**	**–0.1**	**0.6**	**0.1**	**0.5**
Bangladesh	0.7	1.2	1.3	1.9	0.6	–2.1	–2.6	–2.7	–2.2	–0.8
Bhutan	–21.9	–26.0	–27.5	–27.9	–31.7	–23.6	–19.5	–23.1	–21.3	–20.2
Brunei Darussalam	29.8	20.9	31.9	16.7	12.9	16.4	7.9	4.3	–1.2	2.1
Cambodia	–8.6	–8.5	–8.6	–8.7	–8.5	–7.9	–11.4	–12.5	–22.2	–17.6
China	2.5	1.5	2.2	2.7	1.8	1.6	0.4	1.0	0.5	1.0
Fiji	–1.4	–8.9	–5.8	–3.5	–3.6	–6.7	–8.5	–7.2	–8.2	–6.0
India	–4.8	–1.7	–1.3	–1.0	–0.6	–1.8	–2.1	–1.1	–0.6	–1.4
Indonesia	–2.7	–3.2	–3.1	–2.0	–1.8	–1.6	–2.9	–2.7	–3.2	–2.7
Kiribati	1.9	–5.5	31.1	32.8	10.8	37.6	38.7	44.9	1.5	5.5
Lao P.D.R.	–21.3	–26.5	–23.3	–22.4	–11.0	–10.6	–12.0	–7.2	–10.9	–9.2
Malaysia	5.1	3.4	4.3	3.0	2.4	2.8	2.1	3.3	–0.1	1.7
Maldives	–6.6	–4.3	–3.7	–7.5	–23.6	–21.7	–26.4	–26.1	–23.1	–11.8
Marshall Islands	–0.4	–6.2	3.4	17.2	16.1	7.5	6.5	3.7	–0.9	–3.7
Micronesia	–13.6	–9.9	6.1	4.5	7.2	10.3	21.0	17.1	3.4	5.3
Mongolia	–27.4	–25.4	–11.3	–4.0	–6.3	–10.1	–16.8	–12.4	–10.2	–10.5
Myanmar	–1.8	–1.2	–4.5	–3.4	–4.2	–6.5	–4.2	–2.0	–4.7	–3.9
Nauru	35.7	49.5	25.2	–21.3	2.0	12.7	–4.6	5.0	5.2	2.7
Nepal	4.8	3.3	4.5	5.0	6.3	–0.4	–8.1	–7.7	–6.5	–6.2
Palau	–15.3	–14.1	–17.8	–8.7	–13.6	–19.1	–15.8	–23.6	–30.7	–27.6
Papua New Guinea	–36.7	–30.9	11.7	22.5	26.6	27.2	25.9	24.1	19.8	23.1
Philippines	2.8	4.2	3.8	2.5	–0.4	–0.7	–2.7	–0.1	–2.3	–2.2
Samoa	–9.5	–1.5	–9.1	–2.8	–4.5	–2.0	0.8	2.3	–6.4	–4.4
Solomon Islands	1.5	–3.4	–4.3	–3.0	–4.0	–4.9	–4.5	–6.4	–15.0	–14.7
Sri Lanka	–5.8	–3.4	–2.5	–2.3	–2.1	–2.6	–3.2	–2.2	–3.6	–2.9
Thailand	–1.2	–2.1	2.9	6.9	10.5	9.6	5.6	6.9	5.2	5.6
Timor-Leste	230.7	171.4	75.6	12.8	–32.9	–17.7	–12.2	8.2	–28.1	–37.3
Tonga	–12.3	–8.0	–10.0	–10.7	–6.6	–6.2	–5.5	–8.9	–14.8	–15.7
Tuvalu	18.4	–6.7	3.0	–53.5	21.5	24.0	7.1	25.6	–11.2	–24.0
Vanuatu	–6.5	–3.3	6.2	–1.6	0.8	–6.4	1.9	7.2	–10.9	–5.6
Vietnam	4.7	3.6	3.7	–0.9	0.2	–0.6	1.9	4.0	0.7	1.0
Emerging and Developing Europe	**–0.6**	**–1.2**	**–0.2**	**1.1**	**–0.2**	**–0.4**	**1.7**	**1.4**	**–0.4**	**–0.5**
Albania	–10.2	–9.3	–10.8	–8.6	–7.6	–7.5	–6.8	–7.6	–11.2	–8.1
Belarus[1]	–2.8	–10.0	–6.6	–3.3	–3.4	–1.7	0.0	–1.8	–2.9	–2.5
Bosnia and Herzegovina	–8.7	–5.3	–7.3	–5.1	–4.7	–4.4	–3.7	–3.6	–7.5	–5.5
Bulgaria	–0.9	1.3	1.2	0.1	3.2	3.5	1.4	4.0	1.7	0.6
Croatia	0.3	1.3	0.3	3.3	2.1	3.4	1.9	2.9	–4.0	–1.5
Hungary	1.5	3.6	1.3	2.4	4.5	2.3	–0.0	–0.8	–0.1	–0.6
Kosovo	–5.8	–3.4	–6.9	–8.6	–7.9	–5.4	–7.6	–5.5	–7.4	–5.1
Moldova	–7.4	–5.2	–6.0	–6.0	–3.5	–5.7	–10.7	–8.9	–8.3	–10.1
Montenegro	–15.3	–11.4	–12.4	–11.0	–16.2	–16.1	–17.0	–15.1	–17.9	–14.0
North Macedonia	–3.2	–1.6	–0.5	–2.0	–2.9	–1.1	–0.1	–2.8	–2.2	–1.3
Poland	–3.7	–1.3	–2.1	–0.5	–0.5	0.0	–1.0	0.5	0.2	0.1
Romania	–4.8	–0.8	–0.2	–0.6	–1.4	–2.8	–4.4	–4.7	–5.5	–4.7
Russia	3.3	1.5	2.8	5.0	1.9	2.1	6.8	3.8	0.7	0.6
Serbia	–10.8	–5.7	–5.6	–3.5	–2.9	–5.2	–4.8	–6.9	–6.1	–5.5
Turkey	–5.5	–5.9	–4.2	–3.2	–3.1	–4.8	–2.7	1.1	0.4	–0.2
Ukraine[1]	–8.1	–9.2	–3.9	1.7	–1.5	–2.2	–3.3	–0.7	–2.0	–2.4
Latin America and the Caribbean	**–2.5**	**–2.9**	**–3.1**	**–3.3**	**–2.0**	**–1.6**	**–2.4**	**–1.7**	**–1.5**	**–1.6**
Antigua and Barbuda	. . .	. . .	0.3	2.2	–2.4	–7.8	–13.6	–7.5	–25.6	–25.3
Argentina[1]	–0.4	–2.1	–1.6	–2.7	–2.7	–4.8	–5.2	–0.8	. . .	. . .
Aruba	3.5	–12.9	–5.1	4.3	5.1	1.1	–0.1	–0.2	–11.2	–1.1
The Bahamas	–14.3	–14.4	–20.1	–13.7	–6.0	–12.4	–12.1	0.6	–12.7	–9.3
Barbados	–8.5	–8.4	–9.2	–6.1	–4.3	–3.8	–4.0	–3.6	–7.8	–5.6
Belize	–1.2	–4.6	–8.0	–10.1	–9.2	–7.1	–8.1	–7.8	–18.6	–9.0
Bolivia	7.2	3.4	1.7	–5.8	–5.6	–4.8	–4.6	–3.2	–4.6	–4.9
Brazil	–3.4	–3.2	–4.1	–3.0	–1.3	–0.7	–2.2	–2.7	–1.8	–2.3
Chile	–4.4	–4.8	–2.0	–2.4	–2.0	–2.3	–3.6	–3.9	–0.9	–1.8
Colombia	–3.1	–3.3	–5.2	–6.3	–4.3	–3.3	–3.9	–4.3	–4.7	–4.2

Table A9. Emerging Market and Developing Economies: Balance on Current Account *(continued)*

(Percent of GDP)

	2012	2013	2014	2015	2016	2017	2018	2019	Projections 2020	Projections 2021
Latin America and the Caribbean (continued)	**–2.5**	**–2.9**	**–3.1**	**–3.3**	**–2.0**	**–1.6**	**–2.4**	**–1.7**	**–1.5**	**–1.6**
Costa Rica	–5.1	–4.8	–4.8	–3.5	–2.2	–3.3	–3.3	–2.5	–4.5	–3.1
Dominica	. . .	. . .	–5.4	–4.7	–7.7	–8.8	–44.6	–29.4	–33.8	–26.4
Dominican Republic	–6.5	–4.1	–3.2	–1.8	–1.1	–0.2	–1.4	–1.4	–5.2	–3.7
Ecuador	–0.2	–1.0	–0.7	–2.2	1.3	–0.5	–1.4	–0.4	–5.7	–3.6
El Salvador	–5.8	–6.9	–5.4	–3.2	–2.3	–1.9	–4.7	–2.1	–4.1	–4.3
Grenada	. . .	. . .	–11.6	–12.5	–11.0	–14.4	–15.9	–15.8	–27.7	–18.0
Guatemala	–3.7	–4.2	–3.3	–1.3	0.9	1.1	0.7	1.8	2.6	1.8
Guyana	–11.3	–13.0	–9.0	–4.6	–2.4	–6.2	–32.1	–40.3	–20.4	–18.9
Haiti	–5.7	–6.6	–8.5	–3.0	–0.9	–1.0	–3.9	–1.4	–3.6	–0.8
Honduras	–8.5	–9.5	–6.9	–4.7	–2.6	–0.8	–5.3	–0.7	–2.0	–2.0
Jamaica	–9.8	–9.5	–8.0	–3.0	–0.3	–2.6	–1.8	–1.9	–7.8	–3.1
Mexico	–1.6	–2.5	–1.9	–2.6	–2.3	–1.8	–1.9	–0.2	–0.3	–0.4
Nicaragua	–10.7	–10.9	–7.1	–9.0	–6.6	–4.9	0.6	5.7	1.2	0.6
Panama	–9.2	–9.0	–13.4	–9.0	–7.8	–5.9	–8.2	–5.2	–6.8	–6.0
Paraguay	–0.9	1.6	–0.1	–0.4	3.6	3.1	0.0	–1.0	–2.2	–1.0
Peru	–3.2	–5.1	–4.5	–5.0	–2.6	–1.3	–1.7	–1.4	–0.9	–1.0
St. Kitts and Nevis	. . .	. . .	0.1	–8.7	–12.7	–11.2	–5.7	–1.7	–10.7	–8.5
St. Lucia	. . .	. . .	–2.5	0.0	–6.5	–1.0	2.2	4.6	–10.3	0.2
St. Vincent and the Grenadines	. . .	. . .	–26.1	–15.3	–13.9	–11.6	–12.0	–10.1	–20.1	–14.8
Suriname	3.3	–3.8	–7.9	–16.4	–5.1	1.9	–3.4	–10.7	–12.0	–11.0
Trinidad and Tobago	13.4	19.3	13.8	7.0	–4.4	5.4	5.6	5.1	–3.3	0.5
Uruguay	–4.0	–3.6	–3.2	–0.9	–0.1	0.7	0.1	0.2	–2.5	–3.1
Venezuela	0.7	1.8	2.4	–5.0	–1.4	6.1	8.8	9.8	2.4	3.4
Middle East and Central Asia	**11.4**	**8.8**	**5.2**	**–3.9**	**–4.1**	**–0.7**	**2.5**	**0.4**	**–5.7**	**–4.6**
Afghanistan	10.9	1.4	6.5	3.7	8.4	7.1	13.0	8.6	4.9	5.8
Algeria	5.9	0.4	–4.4	–16.4	–16.5	–13.2	–9.6	–9.6	–18.3	–17.1
Armenia	–10.0	–7.3	–7.8	–2.7	–2.1	–3.0	–9.4	–8.2	–8.6	–7.2
Azerbaijan	21.4	16.6	13.9	–0.4	–3.6	4.1	12.8	9.2	–8.2	–3.7
Bahrain	8.4	7.4	4.6	–2.4	–4.6	–4.5	–5.9	–2.9	–9.6	–7.3
Djibouti	–23.4	–30.8	24.0	29.3	–1.0	–4.8	18.0	24.7	–0.8	0.2
Egypt	–3.6	–2.2	–0.9	–3.7	–6.0	–6.1	–2.4	–3.6	–4.3	–4.5
Georgia	–11.4	–5.6	–10.2	–11.8	–12.5	–8.1	–6.8	–5.1	–10.5	–6.9
Iran	6.0	6.7	3.2	0.3	4.0	3.8	2.1	–0.1	–4.1	–3.4
Iraq	5.1	1.1	2.6	–6.5	–8.3	1.8	6.9	–1.2	–21.7	–14.1
Jordan	–15.2	–10.4	–7.2	–9.2	–9.8	–10.8	–7.0	–2.8	–5.8	–5.3
Kazakhstan	1.1	0.8	2.8	–3.3	–5.9	–3.1	–0.1	–3.6	–6.8	–5.5
Kuwait	45.5	40.3	33.4	3.5	–4.6	8.0	14.5	8.9	–10.2	–7.8
Kyrgyz Republic	–15.5	–13.9	–17.0	–15.9	–11.6	–6.2	–12.1	–9.1	–16.6	–11.0
Lebanon[1]	–25.9	–28.0	–28.8	–19.9	–23.8	–26.5	–26.7	–20.6	–12.6	. . .
Libya[1]	29.9	0.0	–78.4	–54.3	–24.6	8.0	1.8	–0.3	–6.6	–8.3
Mauritania	–18.8	–17.2	–22.2	–15.5	–11.0	–10.0	–13.8	–10.6	–17.3	–17.4
Morocco	–9.3	–7.6	–5.9	–2.1	–4.1	–3.4	–5.3	–4.1	–7.8	–4.3
Oman	10.2	6.6	5.2	–15.9	–19.1	–15.6	–5.5	–5.2	–14.2	–11.1
Pakistan	–2.1	–1.1	–1.3	–1.0	–1.7	–4.1	–6.3	–5.0	–1.7	–2.4
Qatar	33.2	30.4	24.0	8.5	–5.5	3.8	8.7	2.4	–1.9	–1.8
Saudi Arabia	22.4	18.1	9.8	–8.7	–3.7	1.5	9.0	6.3	–3.1	–3.4
Somalia	. . .	–13.6	–8.3	–8.3	–9.3	–9.7	–10.3	–13.7	–11.4	–11.2
Sudan[2]	–12.8	–11.0	–5.8	–8.4	–7.6	–10.1	–13.0	–14.9	–15.2	–11.8
Syria[3]	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Tajikistan	–9.0	–10.4	–3.4	–6.1	–4.2	2.2	–5.0	–3.3	–7.7	–4.5
Tunisia	–9.1	–9.7	–9.8	–9.7	–9.3	–10.2	–11.2	–8.8	–7.5	–8.1
Turkmenistan	–0.9	–7.3	–6.1	–15.6	–20.2	–10.4	5.5	5.1	–1.4	–0.4
United Arab Emirates	19.7	19.0	13.5	4.9	3.7	7.3	10.0	7.4	1.5	4.1
Uzbekistan	0.9	2.4	3.3	1.3	0.4	2.5	–7.1	–5.6	–9.4	–6.4
Yemen	–1.7	–3.1	–0.7	–7.1	–3.2	–0.2	–1.4	–7.4	–2.8	–6.0

Table A9. Emerging Market and Developing Economies: Balance on Current Account *(continued)*

(Percent of GDP)

									Projections	
	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Sub-Saharan Africa	**–1.6**	**–2.1**	**–3.5**	**–5.8**	**–3.8**	**–2.2**	**–2.5**	**–4.0**	**–4.7**	**–4.2**
Angola	10.8	6.1	–2.6	–8.8	–4.8	–0.5	7.0	2.9	–6.7	–3.0
Benin	–2.4	–2.6	–2.4	–6.0	–3.0	–4.2	–4.6	–5.1	–5.3	–3.7
Botswana	0.3	8.9	15.4	7.8	7.8	6.1	2.1	–5.2	–2.5	–1.7
Burkina Faso	–1.3	–10.0	–7.2	–7.6	–6.1	–5.0	–4.1	–4.4	–4.3	–4.5
Burundi	–18.6	–19.7	–19.6	–23.7	–13.8	–14.2	–15.0	–16.4	–17.1	–16.6
Cabo Verde	–12.6	–4.9	–9.1	–3.2	–3.9	–7.9	–5.3	–0.2	–7.7	–7.6
Cameroon	–3.3	–3.5	–4.0	–3.8	–3.2	–2.7	–3.6	–3.7	–5.7	–4.8
Central African Republic	–5.6	–2.9	–13.3	–9.1	–5.3	–7.8	–8.0	–4.9	–5.3	–5.0
Chad	–7.8	–9.1	–8.9	–13.8	–10.4	–7.1	–1.4	–4.9	–12.9	–10.1
Comoros	–3.2	–4.0	–3.8	–0.3	–4.3	–2.1	–2.8	–3.8	–5.7	–4.5
Democratic Republic of the Congo	–4.3	–5.1	–4.7	–3.8	–4.1	–3.3	–3.6	–4.2	–5.4	–4.1
Republic of Congo	17.7	13.8	1.3	–54.2	–63.5	–3.5	7.2	8.4	–1.2	–2.8
Côte d'Ivoire	–0.9	–1.0	1.0	–0.4	–0.9	–2.0	–3.6	–2.7	–3.3	–2.5
Equatorial Guinea	–1.1	–2.4	–4.3	–16.4	–13.0	–5.8	–5.4	–5.8	–10.4	–7.0
Eritrea	12.9	2.3	17.3	20.8	15.3	24.0	19.0	12.1	10.2	9.4
Eswatini	5.0	10.8	11.6	12.9	7.8	7.0	2.0	6.2	3.5	4.0
Ethiopia	–7.1	–6.1	–6.6	–11.7	–9.4	–8.5	–6.5	–5.3	–5.3	–4.6
Gabon	17.9	7.3	7.6	–5.6	–10.4	–6.9	–3.2	–0.8	–8.4	–6.1
The Gambia	–4.5	–6.7	–7.3	–9.9	–9.2	–7.4	–9.7	–5.4	–9.8	–9.8
Ghana	–8.7	–9.0	–7.0	–5.8	–5.2	–3.4	–3.1	–2.7	–4.5	–3.0
Guinea	–19.9	–12.5	–12.9	–12.9	–31.9	–6.7	–18.7	–13.7	–22.9	–16.1
Guinea-Bissau	–7.9	–4.3	0.5	1.8	1.4	0.3	–3.5	–10.2	–7.4	–6.4
Kenya	–8.4	–8.8	–10.4	–6.7	–4.9	–6.2	–5.0	–4.5	–4.6	–4.4
Lesotho	–8.8	–5.3	–5.1	–3.7	–6.6	–2.4	–1.2	–8.3	6.9	–8.2
Liberia	–12.3	–14.7	–20.5	–22.2	–19.2	–22.7	–22.4	–22.3	–18.7	–19.7
Madagascar	–7.6	–5.5	–0.3	–1.6	0.5	–0.4	0.7	–2.5	–2.9	–3.0
Malawi	–9.2	–8.4	–8.2	–17.2	–18.5	–25.6	–20.5	–17.2	–17.9	–17.9
Mali	–2.2	–2.9	–4.7	–5.3	–7.2	–7.3	–4.9	–4.2	–3.7	–3.9
Mauritius	–7.1	–6.2	–5.4	–3.6	–4.0	–4.6	–5.8	–5.8	–8.4	–7.9
Mozambique	–41.8	–40.5	–36.5	–37.4	–35.6	–19.1	–30.9	–42.2	–68.8	–74.0
Namibia	–5.7	–4.2	–11.1	–12.8	–15.8	–4.0	–2.7	–2.3	–0.4	–1.0
Niger	–10.9	–11.3	–12.1	–15.4	–11.5	–11.4	–12.7	–13.2	–13.5	–16.6
Nigeria	3.8	3.7	0.2	–3.1	0.7	2.8	1.3	–3.8	–3.3	–2.5
Rwanda	–9.9	–7.3	–11.8	–15.3	–15.9	–7.5	–8.0	–9.2	–16.2	–10.2
São Tomé and Príncipe	–21.8	–14.5	–20.7	–12.0	–6.1	–13.2	–11.1	–12.3	–10.6	–8.9
Senegal	–8.7	–8.2	–7.0	–5.7	–4.2	–7.3	–8.8	–9.1	–11.3	–11.4
Seychelles	–21.1	–11.9	–23.1	–18.6	–20.6	–20.1	–17.9	–16.7	–27.8	–23.6
Sierra Leone	–31.8	–17.5	–9.3	–15.5	–9.2	–21.0	–18.7	–13.9	–14.3	–12.7
South Africa	–5.1	–5.8	–5.1	–4.6	–2.9	–2.5	–3.5	–3.0	0.2	–1.3
South Sudan	–15.9	–3.9	–2.0	–2.5	4.9	–3.4	–9.3	–2.5	–2.4	0.3
Tanzania	–12.0	–10.7	–10.0	–7.9	–4.2	–2.9	–3.5	–3.2	–3.8	–3.8
Togo	–7.6	–13.2	–10.0	–11.0	–9.8	–2.0	–3.5	–4.3	–5.4	–4.5
Uganda	–5.9	–6.3	–7.0	–6.2	–2.8	–4.5	–7.2	–9.5	–9.7	–8.1
Zambia	4.9	–0.8	2.1	–2.7	–3.3	–1.7	–1.3	1.0	–2.0	–2.6
Zimbabwe[1]	–10.7	–13.2	–11.6	–7.6	–3.6	–1.3	–5.9	1.1	–1.9	–1.9

[1]See country-specific notes for Argentina, Belarus, Lebanon, Libya, Ukraine, and Zimbabwe in the "Country Notes" section of the Statistical Appendix.
[2]Data for 2011 exclude South Sudan after July 9. Data for 2012 and onward pertain to the current Sudan.
[3]Data for Syria are excluded for 2011 onward owing to the uncertain political situation.

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IMF EXECUTIVE BOARD DISCUSSION OF THE OUTLOOK, APRIL 2020

The following remarks were made by the Chair at the conclusion of the Executive Board's discussion of the Fiscal Monitor, Global Financial Stability Report, *and* World Economic Outlook *on April 7, 2020.*

Executive Directors broadly shared the assessment of the global economic outlook, risks, and policy priorities. They agreed that the outlook is dominated by the global health crisis from the COVID-19 pandemic, and the extreme uncertainty about its course, intensity, and impact. The expected sharp contraction of the global economy in 2020 is likely much worse than during the 2008–09 global financial crisis, as a significant portion of the global economy has been shut down. Directors noted that the projected global recovery in 2021 is predicated on the pandemic fading in the second half of 2020 and the effectiveness of policy actions to contain its economic fallout.

Directors agreed that, amid the exceptionally large degree of uncertainty, risks of a worse outcome predominate. Some Directors indicated their interest in additional scenario analysis, including possibly more positive developments than assumed in the baseline projections. Directors observed that the economic fallout depends on factors that interact in ways that are hard to predict, including the pathway of the pandemic, the intensity and efficacy of the necessary containment efforts, the extent of supply disruptions, and the repercussions of the substantial tightening in global financial conditions. As a result, many countries face a multi-layered crisis comprising a health shock, domestic economic disruptions, plummeting external demand, and capital flow reversals. For many low-income developing countries, the challenges have been compounded by high and rising debt levels, capacity constraints, and a collapse in commodity prices.

Directors agreed that effective policies are urgently needed to forestall worse outcomes. The immediate priority is to reduce contagion and protect lives, especially by fully accommodating additional health care expenditures to strengthen the capacity and resources of the health sector. Economic and financial policies will need to focus on supporting vulnerable people and businesses, safeguarding the financial system, and reducing scarring effects from the unavoidable severe slowdown. Directors emphasized that these supporting measures should be scaled back gradually and flexibly as the pandemic fades. Once containment measures can be lifted, policy focus will have to shift to securing a robust recovery while ensuring debt overhangs do not weigh on activity over the medium term.

Directors acknowledged that the pandemic has elevated the need for fiscal policy action to an unprecedented level. They noted in particular the need for large timely, temporary, and targeted fiscal support lifelines to protect the most-affected people and viable firms, including government-funded paid sick and family leaves, cash or in-kind transfers, unemployment benefits, wage subsidies, tax relief, and deferral of tax payments. Good governance, including transparency in budget execution and communication, is crucial to manage fiscal risks and maintain public trust. Most Directors acknowledged that broad-based, coordinated fiscal stimulus will be more effective in boosting aggregate demand during the recovery phase, mindful of the need to preserve sound public finances and debt sustainability.

Directors welcomed the extraordinary actions taken by many central banks to ease monetary policy, provide ample liquidity to financial institutions and markets, including through enhanced US dollar swap lines, and maintain the flow of credit to households and firms by setting up emergency facilities. They noted that authorities could consider extending these measures to a broader range of market segments. Some Directors also called for an extension of swap lines to provide foreign currency liquidity to a broader group of countries, and a few encouraged utilizing regional financing arrangements. Directors considered that, as banks generally have larger capital and liquidity buffers now relative to the global financial crisis, they should

be encouraged to use the existing buffers to absorb losses and prudently renegotiate loan terms for firms and individuals, using the flexibility within existing regulatory frameworks. Any regulatory relief would need to be reassessed once conditions permit.

Directors noted that the pandemic also triggered a record reversal of portfolio flows from emerging and frontier markets. They recommended, where feasible and appropriate, allowing exchange rates to act as a shock absorber, and intervening in foreign exchange markets as needed to reduce excessive volatility and ease liquidity constraints. Macroprudential measures, and in near-crisis situations, temporary capital flow management measures may be necessary as part of the policy package and should be phased out as global financial sentiment recovers. Sovereign debt managers should also develop contingency plans to deal with limited access to external financing.

Directors underscored that both the containment and recovery will also require strong multilateral cooperation to complement national policy efforts. Global cooperation is essential to address shared challenges, especially to channel aid and medical resources to countries with weak health systems, and help financially constrained countries facing twin health and funding shocks. Directors noted that multilateral cooperation is also necessary to ensure a strong global financial safety net and better access to international liquidity across countries. They stressed the critical role for the IMF in supporting its member countries, in collaboration with other international financial institutions. Directors welcomed the IMF's crisis response package, in particular the enhancement of the emergency financing toolkit, provision of debt service relief for the poorest members, and fund-raising for the Catastrophe, Containment, and Relief Trust.

The IMF and COVID-19 crisis

The IMF has responded to the COVID-19 crisis by quickly deploying financial assistance, developing policy advice, and creating special tools to assist member countries. Visit IMF.org/COVID19 to access the latest analysis and research from IMF staff in response to the pandemic.

IMF COVID-19 Hub

Latest news, blogs, Factsheets, Podcasts, and all the information on the IMF's response to the crisis IMF.org/COVID19

Policy Tracker

Learn more about key policy responses governments are taking to limit the human and economic impact of this global pandemic by country at IMF.org/COVID19policytracker

Emergency Financing

The IMF has secured $1 trillion in lending capacity, serving and responding fast to an unprecedented number of emergency financing requests from over 90 countries so far. This list includes emergency assistance by region approved by the IMF's Executive Board. IMF.org/COVID19lendingtracker

Special Series

These notes are produced by IMF experts to provide guidance and help members address the economic effects of COVID-19. IMF.org/COVID19notes

"A global crisis like no other needs a global response like no other."

—Kristalina Georgieva

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