World Economic and Financial Surveys

Fiscal Monitor

Achieving More with Less

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ASSUMPTIONS AND CONVENTIONS

The following symbols have been used throughout this publication:

. . . to indicate that data are not available

— to indicate that the figure is zero or less than half the final digit shown, or that the item does not exist

– between years or months (for example, 2008–09 or January–June) to indicate the years or months covered, including the beginning and ending years or months

/ between years (for example, 2008/09) 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).

"n.a." means "not applicable."

Minor discrepancies between sums of constituent figures and totals are due to rounding.

As used in this publication, the term "country" does 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.

Further Information and Data

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The data and analysis appearing in the *Fiscal Monitor* are compiled by the IMF staff at the time of publication. Every effort is made to ensure their timeliness, accuracy, and completeness, but it cannot be guaranteed. When errors are discovered, there is a concerted effort to correct them as appropriate and feasible. Corrections and revisions made after publication are incorporated into the electronic editions available from the IMF eLibrary (www.elibrary.imf.org) and on the IMF website (www.imf.org). All substantive changes are listed in detail in the online tables of contents.

PREFACE

The projections included in this issue of the *Fiscal Monitor* are based on the same database used for the April 2017 *World Economic Outlook* and *Global Financial Stability Report* (and are referred to as "IMF staff projections"). Fiscal projections refer to the general government unless otherwise indicated. Short-term projections are based on officially announced budgets, adjusted for differences between the national authorities and the IMF staff regarding macroeconomic assumptions. The medium-term fiscal projections incorporate policy measures that are judged by the IMF staff as likely to be implemented. For countries supported by an IMF arrangement, the medium-term projections are those under the arrangement. In cases in which the IMF staff has insufficient information to assess the authorities' budget intentions and prospects for policy implementation, an unchanged cyclically adjusted primary balance is assumed, unless indicated otherwise. Details on the composition of the groups, as well as country-specific assumptions, can be found in the Methodological and Statistical Appendix.

The *Fiscal Monitor* is prepared by the IMF Fiscal Affairs Department under the general guidance of Vítor Gaspar, Director of the Department. The project was directed by Abdelhak Senhadji, Deputy Director, and Catherine Pattillo, Assistant Director. The main authors of this issue are Luc Eyraud (team leader), Philip Barrett, Victor Duarte Lledó, Adrian Peralta, Sampawende J.-A. Tapsoba, Elif Ture, and Philippe Wingender for Chapter 1, which also benefited from contributions by Valerio Crispolti, Jeff Danforth, João Jalles, Michael Keen, Takuji Komatsuzaki, Thornton Matheson, Mauricio Soto, and Daria Ulybina; Laura Jaramillo Mayor (team leader), João Jalles, Li Liu, Florian Misch, Adrian Peralta, and Mousse Sow for Chapter 2, which also benefited from contributions from Nina Budina and comments by Mariano Bosch, William Maloney, Diego Restuccia, and Juan Carlos Suárez Serrato. Excellent research contributions were provided by Kyungla Chae, Young Kim, Elijah Kimani, and Fedor Miryugin. Nadia Malikyar and Erin Yiu provided excellent coordination and editorial support. Michael Harrup from the Communications Department led the editorial team and managed the report's production, with production assistance from Rumit Pancholi and editorial assistance from Lorraine Coffey, Susan Graham, Lucy Scott Morales, Nancy Morrison, and Vector Talent Resources.

Inputs, comments, and suggestions were received from other departments in the IMF, including area departments—namely, the African Department, Asia and Pacific Department, European Department, Middle East and Central Asia Department, and Western Hemisphere Department—as well as the Institute for Capacity Development, Monetary and Capital Markets Department, Research Department, Statistics Department, and Strategy, Policy, and Review Department. Both projections and policy considerations are those of the IMF staff and should not be attributed to Executive Directors or to their national authorities.

EXECUTIVE SUMMARY

A Greater Role for Fiscal Policy (Chapter 1)

The global economy is undergoing major transformations, including a productivity slowdown, technological change, and global economic integration. This creates new demands for public policies to facilitate these transformations, while cushioning the effect on those negatively affected. Fiscal policy has a greater role to play in fostering sustainable and inclusive growth. At the same time, the high degree of uncertainty surrounding the outlook as well as stretched government balance sheets require a better understanding and management of risks. Fiscal policy therefore has the difficult task of achieving more and better in a more constrained environment.

Shifts in Fiscal Positions and Elevated Risks

Advanced economies eased their fiscal stance by one-fifth of 1 percent of GDP in 2016, breaking a five-year trend of gradual fiscal consolidation. Their aggregate fiscal stance is expected to remain broadly neutral in 2017 as well as in the following years. As a result, public debt in advanced economies should stabilize in the medium term, averaging more than 100 percent of GDP, rather than decline as previously expected.

In *emerging market and developing economies*, the deterioration in fiscal positions seems to have come to an end, although the expected improvement depends crucially on developments in commodity markets. Oil exporters are implementing large consolidation plans to realign spending with revenues, and their fiscal deficits are expected to fall by about $150 billion between 2016 and 2018 (with the improvement next year coming mainly from the non-oil balance). In oil importers, the fiscal deficit should remain broadly stable as a share of GDP in 2017, followed by a gradual consolidation over the medium term.

Uncertainty regarding future policies as well as macroeconomic risks cloud the global fiscal outlook. The lack of specificity about the size and composition of the expected fiscal stimulus in the United States, a number of elections in Europe, and the upcoming party congress in China all contribute to policy uncertainty. In emerging market and developing economies, a more rapid increase in interest rates, a significant appreciation of the U.S. dollar, and lower commodity prices could exacerbate debt vulnerabilities and trigger the materialization of contingent liabilities, in particular those related to implicit government guarantees on corporate borrowing.

Setting the Course for Fiscal Policy

The role of fiscal policy has been reassessed in the past decade, reflecting specific circumstances, notably the global financial crisis, as well as new academic research using macroeconomic and survey data. Fiscal policy is generally seen as a powerful tool for promoting inclusive growth and can contribute to stabilizing the economy, particularly during deep recessions and when monetary policy has become less effective. At the same time, high debt levels, long-term demographic challenges, and elevated fiscal risks place a premium on sound public financial management. In particular, policies should be anchored within a credible medium-term framework that ensures debt sustainability, manages risks adequately, and encourages countries to build buffers during upturns.

Overall, three main objectives should guide the conduct of fiscal policy, although limited budgetary room and possible trade-offs constrain governments' ability to pursue these objectives simultaneously.

Fiscal policy should be countercyclical. A countercyclical fiscal response should rely mostly on automatic stabilizers and be symmetric (that is, it should expand in bad times and tighten in good times). Nevertheless, in countries suffering from a protracted lack of demand and with constrained monetary policy, like Japan, discretionary fiscal support, combined with structural reforms and continued monetary accommodation, can be used to break away from debt-deflation traps by raising nominal GDP. In the euro area, the aggregate cyclical position also argues for a slightly more expansionary aggregate fiscal stance in 2017. At the other end of the spectrum, economies with limited economic slack and signs of inflationary pressures

should, in general, withdraw fiscal support to rebuild buffers. In the United States, where the economy is close to full employment, fiscal consolidation could start next year to put debt firmly on a downward path. In China, given robust employment levels and the expected pickup in inflation, the "augmented" fiscal deficit should decline in the medium term to support economic rebalancing, with fiscal resources reallocated from off-budget public investment toward on-budget spending for social assistance, education, and health. Yet using fiscal policy flexibly to stabilize the economic cycle is not always feasible. In some countries, fiscal consolidation is warranted regardless of the cyclical conditions in order to ensure fiscal sustainability in the face of large shocks (for example, in commodity exporters) or to restore market confidence.

Fiscal policy should be growth friendly. Tax and expenditure measures can be used as structural instruments to support the three engines of long-term growth: the stock of physical capital, the labor force, and productivity (the short-term effect of these measures on activity may nonetheless depend on overall economic conditions). The case for increasing public investment remains strong in many countries in light of low borrowing costs and substantial deficiencies in infrastructure, although careful project selection, management, and evaluation should also ensure that investment is efficient. More growth-friendly business tax systems that focus on taxing rents and reducing burdensome tax administration practices can promote private investment. For instance, in the United States, reforming corporate taxation could help revitalize business dynamism and investment. Countries should also continue efforts to create a better environment for job creation—in advanced economies by reducing labor taxation where it is high, making more intensive use of active labor market policies, and adopting targeted spending measures for vulnerable groups; and in emerging markets and developing economies by improving access to health care and education. Almost all countries need to boost female labor force participation. With respect to productivity, a range of policies can foster innovation, including tax measures that reduce the misallocation of resources across firms (see the summary of Chapter 2).

Fiscal policy should promote inclusion. Global economic integration and technological change have contributed to economic growth and prosperity, lifting one billion people out of poverty since the 1980s. But gains at a global level have not always been widely shared within countries. For instance, in advanced economies, the incomes of the top 1 percent have grown almost three times faster than those of the rest of the population over the past 30 years. Fiscal policy can play an important role in ensuring that the poor and the middle class share in the growth dividend. One challenge is to identify transfer and tax instruments that promote inclusiveness, while creating sound incentives to invest and work. For instance, conditional cash transfer programs—transfers to poor households that require, in some cases, children to attend health clinics and school—could be expanded in a number of emerging markets and developing economies. Inclusive fiscal policies can also help people fully participate and adapt to a changing economy through better access to quality education, training, and health services, as well as through social insurance.

Achieving Sustainable and Inclusive Growth While Coping with High Debt

The three objectives outlined previously provide a road map for policymakers, but in most countries, limited fiscal buffers will require them to be selective in their budgetary choices. If additional resources are necessary, they should be raised in a way that is the least harmful for growth, while keeping debt on a sustainable path.

For countries that have fiscal room, one option is to finance the policies through additional borrowing. But debt should be used wisely. The return on debt-financed projects should clearly outweigh the cost and risks that higher leverage creates. Assessing the extent to which public debt can be safely increased is a difficult task. The IMF has recently developed a new framework that combines a variety of indicators and tools to assess "fiscal space" more systemically and consistently across countries. In this context, the persistent decline in interest rates may have relaxed government budget constraints in advanced economies; if the differential between interest rates and GDP growth were to remain durably lower than it has been in past decades, countries could be able to sustain higher levels of public debt.

For countries that do not have fiscal space, room must be created within their budgets: they can raise more revenue or save on expenditures to implement desired policies in a budget-neutral way. On the revenue side,

identifying the least distortionary measures available—meaning those that least reduce incentives to work, save, and invest—should be a priority. Options include broadening the tax base (by eliminating tax exemptions and preferential tax rates) and raising indirect taxes and property taxes. In China, for example, significantly raising taxes on fossil fuel would raise revenue, while helping curtail emissions and improve energy efficiency. On the spending side, better targeting of expenditure as well as increasing efficiency, preferably as part of comprehensive expenditure reviews, can often generate savings. In particular, countries can eliminate generalized subsidies that disproportionately benefit higher-income groups in favor of targeted measures to those in need. While all these measures could raise some additional resources, reallocating taxes and expenditures within a given budget envelope may, however, be difficult to achieve politically.

Upgrading the Tax System to Boost Productivity (Chapter 2)

A top challenge facing policymakers today is how to raise total factor productivity, the key driver of living standards over the long term. Tackling this challenge calls for the use of all policy levers, and in particular growth-friendly fiscal policies. Chapter 2 makes the case that upgrading a country's tax system is important to boosting productivity because it can reduce distortions that prevent resources from going to where they are most productive. The chapter offers several key findings:

- Countries can reap substantial productivity gains by reducing resource misallocation across firms. Resource misallocation results from a number of government policies or poorly functioning markets that allow less efficient businesses to gain market share at the expense of more efficient businesses. Estimates show that eliminating the distortions that cause resource misallocation could generate sizable productivity gains and lift annual real GDP growth rates by roughly 1 percentage point for about 20 years.
- Countries can chip away at resource misallocation by upgrading the design of their tax systems to ensure that firms' decisions are made for business and not tax reasons. In particular, countries can achieve important productivity gains by reducing tax discrimination by asset type, by sources of financing, or by firm characteristics such as formality and size.
- Minimizing differentiated tax treatments across capital asset types and financing can help tilt firms' decisions toward investments that are more productive, rather than more tax favored. For instance, tax treatments that favor debt over equity financing create resource misallocation by imposing a higher marginal tax on research and development investment, which is more dependent on equity compared to other capital spending. Disparity in taxes across capital asset types also affects firms' investment decisions. These two distortions can be eliminated by shifting to a cash flow tax or by adopting an allowance for corporate equity system, which allows a tax deduction for the normal rate of return on equity.
- Governments should encourage the growth of productive firms by leveling the playing field. For example, informal firms, by evading taxes, are able to stay in business despite low productivity. Stronger tax administration can help reduce the unfair cost advantage that these firms enjoy over their more productive, tax-compliant competitors. Another example of leveling the playing field is to encourage growth and productivity among small firms by reducing tax compliance costs and by targeting tax relief to new firms rather than small firms in order to avoid disincentives to growth that result in the "small business trap."

In sum, how governments tax matters for productivity. Improving the design of tax policies helps remove the distortions that are holding more productive firms back, generating a positive impact on aggregate productivity and growth.

CHAPTER 1

A GREATER ROLE FOR FISCAL POLICY

Fiscal policy has recently gained prominence, both in public debate and in governments' policy agendas (Figure 1.1). A reassessment of fiscal policy is taking place, stressing its greater role in fostering sustainable and inclusive growth and smoothing the economic cycle. At the same time, the high uncertainty surrounding the outlook and high levels of public debt require a better understanding and managing of fiscal risks. Therefore, fiscal policy has the difficult task of achieving more and better in a more constrained environment. This issue of the *Fiscal Monitor* shows how the evolution of the debate on fiscal policy can shed new light on fiscal developments and help frame policy recommendations to countries.

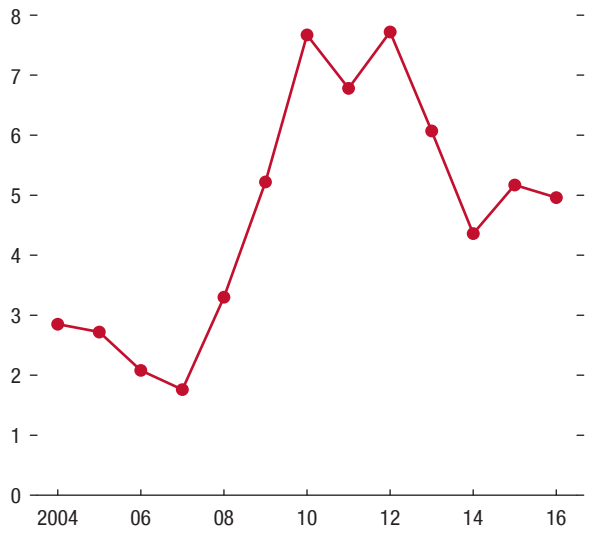
Introduction

In the last decade, a debate has taken place among policymakers and in the academic world about the role, design, and efficacy of fiscal policy (Romer 2012; Cottarelli, Gerson, and Senhadji 2014; Gaspar, Obstfeld, and Sahay 2016). Some argue that a new view on fiscal policy is emerging (Furman 2016; Roubini 2016; Ubide 2016). Although it is still too early to talk about a new consensus, it is clear that a reassessment of public policies is taking place. To examine the role of fiscal policy, this chapter uses the classification of public finances into three functions—economic stabilization, allocation, and redistribution—first proposed by Musgrave (1959).[1] The chapter also acknowledges that most governments operate with limited fiscal buffers and have to be selective in their budgetary choices. Therefore, the functions examined in the discussion that follows should be considered as a road map for policymakers. Specifically, the current debate points to a greater role for fiscal policy along three main dimensions:

Stabilization policies to smooth the economic cycle. Prior to the global financial crisis, discretionary fiscal policy was, in general, not seen as an effective tool for macroeconomic stabilization (Taylor 2000; Blanchard, Dell'Ariccia, and Mauro 2010; IMF 2013).[2] Monetary

Figure 1.1. Mentions of Fiscal Issues in the Economic Press, 2014–16
(Percentage of total articles)

The prevalence of press articles on fiscal issues has surged over the last decade.



Sources: *Financial Times*; and IMF staff calculations.
Note: For the purposes of this figure, an article is considered fiscal if it contains the word "fiscal," but not the words "fiscal year" (to exclude articles related to company performance).

[1]The *stabilization* (or *countercyclical*) *function* refers to the ability of fiscal policy to smooth short-term economic fluctuations by providing support to aggregate demand in bad times and alleviating inflation pressures and the risk of overheating in good times. The *allocation function* corresponds to the provision of public goods and services in the most efficient way; this report takes a macroeconomic perspective on allocation by focusing on how fiscal policy can contribute to medium- to long-term growth. The *redistribution function* refers to ways governments can affect the distribution of income and wealth through tax and expenditure measures.

[2]Fiscal policy can stabilize domestic demand and smooth economic fluctuations either through the operation of automatic stabilizers or through discretionary measures. *Automatic stabilization* arises from parts of the fiscal system that naturally vary with changes in economic activity. For example, as output falls, tax revenues also fall and unemployment payments rise, which "automatically" provides demand support. *Discretionary fiscal policy*, on the other hand, involves active changes in expenditure and tax policies in response to the business cycle.

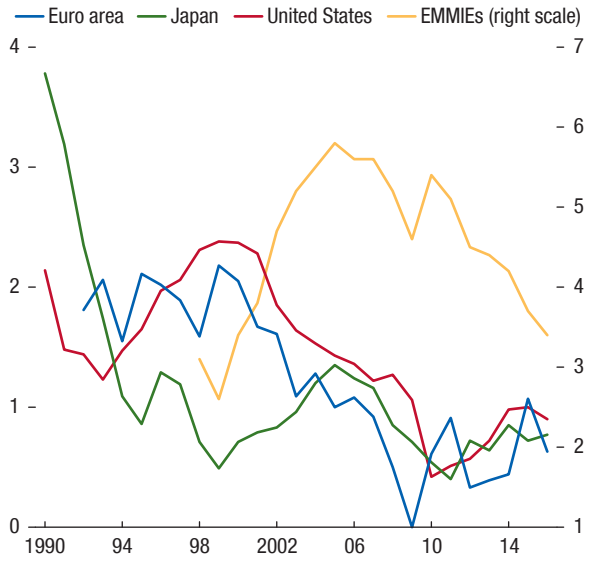
policy was the preferred instrument for mitigating fluctuations in the business cycle. The reluctance to use discretionary fiscal policy for stabilization reflected four broad considerations: the relatively long time it takes for fiscal measures to be implemented and have an impact on the economy; the difficulty of reversing a fiscal stimulus; governments' tendency to spend revenue windfalls in good times, leaving insufficient buffers to fund expansionary policies in bad times; and the belief that markets may reward fiscal discipline and that, in some cases, fiscal consolidation could be expansionary. During the global financial crisis, fiscal policy returned to the front of the stage as a countercyclical tool, partly in response to the depth and length of the recession, but also because monetary policy alone could not restore full employment. The greater role of fiscal policy for stabilization has also been supported by academic research showing that discretionary fiscal policy can have a strong effect on output (reflected in high fiscal multipliers) when monetary policy is constrained, the financial sector is weak, and there is significant and protracted slack in the economy (Christiano, Eichenbaum, and Rebelo 2011; Woodford 2011; Auerbach and Gorodnichenko 2012; Jordà and Taylor 2016). However, under normal circumstances, the preferred approach to macroeconomic stabilization continues to be a combination of monetary policy with free operation of automatic stabilizers (DeLong and Summers 2012).

Allocation policies to foster long-term growth. The idea that fiscal policy can affect an economy's trend growth, and not solely the fluctuations around it, is not new (Tanzi and Zee 1997). In particular, the economic literature has long argued that fiscal policy can have permanent effects on the level and even the growth rate of GDP per capita (for a review of endogenous growth models, see IMF 2015a). However, the tool kit of growth-friendly fiscal measures was relatively limited and lacked granularity in the 2000s. In addition, even for the least contentious candidates, such as public investment or education, empirical evidence was mixed regarding the size of their growth impact (Warner 2014). With the slowdown in productivity and potential growth (which, in many countries, started well before the global financial crisis; see Chapter 3 of the April 2015 *World Economic Outlook*), governments have explored new policy levers to boost employment, accelerate capital accumulation, and lift productivity (Figure 1.2). In parallel, progress has been made in understanding how tax and expenditure measures can be used as structural instruments to improve medium- to long-term growth, with research demonstrating that these reforms have a larger growth dividend than previously thought (OECD 2010; Barbiero and Cournède 2013; IMF 2015a). In the area of taxation, as shown in Chapter 2, the use of micro data has allowed a better estimation of the effect of taxes on firms' productivity and investment (Egger and others 2009; Gemmell and others 2016). Concerns that demand could remain persistently weak and lead to "secular stagnation" have also strengthened the case for raising public investment, which remains at a historical low in advanced economies (October 2014 *World Economic Outlook,* Chapter 3; Summers 2014, 2016). Another important finding has been that fiscal policy can also have an indirect impact on long-term growth by supporting the implementation of structural reforms, such as labor or product market reforms. Since some structural reforms tend to yield smaller benefits when the economy is weak, their effect can be amplified when they are complemented by fiscal policies that support aggregate demand (October 2014 *Fiscal Monitor*, Chapter 2; April 2016 *World Economic Outlook*, Chapter 3).

Redistribution policies to promote inclusiveness. Equity issues have become more visible after three decades of rising income inequalities in many countries (Figure 1.3). Together with the social tensions associated with fiscal consolidation programs, this has put the distributional effects of governments' tax and spending policies at the heart of public debate. The salience of these trends has also been reinforced by advances in the measurement of income and wealth concentration over the long term in a growing number of countries (Atkinson, Piketty, and Saez 2011; Mankiw 2013). While there is relatively broad consensus on the inequality trends, the contribution of various underlying causes is still being explored. Some studies have emphasized the effects of technological change and global economic integration (Helpman and others 2017; Jaumotte, Lall, and Papageorgiou 2013), while others have highlighted the role of policies, including the reduction in top personal income tax rates (Alvaredo and others 2013) and lower capital taxation (Piketty 2015). Another area in which significant progress has been made is the design and implementation of inclusive fiscal policies. The growing use of household survey and adminis-

Figure 1.2. Potential GDP Per Capita Growth, 1990–2016
(Percent)

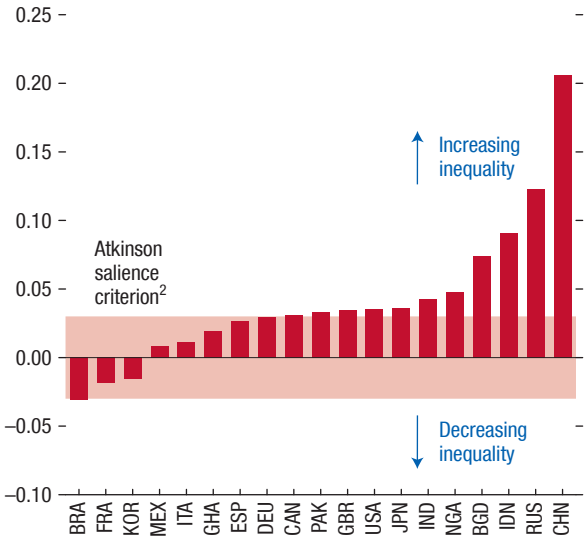
Since the early 2000s, potential growth has decelerated dramatically.



Source: IMF staff estimates.
Note: EMMIEs = emerging market and middle-income economies.

Figure 1.3. Change in Disposable Income Inequality for Selected Countries, 1985–2015[1]
(Change in Gini index)

The benefits of growth have been shared less and less evenly in the last three decades.



Sources: Standardized World Income Inequality Database; and IMF staff estimates.
Note: Data labels use International Organization for Standardization (ISO) country abbreviations; see "Country Abbreviations" for definitions.
[1]1985 refers to 1985 or the earliest available year until 1990. 2015 refers to 2015 or the latest available year between 2010 and 2015.
[2]According to the Atkinson salience criterion, changes in the Gini index larger than 0.03 are considered economically significant and are indicative of a salient change in redistribution policy (Atkinson 2015).

trative data has allowed a better calibration of tax, transfer, and social insurance measures and a better understanding of their incidence (Brewer, Saez, and Shephard 2010; Chetty and Finkelstein 2013; Lustig, Pessino, and Scott 2014). In this context, discussion has revolved around the efficiency cost of progressive taxation, with some arguing that the redistributive benefits of higher marginal income tax rates exceed their costs (Diamond and Saez 2011; Piketty, Saez, and Stantcheva 2014), although this is the subject of an ongoing debate (Mankiw, Weinzierl, and Yagan 2009). At the macroeconomic level, recent research also suggests that equity-enhancing fiscal measures may be consistent with sustainable economic growth (Ostry, Berg, and Tsangarides 2014). One implication is that, in certain cases, there may be scope to improve income distribution without undermining incentives to work and invest (IMF 2014a; Fabrizio and others 2017).

The rest of the chapter examines fiscal trends and recommendations through the prism of these new views on fiscal policy. The next section reviews recent fiscal developments and finds that fiscal policy already assumes a broader role in several countries. Nonetheless, there is still room for more stabilizing, growth-friendly, and inclusive policies around the world. The third section—titled "Can Fiscal Policy Do More and How?"—discusses in greater depth the three objectives of fiscal policy and shows how they translate into specific policy recommendations, taking into account country circumstances and constraints.

Recent Fiscal Developments and Outlook

This section examines recent fiscal developments in the three main country groups (advanced economies, emerging markets and middle-income economies, and low-income developing countries), provides an overview of the fiscal outlook, and highlights the main risks to the projections (Tables 1.1a, 1.1b, and 1.2).

Table 1.1a. General Government Fiscal Balance, 2010–18: Overall Balance

(Percent of GDP)

								Projections		Difference from April 2016 *Fiscal Monitor*		
	2010	2011	2012	2013	2014	2015	2016	2017	2018	2016	2017	2018
World	**–5.7**	**–4.3**	**–3.7**	**–2.8**	**–2.9**	**–3.3**	**–3.6**	**–3.4**	**–3.1**	**0.0**	**–0.2**	**–0.4**
Advanced Economies	**–7.6**	**–6.2**	**–5.4**	**–3.6**	**–3.1**	**–2.6**	**–2.9**	**–2.7**	**–2.7**	**0.0**	**–0.2**	**–0.5**
United States[1]	–10.9	–9.6	–7.9	–4.4	–4.0	–3.5	–4.4	–4.0	–4.5	–0.5	–0.4	–1.0
Euro Area	–6.2	–4.2	–3.6	–3.0	–2.6	–2.1	–1.7	–1.5	–1.2	0.3	0.0	–0.2
France	–6.8	–5.1	–4.8	–4.0	–4.0	–3.5	–3.3	–3.2	–2.8	0.1	–0.4	–0.5
Germany	–4.2	–1.0	0.0	–0.2	0.3	0.7	0.8	0.6	0.6	0.7	0.5	0.3
Italy	–4.2	–3.7	–2.9	–2.9	–3.0	–2.7	–2.4	–2.4	–1.4	0.3	–0.8	–0.9
Spain[2]	–9.4	–9.6	–10.5	–7.0	–6.0	–5.1	–4.6	–3.3	–2.7	–1.3	–0.8	–0.7
Japan[3]	–9.1	–9.1	–8.3	–7.6	–5.4	–3.5	–4.2	–4.0	–3.3	0.6	0.0	0.2
United Kingdom	–9.5	–7.5	–7.7	–5.6	–5.7	–4.4	–3.1	–2.8	–2.1	0.1	–0.6	–0.8
Canada	–4.7	–3.3	–2.5	–1.5	0.0	–1.1	–1.9	–2.4	–2.2	0.5	–0.6	–0.9
Others	–0.2	0.4	0.4	0.2	0.2	–0.1	0.0	–0.2	0.2	0.3	0.0	–0.1
Emerging Market and Middle-Income Economies	**–2.1**	**–1.0**	**–0.9**	**–1.4**	**–2.4**	**–4.4**	**–4.8**	**–4.4**	**–3.9**	**–0.1**	**–0.3**	**–0.2**
Excluding MENAP Oil Producers	–2.8	–1.8	–2.0	–2.3	–2.7	–4.1	–4.3	–4.4	–3.9	–0.2	–0.7	–0.6
Asia	–2.2	–1.6	–1.6	–1.8	–1.9	–3.2	–3.9	–3.9	–3.7	–0.4	–0.7	–0.8
China	–0.4	–0.1	–0.3	–0.8	–0.9	–2.8	–3.7	–3.7	–3.4	–0.7	–1.1	–1.1
India	–8.6	–8.3	–7.5	–7.0	–7.2	–7.1	–6.6	–6.4	–6.3	0.5	0.3	0.2
Europe	–3.5	–0.1	–0.7	–1.5	–1.5	–2.7	–2.9	–3.1	–2.2	0.5	–0.4	–0.2
Russia	–3.2	1.4	0.4	–1.2	–1.1	–3.4	–3.7	–2.6	–1.9	0.8	0.4	0.0
Latin America	–3.1	–2.8	–3.1	–3.2	–5.1	–7.2	–6.4	–6.5	–5.6	0.1	–0.6	–0.5
Brazil	–2.7	–2.5	–2.5	–3.0	–6.0	–10.3	–9.0	–9.1	–7.5	–0.3	–0.6	0.6
Mexico	–3.9	–3.4	–3.8	–3.7	–4.6	–4.0	–2.9	–2.9	–2.5	0.6	0.1	0.0
MENAP	2.4	4.3	6.0	4.3	–0.9	–8.4	–9.5	–5.2	–3.9	0.5	3.5	3.7
Saudi Arabia	3.6	11.1	12.0	5.8	–3.4	–15.8	–16.9	–9.8	–6.4	–3.4	2.0	4.6
South Africa	–4.7	–3.7	–4.0	–3.9	–3.6	–3.6	–3.5	–3.5	–3.4	0.2	0.1	0.0
Low-Income Developing Countries	**–2.8**	**–1.2**	**–2.0**	**–3.4**	**–3.2**	**–4.0**	**–4.4**	**–4.4**	**–3.9**	**0.1**	**–0.4**	**–0.1**
Nigeria	–4.2	0.2	0.1	–2.5	–2.2	–3.5	–4.4	–5.0	–4.2	0.3	–0.8	–0.2
Oil Producers	**–1.1**	**1.4**	**1.6**	**0.5**	**–1.0**	**–4.6**	**–4.9**	**–3.5**	**–2.8**	. . .	. . .	. . .
Memorandum												
World Output (percent)	**5.4**	**4.2**	**3.5**	**3.4**	**3.5**	**3.4**	**3.1**	**3.5**	**3.6**	**–0.1**	**–0.1**	**0.0**

Source: IMF staff estimates and projections.

Note: All fiscal data country averages are weighted by nominal GDP converted to U.S. dollars at average market exchange rates in the years indicated and based on data availability. Projections are based on IMF staff assessments of current policies. In many countries, 2016 data are still preliminary. For country-specific details, see "Data and Conventions" and Tables A, B, C, and D in the Methodological and Statistical Appendix. MENAP = Middle East, North Africa, and Pakistan.

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

[2] Including financial sector support.

[3] Japan's figures reflect a comprehensive revision by the national authorities, released in December 2016. The main revisions are the switch from the 1993 System of National Accounts to the 2008 System of National Accounts.

Advanced Economies: Turning to Fiscal Relaxation in 2016

Advanced economies eased their fiscal stance by one-fifth of 1 percent of GDP in 2016, breaking a five-year trend of gradual fiscal consolidation (Figure 1.4, panels 1 and 2).[3] The main countries contributing to the change in the aggregate stance were Italy, Spain, and the United States, and, to a smaller extent, Canada and Germany. The debt-to-GDP ratio of advanced economies increased by about 2 percentage points in 2016, reaching 107.6 percent of GDP, and is expected to remain elevated and relatively flat in the medium term (in contrast to the April 2016 *Fiscal Monitor*'s projection of a moderate and steady decline). Starting from 2015, the path of debt ratios

[3]Throughout the report, changes in the fiscal stance are assessed using the change in the structural primary balance (as a share of potential GDP). A broadly neutral stance means that this ratio is broadly constant relative to the previous year.

Table 1.1b. General Government Fiscal Balance, 2010–18: Cyclically Adjusted Primary Balance
(Percent of potential GDP)

								Projections		Difference from April 2016 *Fiscal Monitor*		
	2010	2011	2012	2013	2014	2015	2016	2017	2018	2016	2017	2018
Advanced Economies	**–5.0**	**–3.8**	**–2.6**	**–1.6**	**–1.1**	**–0.9**	**–1.1**	**–1.2**	**–1.2**	**–0.1**	**–0.4**	**–0.6**
United States[1, 2, 3]	–7.6	–6.0	–4.2	–2.4	–1.8	–1.5	–1.9	–1.9	–2.3	–0.5	–0.5	–1.1
Euro Area	–2.6	–1.3	0.0	1.1	1.0	1.0	0.9	0.7	0.7	0.1	–0.2	–0.3
France	–3.5	–2.1	–1.5	–0.8	–0.6	–0.5	–0.5	–0.8	–0.6	0.1	–0.3	–0.5
Germany	–1.4	0.6	1.6	1.6	1.7	1.9	1.7	1.2	1.0	0.5	0.4	0.2
Italy	0.5	1.0	3.4	3.7	3.4	2.9	2.5	1.9	2.6	0.0	–1.1	–1.1
Spain[2, 3]	–6.9	–5.5	–0.9	0.4	0.9	0.2	–0.7	–0.2	–0.2	–1.2	–0.8	–0.9
Japan[4]	–6.9	–6.8	–6.3	–6.4	–4.6	–3.5	–3.6	–3.7	–3.1	0.8	–0.1	0.0
United Kingdom[2]	–5.0	–3.2	–3.7	–2.8	–3.1	–2.6	–1.3	–1.0	–0.3	0.1	–0.5	–0.8
Canada	–3.0	–2.3	–1.3	–0.7	0.3	–0.2	–0.8	–1.5	–1.5	0.6	–0.2	–0.5
Others	–1.5	–1.1	–0.9	–0.8	–0.6	–0.7	–0.7	–0.8	–0.4	0.2	–0.2	–0.1
Emerging Market and Middle-Income Economies	**–0.9**	**0.0**	**–0.1**	**–0.4**	**–0.7**	**–1.8**	**–2.1**	**–1.9**	**–1.5**	**–0.3**	**–0.6**	**–0.5**
Asia	–0.9	–0.3	–0.2	–0.3	–0.3	–1.8	–2.4	–2.3	–2.0	–0.3	–0.7	–0.7
China	0.0	0.4	0.4	0.0	0.1	–1.9	–2.8	–2.7	–2.3	–0.6	–1.0	–1.0
India	–4.7	–4.2	–3.1	–2.3	–2.6	–2.5	–1.7	–1.5	–1.7	0.6	0.6	0.3
Europe	–1.9	0.6	0.4	–0.4	0.2	–0.8	–1.2	–1.5	–0.9	0.5	–0.5	–0.5
Russia	–2.7	1.7	0.5	–1.0	0.5	–2.1	–2.3	–2.0	–1.3	1.2	0.1	–0.4
Latin America	0.2	0.5	0.1	–0.4	–1.7	–1.9	–1.6	–1.0	–0.3	–0.7	–0.8	–0.5
Brazil	1.5	1.9	1.1	0.8	–1.7	–1.7	–1.3	–1.1	–0.4	–0.8	–1.0	–0.4
Mexico	–1.1	–0.9	–1.4	–1.2	–1.9	–1.2	–1.0	0.5	1.3	–0.6	0.2	0.2
South Africa	–0.9	–0.7	–1.0	–0.8	–0.3	0.5	0.7	0.8	1.1	0.3	0.1	0.1
MENAP	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Saudi Arabia	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Low-Income Developing Countries	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .

Source: IMF staff estimates and projections.
Note: The cyclically adjusted primary balance is defined as the cyclically adjusted balance plus net interest payable/paid (interest expense minus interest revenue) following the *World Economic Outlook* convention. All fiscal data country averages are weighted by nominal GDP converted to U.S. dollars at average market exchange rates in the years indicated and based on data availability. Projections are based on IMF staff assessments of current policies. In many countries, 2016 data are still preliminary. For country-specific details, see "Data and Conventions" and Tables A, B, C, and D in the Methodological and Statistical Appendix. MENAP = Middle East, North Africa, and Pakistan.
[1] For cross-country comparability, expenditure and fiscal balances of the United States are adjusted to exclude the imputed interest on unfunded pension liabilities and the imputed compensation of employees, which are counted as expenditures under the 2008 System of National Accounts (2008 SNA) adopted by the United States, but not in countries that have not yet adopted the 2008 SNA. Data for the United States in this table may thus differ from data published by the U.S. Bureau of Economic Analysis.
[2] Excluding financial sector support.
[3] Data refer to structural primary balance from the *World Economic Outlook*.
[4] Japan's figures reflect a comprehensive revision by the national authorities, released in December 2016. The main revisions are the switch from the 1993 System of National Accounts to the 2008 System of National Accounts.

in Japan has been reduced by more than 10 percent of GDP owing to a comprehensive revision of national accounts, which, among other things, pushed up the level of nominal GDP.

Although the reasons behind the loosening of fiscal policy in 2016 are largely country specific, three broad factors can account for this general trend:

- The main consideration behind fiscal easing was support for the recovery in a context of heightened uncertainty over economic prospects. Countries where short-term growth and employment were key factors include Italy, Spain, and the United States. In Japan, the authorities adopted a supplementary budget in response to the weaker domestic and external economic environment at the beginning of 2016. Taking a longer perspective, it is noteworthy that fiscal policy has become gradually more countercyclical in advanced economies over the past 20 years. This is reflected in the rise in the fiscal stabilization coefficient, which measures the relationship between the nominal budget balance and movements in output (Figure 1.4, panel 3).[4]

[4]The *fiscal stabilization coefficient* (FISCO) was introduced in Chapter 2 of the April 2015 *Fiscal Monitor*, which provides further details on the calculation. It captures both the effect of discretionary policy and automatic stabilizers. A positive coefficient means that

Table 1.2. General Government Debt, 2010–18

(Percent of GDP)

								Projections		Difference from April 2016 *Fiscal Monitor*		
	2010	2011	2012	2013	2014	2015	2016	2017	2018	2016	2017	2018
Gross Debt												
World	**77.7**	**78.7**	**80.4**	**79.1**	**79.3**	**80.6**	**83.6**	**83.1**	**82.8**	**–0.1**	**–0.3**	**0.3**
Advanced Economies	**99.3**	**103.5**	**107.7**	**106.3**	**105.6**	**105.4**	**107.6**	**107.1**	**106.7**	**0.0**	**0.0**	**0.9**
United States[1]	95.7	99.9	103.4	105.4	105.2	105.6	107.4	108.3	108.9	–0.1	0.9	2.2
Euro Area	84.0	86.8	91.4	93.7	94.4	92.6	91.3	90.1	88.6	–1.2	–1.2	–1.0
France	81.6	85.2	89.5	92.3	95.2	96.2	96.6	97.4	97.4	–1.6	–1.4	–1.1
Germany	81.0	78.7	79.9	77.5	74.9	71.2	67.6	64.7	62.0	–0.6	–1.2	–1.5
Italy	115.4	116.5	123.3	129.0	131.8	132.0	132.6	132.8	131.6	–0.4	1.1	2.1
Spain	60.1	69.5	85.7	95.4	100.4	99.8	99.3	98.5	97.9	0.2	0.1	0.3
Japan[2]	215.9	230.6	236.6	240.5	242.1	238.0	239.2	239.2	239.4	–10.2	–11.7	–12.4
United Kingdom	76.0	81.6	85.1	86.2	88.1	89.0	89.2	89.0	88.7	0.0	1.0	2.4
Canada[1]	81.1	81.5	84.8	85.8	85.4	91.6	92.3	91.2	89.8	0.1	0.6	1.6
Emerging Market and Middle-Income Economies	**38.4**	**37.5**	**37.5**	**38.7**	**40.8**	**44.5**	**47.4**	**48.6**	**49.8**	**–0.1**	**–0.4**	**–0.4**
Excluding MENAP Oil Producers	40.6	40.1	39.9	41.3	43.5	46.5	49.3	50.6	51.8	–0.2	–0.1	0.2
Asia	40.3	39.7	39.7	41.4	43.6	45.8	48.5	50.5	52.2	0.0	0.3	0.7
China	33.7	33.6	34.3	37.0	39.9	42.6	46.2	49.3	52.0	–0.5	0.0	0.8
India	67.5	69.6	69.1	68.5	68.6	69.6	69.5	67.8	66.1	3.0	2.2	1.8
Europe	28.2	26.9	25.8	26.8	28.4	30.8	32.7	32.2	32.3	–2.0	–2.3	–2.2
Russia	10.6	10.9	11.8	13.1	15.6	15.9	17.0	17.1	17.3	–1.4	–2.3	–3.3
Latin America	48.6	48.6	48.8	49.4	51.4	55.0	58.3	60.1	60.7	0.0	0.4	0.1
Brazil[3]	63.0	61.2	62.2	60.2	62.3	72.5	78.3	81.2	82.7	2.1	0.7	–0.9
Mexico	42.2	43.2	43.2	46.4	49.5	53.7	58.1	57.2	56.8	3.2	2.3	2.3
MENAP	25.2	22.0	23.5	24.0	24.5	33.8	38.9	36.3	36.3	1.1	–5.0	–7.9
Saudi Arabia	8.4	5.4	3.6	2.1	1.6	5.0	12.4	15.6	19.1	–4.8	–10.2	–14.2
South Africa	34.7	38.2	41.0	44.0	46.9	49.8	50.5	52.4	54.0	–1.0	0.2	1.4
Low-Income Developing Countries	**30.8**	**30.7**	**31.0**	**31.8**	**32.0**	**36.1**	**40.4**	**41.9**	**41.6**	**3.5**	**5.4**	**5.0**
Nigeria	9.6	12.6	12.5	12.6	10.6	12.1	18.6	23.3	24.1	5.4	9.3	9.8
Oil Producers	**33.7**	**31.8**	**32.5**	**33.3**	**34.0**	**39.5**	**42.3**	**40.9**	**40.8**	. . .	. . .	. . .
Net Debt												
World	**54.4**	**57.3**	**59.0**	**58.0**	**58.1**	**59.8**	**62.3**	**62.4**	**62.5**	**–0.9**	**–0.9**	**–0.3**
Advanced Economies	**63.1**	**67.6**	**70.5**	**69.8**	**69.6**	**70.1**	**71.4**	**71.4**	**71.4**	**–1.4**	**–1.2**	**–0.4**
United States[1]	70.4	76.8	80.2	81.5	81.0	80.5	81.5	82.4	83.1	–0.7	0.3	1.6
Euro Area	58.0	62.6	65.9	68.1	68.4	67.5	67.0	66.3	65.3	–2.3	–2.3	–2.1
France	74.0	76.9	80.6	83.5	86.4	87.4	88.3	89.1	89.1	–2.2	–2.0	–1.7
Germany	57.0	55.5	54.8	53.8	50.6	47.8	45.0	42.7	40.6	–1.7	–2.2	–2.5
Italy	98.4	100.4	105.0	109.9	111.9	112.5	113.3	113.8	113.0	1.5	3.1	4.2
Spain	42.3	51.6	66.0	74.0	78.6	80.2	80.4	80.4	80.4	14.2	13.8	13.7
Japan	106.2	117.9	120.5	117.4	119.0	118.4	119.8	119.9	120.1	–9.8	–11.3	–12.0
United Kingdom	68.7	73.2	76.4	77.8	79.7	80.4	80.7	80.4	80.2	0.0	1.1	2.4
Canada[1]	26.8	27.1	28.2	29.0	27.2	25.2	27.6	26.4	25.1	0.2	0.7	1.6
Emerging Market and Middle-Income Economies	**14.5**	**12.8**	**9.8**	**9.0**	**9.6**	**11.8**	**17.5**	**19.9**	**21.1**	**3.0**	**2.0**	**0.7**
Asia	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Europe	26.8	24.6	21.7	21.3	19.9	18.8	23.3	24.9	25.1	–3.7	–2.2	–1.7
Latin America	33.1	31.2	29.5	29.6	32.2	35.5	41.7	44.8	45.9	2.4	3.1	2.9
MENAP	–32.1	–31.0	–37.3	–41.3	–40.6	–33.1	–25.8	–25.8	–23.8	4.8	–3.5	–7.9
Low-Income Developing Countries	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .

Source: IMF staff estimates and projections.

Note: All fiscal data country averages are weighted by nominal GDP converted to U.S. dollars at average market exchange rates in the years indicated and based on data availability. In many countries, 2016 data are still preliminary. Projections are based on IMF staff assessments of current policies. For country-specific details, see "Data and Conventions" and Tables A, B, C, and D in the Methodological and Statistical Appendix. MENAP = Middle East, North Africa, and Pakistan.

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

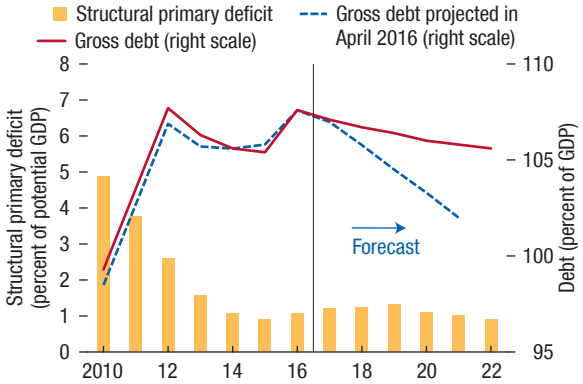
[2] Japan's figures reflect a comprehensive revision by the national authorities, released in December 2016. The main revisions are the switch from the 1993 System of National Accounts to the 2008 System of National Accounts.

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

Figure 1.4. Fiscal Trends in Advanced Economies

After years of consolidation, advanced economies relaxed their fiscal stance in 2016 ...

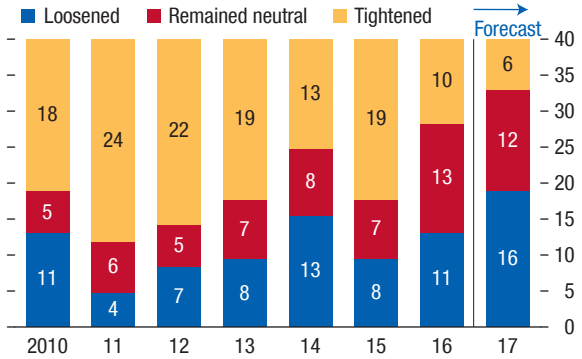
1. General Government Debt and Deficit, 2010–22



... partly in response to weak cyclical conditions.

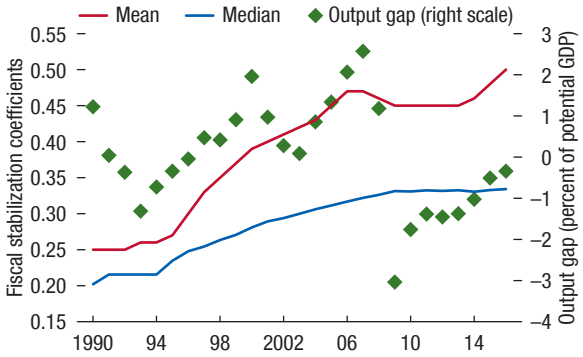
... with fewer and fewer countries conducting fiscal consolidation in the past five years ...

2. Number of Countries in Which the Fiscal Stance Was Tightened, Loosened, or Remained Neutral, 2010–17[1]

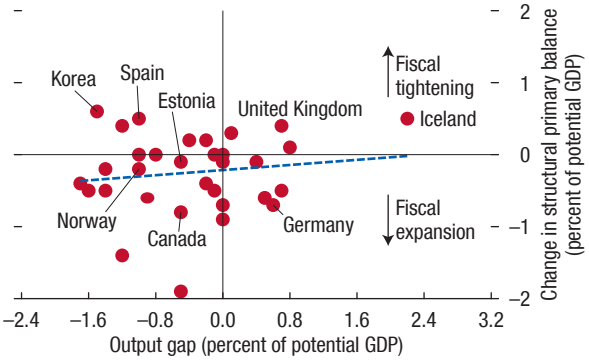


In 2017, countries with greater economic slack are expected to conduct a more supportive fiscal policy.

3. Fiscal Stabilization Coefficients for Advanced Economies, 1990–2016[2]



4. Fiscal Impulse and Output Gap, 2017



Source: IMF staff estimates.
[1]The fiscal stance is considered to have tightened if the ratio of the structural primary balance to potential GDP improves by at least 0.25 percent per year, to have loosened if that ratio deteriorates by at least 0.25 percent per year, and to have remained neutral otherwise.
[2]For details on the calculation of the fiscal stabilization coefficient, see Chapter 2 of the April 2015 *Fiscal Monitor*.

This coefficient increased steadily between the mid-1990s and the onset of the global financial crisis before flattening out. In a few countries, such as Denmark and Iceland, the increase has continued in recent years.

- Growing concerns about medium-term growth and support for public investment constituted a second factor. For instance, in Canada the stimulus package (equivalent to 1¼ percent of GDP spread over fiscal years 2016/17 and 2017/18) allocates more than 40 percent to infrastructure projects. The government has also announced its intention to establish a new infrastructure bank to leverage private sector capital for large infrastructure developments. Other countries where public

the nominal fiscal balance increases when output rises and decreases when output falls; hence, fiscal policy generates additional demand when output is weak and subtracts from demand when the economy is booming, which corresponds to a countercyclical fiscal response.

investment increased as a share of GDP include Australia and New Zealand.
- In some countries, the move toward a more supportive fiscal stance can also be explained by the pursuit of social objectives. In Germany, an increase in primary spending corresponding to half a percent of GDP was directed toward higher pension outlays and refugee-related spending. In Japan, part of the higher spending in 2016 was channeled to cash transfers to low-income pensioners.

In 2017, fiscal policy is expected to be broadly neutral, but this masks substantial differences across countries. While Canada and the euro area will continue to relax their fiscal positions, Korea and the United Kingdom plan to tighten this year. Countries with greater economic slack are expected to conduct a more supportive fiscal policy (Figure 1.4, panel 4). In 2018–19, the aggregate fiscal stance is projected to remain neutral, also with significant heterogeneity across countries. Key components from budget plans for 2017 and subsequent years include the following:
- In the United States, the new administration is considering business and personal income tax cuts, a comprehensive reform of corporate taxation (Box 1.1), an overhaul of the health care system, and more defense and homeland security spending offset by large cuts in various domestic programs and foreign aid. In light of the uncertainties about future policies at the time this *Fiscal Monitor* was prepared, the scenario presented in Tables 1.1 and 1.2 assumes a fiscal impulse of about 1 percent of GDP spread over 2018–19, based on lower personal and corporate income taxes. In spite of their expansionary effects, these policies are expected to generate rising deficits over the medium term. As a result, the U.S. debt ratio is projected to increase continuously over the five-year forecast horizon of the April 2017 *World Economic Outlook* (until 2022).
- In the euro area, the fiscal stance is expected to be expansionary in 2017, principally because of policies in France, Germany, and Italy. In France, the spending-based consolidation carried out since 2014 has slowed and the structural primary deficit is projected to increase marginally in 2017, partly reflecting security needs in the wake of recent terrorist attacks, as well as an increase in the public sector wage bill. For 2017, Germany's federal budget priorities involve personal income tax relief, higher infrastructure spending, and more funding for research and development. Italy intends to enact a corporate tax cut and a range of new spending initiatives (higher pensions, wage bill, and public investment).
- In response to a weak economy and a more uncertain global environment, the Japanese government announced another fiscal stimulus package in the summer of 2016 that will raise spending in 2017. Measures include cash transfers to low-income individuals, an increase in wages of caregivers for children and the elderly, and infrastructure investment. Some progress has been made on labor market reforms, although more fundamental reforms to remove labor market duality and eliminate disincentives to regular work due to the tax and social security system have fallen short. The authorities have also pushed back the planned value-added tax (VAT) hike from April 2017 to October 2019. While the authorities remain committed to their 2020/21 primary surplus goal, no new measures have been specified to meet this target.
- The United Kingdom announced last year that it would slow the pace of fiscal consolidation and revised its medium-term fiscal targets accordingly. The planned increase in the cyclically adjusted primary balance is now about 2⁄3 percentage point of GDP per year until fiscal year 2019/20, lower than previously envisaged. The easing of the pace of adjustment reflects a policy choice in the face of heightened uncertainty, as well as a decision to increase infrastructure investment.

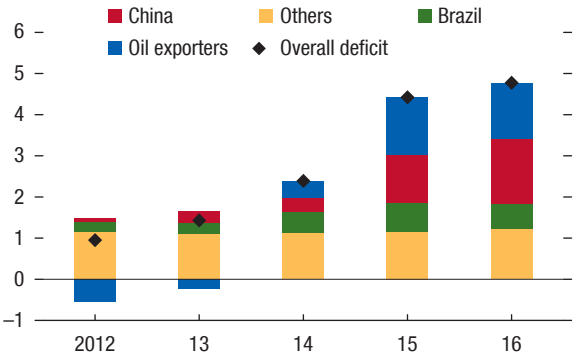
Emerging Markets and Middle-Income Economies: Adapting to New Realities

Headline fiscal deficits in emerging market and middle-income economies increased for the fourth year in a row, from an average of 0.9 percent of GDP in 2012 to 4.8 percent in 2016, reaching a two-decade high. This increase was mainly driven by slower growth and lower commodity prices, combined with political and geopolitical factors—and, in China, stimulatory fiscal measures to support the economy. Brazil, China, and oil exporters accounted for most of the overall deficit increase between 2012 and 2016 (Figure 1.5, panel 1). Over the same period, the average debt ratio rose by about 10 percentage points for the group, reaching 47.4 percent of GDP in 2016, as higher deficits and depreciating currencies more

Figure 1.5. Fiscal Trends in Emerging Market and Middle-Income Economies

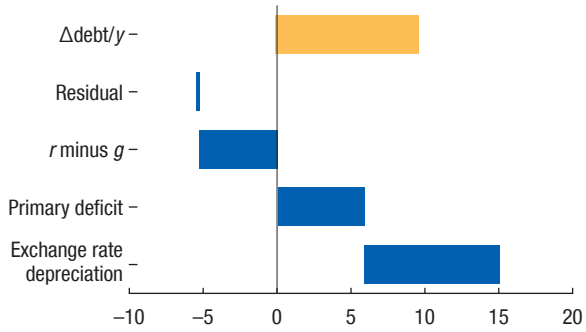
Fiscal deficits increased fivefold between 2012 and 2016 ...

1. Contributors to Overall Deficit, 2012–16
(Percent of GDP)



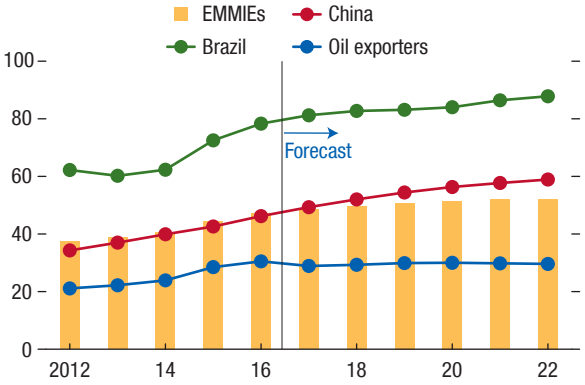
... pushing up debt ratios over the same period.

2. Decomposition of Change in Debt Ratio, 2012–16[1]
(Percent of GDP)



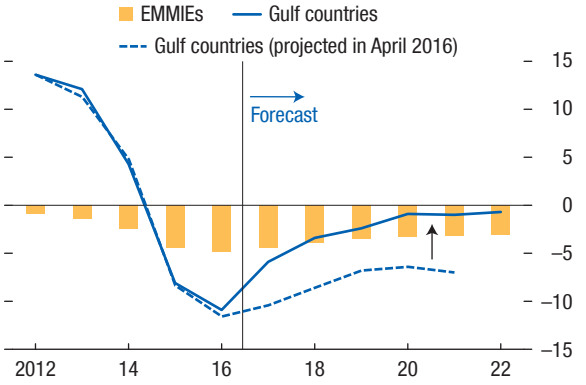
Debt ratios are forecast to keep increasing in the medium term, except in oil exporters ...

3. General Government Debt Ratio, 2012–22
(Percent of GDP)



... where the rebound in oil prices and consolidation measures should bring down high fiscal deficits.

4. General Government Overall Balance, 2012–22
(Percent of GDP)



Source: IMF staff estimates.
Note: Gulf countries are Kuwait, Oman, Qatar, Saudi Arabia, and the United Arab Emirates.
[1]This panel shows the average contribution over the sample of emerging markets and middle-income economies (EMMIEs) using the simple average method. *r* minus *g* = interest–growth rate differential; Δdebt/*y* = change in debt-to-GDP ratio.

than offset the effect of favorable interest–growth rate differentials (Figure 1.5, panel 2).

The main contributor to the 2016 increase in the overall deficit was the fiscal stimulus in China (Figure 1.5, panel 1), where the on-budget deficit[5] moved from 2.8 percent of GDP in 2015 to 3.7 percent in 2016 on the back of strong public infrastructure spending and tax cuts to support the government's GDP growth target. The "augmented" deficit (which includes off-budget activity through local government financing vehicles) is also estimated to have increased from 9.5 percent of GDP in 2015 to 10.3 percent in 2016, as off-budget debt-financed investment remained strong in spite of tighter restrictions on local government borrowing.

In oil exporters, the rebound of oil prices and the implementation of consolidation measures helped

[5]That is, the general government deficit excluding the expenditures financed from land sales.

stabilize the average fiscal deficit at about 6 percent of GDP in 2016, putting an end to the gradual deterioration of fiscal balances that started in 2013. In Mexico, a one-off transfer of central bank profits to the budget and strong non-oil tax revenues contributed to reducing the deficit by more than 1 percent of GDP. However, the fiscal position of Gulf countries[6] continued to worsen despite a substantial improvement in the underlying non-oil balances, which resulted from energy price reforms and spending cuts, as well as non-oil revenue increases in some countries. Outside the Gulf region, Russia's headline deficit also increased by 0.3 percent of GDP, mainly because of a one-off increase in classified spending.

In oil importers other than China, fiscal positions improved slightly in 2016 on average, with some heterogeneity reflecting country circumstances. Brazil's overall deficit declined by more than 1 percentage point to 9 percent of GDP in 2016, despite the economic recession and political headwinds, but the improvement was mainly due to lower interest payments, and the primary fiscal deficit continued to increase.[7] India returned to fiscal consolidation in fiscal year 2016/17, supported by the near-elimination of fuel subsidies and enhanced targeting of social benefits, notwithstanding the deceleration in growth related to the country's recent currency exchange initiative. In contrast, the fiscal stance significantly loosened in Turkey, with the overall deficit widening to 2.3 percent of GDP in 2016 from 1.2 percent a year earlier. This reflected an increase in minimum wages, higher security spending, and temporary tax relief implemented in an effort to revive growth following the failed coup attempt in 2016.

For 2017 and beyond, a gradual tightening of fiscal positions is expected in emerging market and middle-income economies, subject to significant policy uncertainties. Baseline projections envisage a gradual decline in the overall deficit by about half a percentage point to 4.4 percent of GDP in 2017 and to 3.1 percent of GDP by 2022. Debt ratios, on the other hand, are set to continue rising gradually from an average of 48.6 percent of GDP in 2017 to 52.4 percent in 2022, as deficits should remain above debt-stabilizing levels in a majority of countries (Figure 1.5, panel 3). Projected deficit and debt trajectories remain broadly unchanged compared with those under the April 2016 *Fiscal Monitor* forecasts, with an improvement in the fiscal positions of oil exporters offsetting developments in other countries, notably China.

The near-term improvement in the group's fiscal position is mostly due to the expected consolidation in oil exporters, where the fiscal outlook is dominated by the expected oil price recovery and deficit reduction efforts (Figure 1.5, panel 4). Gulf countries, in particular, have set out ambitious medium- to long-term plans to diversify their economies away from oil and restore fiscal discipline. Country authorities have announced the objective of introducing a VAT system in the region by 2018. In Saudi Arabia, the fiscal deficit is expected to decline by 7 percent of GDP in 2017 largely because of higher oil revenues and a decline in arrears payments. The government has also announced a number of measures, including further reduction in energy subsidies, introduction of excises and fees, public wage restraint, and enhanced selection of investment projects, together with allowances to protect low-income households against rising utility costs. In Russia, the medium-term federal budget proposal for 2017–19, based on a conservative oil price assumption ($40 a barrel), envisages an annual fiscal adjustment of 1 percentage point of GDP, supported by an across-the-board freeze in nominal spending. Russia also introduced a new mechanism in February ensuring that excess oil revenues are saved into the reserve fund, rather than spent, to lessen the impact of oil price fluctuations on the economy and the budget.[8]

In oil importers, a broadly neutral fiscal stance is projected in 2017, followed by a gradual consolidation over the medium term. The consolidation will proceed as output gaps close, albeit at different paces:

- China intends to maintain a fiscal stance supportive of aggregate demand in 2017 to offset the short-term drag on activity from structural reforms that aim at reducing vulnerabilities in the corporate and household sectors. To this end, government spend-

[6]Throughout the chapter, "Gulf countries" refers to Kuwait, Oman, Qatar, Saudi Arabia, and the United Arab Emirates.

[7]Gains on operations with foreign exchange swaps were booked in the interest bill.

[8]In Russia, oil-related budget revenues are collected in domestic currency. The new mechanism foresees that the central bank purchases/sells foreign exchange on behalf of the Ministry of Finance on a monthly basis to replenish/draw on the reserve fund, whenever the market price of oil is higher/lower than the price assumed in the budget.

ing is expected to increase modestly, accompanied by more tax breaks and reductions in administrative fees paid by businesses, keeping the on-budget deficit close to its 2016 level. The country is also taking steps to make its income tax system more equitable, address the long-standing misalignment of revenue and spending responsibilities across government levels, and improve debt management by local governments.

- In India, the headline deficit is projected to decline modestly in fiscal year 2017/18, with continued delay in reaching the medium-term deficit target. The budget envisages a growth-friendly fiscal adjustment underpinned by expenditure cuts that protect infrastructure investment, as well as more progressive income taxes for individuals combined with lower taxes on small and medium-sized enterprises. The expected rollout of the nationwide goods and services tax this year will enhance the efficiency of the internal movement of goods and services and effectively create a common national market. The country is also making progress toward strengthening its fiscal responsibility framework, including through anchoring fiscal adjustment by means of a debt-to-GDP ratio of 60 percent to be achieved by fiscal year 2022/23.
- Brazil is expected to exit a two-year recession in 2017 and to continue to advance reforms aimed at rebuilding credibility and fiscal sustainability. The constitutional amendment adopted at the end of 2016 that establishes a ceiling for federal noninterest spending in real terms for the next two decades (with a scheduled revision after nine years) is expected to be complemented by a social security reform, which the authorities have submitted to Congress and plan to adopt later this year. The headline deficit is projected to stabilize in 2017. Over the medium term, the spending freeze in real terms will help reduce the deficit at a relatively fast pace, although the public debt ratio should continue to rise for several years.

Low-Income Developing Countries: Turning the Corner?

For the third consecutive year, the average fiscal deficit increased in low-income developing countries, reaching 4.4 percent of GDP. This is above the level observed at the onset of the global financial crisis (Figure 1.6, panel 1). The deficit increase was larger for commodity exporters than for the rest of the group. The factors driving this deterioration vary across country subgroups:

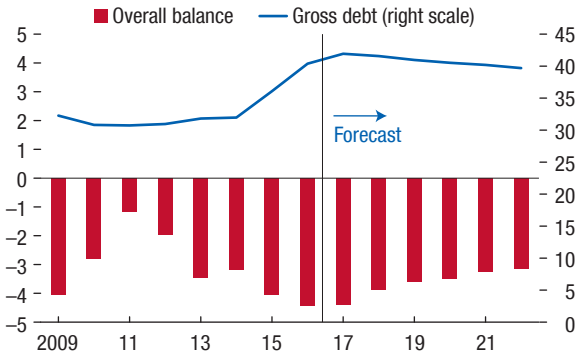
- In commodity exporters, deficits were driven mostly by declining commodity revenues, as a result of lower commodity prices, falling demand from major export markets, and oil supply disruptions in key exporters (Figure 1.6, panel 2). For instance, in Nigeria, the largest oil exporter among low-income developing countries, the decline in oil production due to the sabotage of infrastructure compounded the adverse impact of lower oil prices. The authorities' efforts to boost non-oil revenue through administrative measures were offset by a recession, bringing the deficit to 4.4 percent of GDP in 2016.
- In other countries, the sources of worsening fiscal balances were more diverse and country specific. Public investment ratios increased significantly in the Kyrgyz Republic and Zimbabwe. Larger current spending drove deficits up in Cambodia because of public sector pay hikes and in Ethiopia because of drought-related social expenses. A few countries also experienced revenue drops, such as Uzbekistan owing to tax cuts and Zimbabwe as a result of an economic recession. Finally, interest expenses rose in many countries. Uganda, for example, experienced a notable increase in its interest bill partly resulting from domestic borrowing at elevated rates.

Protracted deficits increased debt ratios in this group of countries in 2016. The average debt-to-GDP ratio for the group reached 40.4 percent, a rise of 4.3 percentage points from a year ago (Figure 1.6, panel 1). In addition to rising deficits, exchange rate depreciation contributed to debt accumulation, albeit to a lesser extent (IMF 2017). In countries where the share of public debt denominated in foreign currency was above 50 percent, the currencies depreciated by about 5 percent in 2016, on average. Debt increases were highest among commodity exporters, as many relied on borrowing to cushion the effect of collapsing revenues. For example, in Nigeria, the higher fiscal deficit from lower oil receipts was partly financed through issuance of domestic debt in 2016. Outside commodity exporters, debt increases were more moderate—for

Figure 1.6. Fiscal Trends in Low-Income Developing Countries

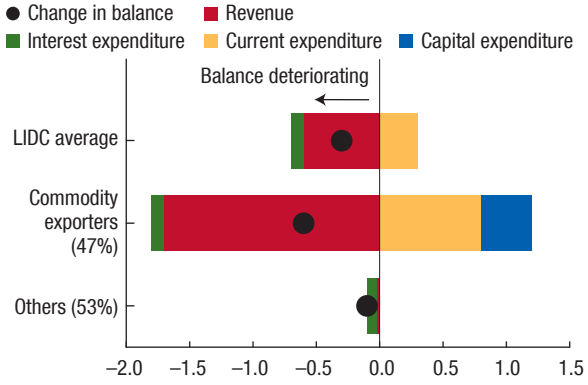
Fiscal deficits have continued to increase in 2016 …

1. Overall Fiscal Balance and Gross Debt, 2009–22 (Percent of GDP)



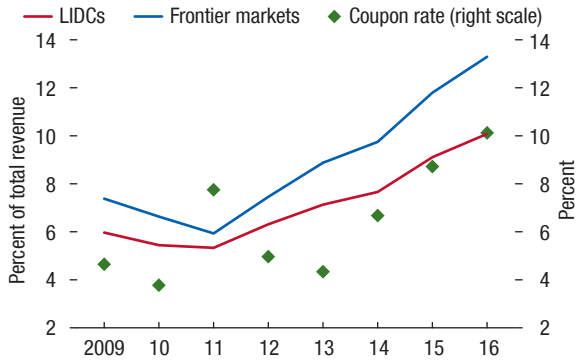
… driven by declining revenues in commodity exporters.

2. Change in Fiscal Balance Ratio: 2015–16 (Percent of GDP)



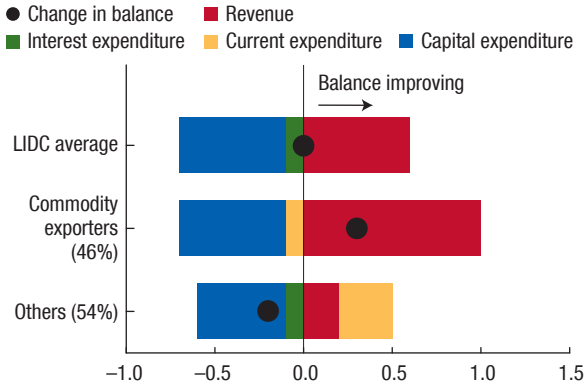
This has pushed up borrowing costs in recent years...

3. Interest Expenditure of the General Government, 2009–16[1]



... but deficits are expected to stabilize in 2017 as commodity markets improve.

4. Expected Change in Fiscal Balance Ratio, 2016–17 (Percent of GDP)



Sources: Dealogic; and IMF staff estimates.
Note: Frontier markets are Bangladesh, Bolivia, Côte d'Ivoire, Ghana, Kenya, Mongolia, Mozambique, Nigeria, Papua New Guinea, Senegal, Tanzania, Uganda, Vietnam, and Zambia. LIDC = low-income developing country.
[1]The coupon rate is based on the dollar-denominated government bonds issued by the following countries: Bolivia, Côte d'Ivoire, Ghana, Kenya, Mongolia, Mozambique, Rwanda, Senegal, Tanzania, Vietnam, and Zambia. It is calculated based on weighted averages using the face value of issued bonds.

instance, in Bangladesh—because of smaller fiscal deficits and relatively stronger GDP growth rates. Finally, as debts have risen, so too have debt-servicing costs in countries with market access. Average interest payments in frontier markets have increased markedly as a share of revenue—doubling since 2011 (Figure 1.6, panel 3). The higher interest bill is explained by both higher coupon rates on new debt and greater reliance on nonconcessional external financing.

The fiscal scenario for 2017 is very sensitive to assumptions about developments in commodity markets. Under the current projections, fiscal deficits are forecast to stabilize in percent of GDP, halting the trend of the past few years. However, prospects vary within the low-income group (Figure 1.6, panel 4). The fiscal position of commodity exporters is expected to improve, with the notable exception of Nigeria, where deficits should continue widening because of planned increases in capital projects. The

improvement in commodity exporters is nonetheless fragile. It is based on the assumption that commodity prices and production will pick up and that export markets, particularly for large emerging markets, will improve gradually. In the remaining low-income developing countries, fiscal positions are projected to deteriorate slightly. For instance, in Bangladesh, the increase in the deficit reflects the delay in the VAT rollout and higher wage bill and transfers.

Slower increases in debt ratios are expected for 2017, with the average debt ratio projected to rise by about 1.6 percentage points, about one-third of this year's increase (Figure 1.6, panel 1). The projected smaller debt accumulation is principally the result of more favorable interest–growth rate differentials, mostly driven by higher GDP growth in commodity exporters. Lower deficits also play a mitigating role in debt dynamics in about two-thirds of the countries in this group. However, the largest economy, Nigeria, bucks this trend. There, an increasing fiscal deficit and clearance of arrears are expected to push up the debt-to-GDP ratio by 4.7 percentage points in 2017.

Risks to the Fiscal Outlook

Fiscal risks remain elevated and on the downside, although some upside risks have also increased recently. The fiscal outlook may differ from the baseline projections described in the previous sections for two main reasons. First, uncertainties about fiscal policies (in terms of both scope and design) have risen in the past year. Second, governments' balance sheets continue to be vulnerable to a wide range of risks. The global debt of the nonfinancial sector is at an all-time high, two-thirds of which consist of private sector liabilities (October 2016 *Fiscal Monitor*). The sheer size of the debt poses a risk of disruptive private sector deleveraging, which could thwart the global economic recovery and threaten public debt sustainability. In particular, private sector liabilities could migrate to government balance sheets. Other risks to the debt outlook include a growth slowdown, tighter financial conditions, weaker currencies, lower commodity prices, and the materialization of contingent liabilities.

Fiscal policy uncertainty. Uncertainty about future macroeconomic policies, in particular in the fiscal area, creates sizable risks to the fiscal outlook. Policy uncertainty, as measured by Baker, Bloom, and Davis (2016), has reached a decade high (Figure 1.7).[9] Currently, the main source of such uncertainty is the lack of specificity about future U.S. policies, including the size and composition of the expected fiscal stimulus (Scenario Box 1.1 of the April 2017 *World Economic Outlook* assesses the macroeconomic impact of alternative fiscal expansions). In the euro area, a number of upcoming elections could also reshape fiscal policy—in France and Germany, and possibly in Italy following the results of the December 2016 constitutional referendum. Detailed arrangements between the United Kingdom and the European Union for implementing Brexit[10] are not yet final, and the transition is likely to take several years. In China, the upcoming fall party congress will determine the makeup of the next leadership and policy position of the Communist Party. Political instability or gridlock in several large emerging market and developing economies could delay budget implementation. Geopolitical tensions, such as the intensification of conflicts in parts of the Middle East and Africa, a further increase in migration and refugee flows to neighboring countries and Europe, and rising acts of terrorism worldwide, could also lead to substantial shifts in fiscal policy, including to accommodate possible fiscal costs.

Weak economic growth and retreat from cross-border integration. On balance, risks to the global growth outlook are assessed to be on the downside, although there are some upside risks as well (see Chapter 1 of the April 2017 *World Economic Outlook*).[11] Support for inward-looking policies has risen in the past year, in particular in advanced economies, increasing the risk of major policy shifts that could limit international trade, financial flows, and migration, with

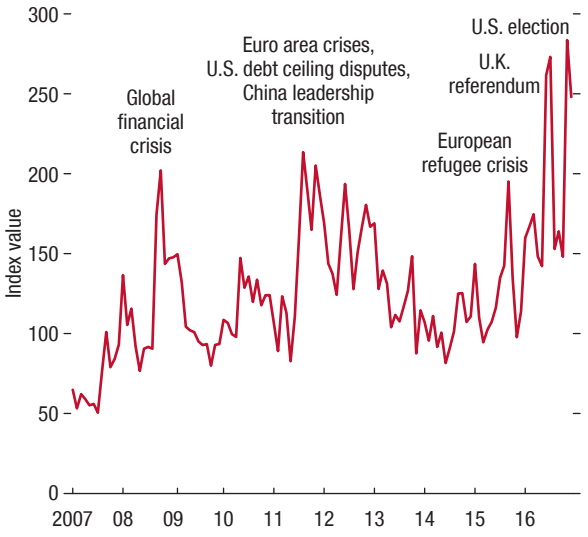
[9]The Global Policy Uncertainty Index is a GDP-weighted average of the shares of newspaper articles discussing economic policy uncertainty every month in each country (see www.PolicyUncertainty.com). One limitation of the indicator is that some country indices rely on only a few newspapers, possibly adding noise to the global index. Other indicators of market expectations of near-term volatility, such as the Chicago Board Options Exchange Volatility Index (VIX) and stock market valuations, currently point to a more sanguine view by financial markets.

[10]The 2016 U.K. referendum result in favor of leaving the European Union.

[11]On the upside, larger-than-expected fiscal stimulus in the United States and China, while worsening the countries' public debt outlook, could boost activity and improve public debt dynamics in trading partners. In advanced economies, a stronger momentum in consumption and investment, if supported by productivity-enhancing structural reforms, could also shift growth above baseline.

Figure 1.7. Global Economic Policy Uncertainty Index, 2007–16

Uncertainty about future economic policies has reached a decade high.



Sources: Baker, Bloom, and Davis 2016; www.PolicyUncertainty.com.
Note: The global index is calculated as the GDP-weighted average of monthly index values for a sample of 18 advanced, emerging market, and middle-income economies. Each monthly national index value is proportional to the share of own-country newspaper articles that discussed economic policy uncertainty in that month.

potentially large negative effects on global growth. Subdued growth would, in turn, adversely affect public debt dynamics, especially in countries where inflation is low and below target. Other risks to growth include adverse feedback loops between weak demand, low inflation, and low potential output in a number of advanced economies; insufficient progress to address crisis legacies and undertake productivity-enhancing reforms in Europe; disruptive private sector deleveraging in emerging market and middle-income economies; a sharper slowdown in China resulting from difficulties in addressing the rapid expansion of credit; and delays in policy adjustment and diversification in commodity exporters.

Tighter financial conditions and a stronger U.S. dollar. A more rapid increase in interest rates and appreciation of the U.S. dollar—reflecting, for instance, a faster tightening of monetary policy in the United States in response to inflationary pressures—could raise borrowing costs and depreciate currencies of emerging market and developing economies, exacerbating already high public debt vulnerabilities (see Chapter 1 of the April 2017 *Global Financial Stability Report*). In these economies, almost half of public debt is issued in foreign currency, on average; thus, a strong currency depreciation could have a negative impact on debt dynamics.

Lower energy prices. The agreement among the Organization of the Petroleum Exporting Countries (OPEC) and other producers to cut oil production in 2017 may not materialize as planned or could encourage more production from other producers such as the United States, keeping oil prices lower than expected because of excess supply. Fiscal positions could continue to worsen in oil exporters, where one-third of fiscal revenues, on average, rely directly on oil production. Conversely, oil importers would continue to benefit from lower energy costs.

Contingent liabilities. Any of the risks discussed in the foregoing paragraphs could trigger the materialization of contingent liabilities, with possibly severe costs to public finances. In Europe, a weaker growth outlook in the context of already-weak bank profitability and slow progress in repairing bank balance sheets raises the risk of further banking distress, increasing the need for recapitalization by exposed sovereigns.[12] In emerging market and developing economies, firms have borrowed heavily in the past decade, especially in foreign currency, at relatively low cost. As a result, tighter financial conditions and a stronger U.S. dollar raise the risk of corporate defaults in these economies, with nonfinancial corporate debt at a historical high. Use of explicit and implicit sovereign guarantees on corporate borrowing could take a heavy toll on public finances. In addition, persistently lower energy prices could further squeeze the profitability of state-owned energy companies in commodity exporters and necessitate government support. In low-income developing countries, the fast growth in public-private partnerships in the past 15 years to fund infrastructure has resulted in an accumulation of contingent liabilities related to government guarantees (IMF 2017). Project failures due to weak growth or tighter financial conditions could lead these guarantees to be called on, increasing the public debt burden.

Overall, risks to public balance sheets are high today, which stresses the importance of countries'

[12]The new bail-in requirements of the Bank Recovery and Resolution Directive should nonetheless limit such implicit contingent liabilities.

Figure 1.8. Fiscal Risk Management Strategy

developing a better understanding of their fiscal exposures and putting in place risk management strategies (IMF 2016a). Specifically, a four-step strategy can help governments enhance their capacities to analyze and manage fiscal risks, as discussed in the April 2016 *Fiscal Monitor* (Figure 1.8). First, countries need to identify the main sources of risks they face and develop tools for fiscal risk analysis, including simulations that assess the impact of plausible shocks on public finances. Second, countries should select mitigating measures tailored to the specific risks involved—for instance, limits on fiscal exposure, regulations to reduce risky behavior, mechanisms to transfer risks to third parties, or active debt maturity management.[13] Third, sufficient buffer funds should be created in countries' budgets to help absorb risks that are not mitigated. Fourth, some risks may be too large to provision for, too costly to mitigate, or simply not known with a sufficient degree of precision; in these cases, governments should take account of the risks in setting long-term fiscal targets and, in particular, ensure that they have a sufficient safety margin relative to their debt ceilings.

Can Fiscal Policy Do More and How?

Views on the role and effectiveness of fiscal policy have evolved in the past decade. Fiscal policy is generally seen as a powerful tool to stabilize the economy and promote inclusive growth, particularly when combined with monetary policy and structural reforms (a framework dubbed the "three-pronged approach" by IMF Managing Director Christine Lagarde in 2016). At the same time, high debt, long-term demographic challenges, and elevated fiscal risks limit governments' leeway to undertake new policies and place a premium on sound public financial management.

In this context, countries have to be selective and make difficult budgetary choices. To guide their decisions, sound fiscal policy objectives need to be clearly defined. This section continues to separate these objectives into three categories—economic stabilization, allocation, and redistribution—to characterize the new role of fiscal policy shown in Figure 1.9. This separation provides a useful organizational framework, but its simplicity should not conceal the fact that the three functions are intertwined in practice. For instance, a fiscal stimulus can rely on redistributive measures such as transfers to cash-constrained households. Thus, the recommendations that follow do not refer to separate and disjoint sets of policies.

In addition, this framework should be viewed as a guide. The ability of governments to pursue the three objectives simultaneously is constrained by limited budgetary room and possible trade-offs, which must be taken into account. Regarding such trade-offs, it appears that certain fiscal structural reforms may boost growth in the medium term but entail a temporary drag on activity (April 2016 *World Economic Outlook*, Chapter 3) or that some growth-enhancing policies can have negative implications for income distribution in the short term (for example, capital tax cuts).

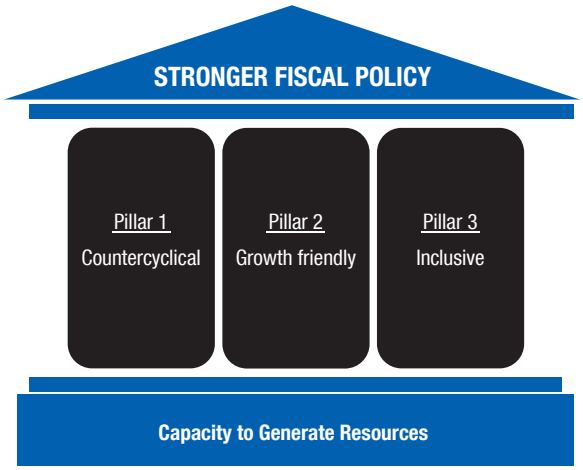
Fiscal Policy Should Be Countercyclical

One of the main contentions of the emerging new view on fiscal policy described in the chapter's introduction is that fiscal policy should react more actively to cyclical conditions in times of deep and prolonged recessions and when monetary policy is constrained.[14] This view should not be interpreted as a blanket support for fiscal stimulus everywhere and under all

[13]Kim and Ostry (forthcoming) show that longer debt maturity reduces a country's recurring financing needs. This would pull down rollover risk, lowering default probability and borrowing costs. As a result, governments could borrow more debt safely and enjoy greater fiscal space.

[14]As in the rest of the chapter, "stabilizing policies" and "countercyclical policies" are used interchangeably. They cover both discretionary measures and automatic stabilizers.

Figure 1.9. Toward a New Role for Fiscal Policy



economic circumstances, for two reasons. First, in normal times, fiscal policy should rely on automatic stabilizers to smooth economic fluctuations, provided that fiscal space is available (Annex 1.1 defines the concept of fiscal space used throughout the report). Discretionary fiscal actions should be used only in special circumstances. Second, fiscal policy should respond symmetrically to the business cycle (expand in bad times and tighten in good times), as described in the following paragraphs.

Case 1: Countercyclical fiscal policy in downturns. The first case applies to countries where demand is lacking and fiscal space is available. In these circumstances, fiscal policy should play a more active role in supporting economic activity, particularly where monetary policy is constrained. This is, for instance, the case when nominal interest rates are close to the effective lower bound and inflation expectations are low, as real interest rates cannot fall enough to restore aggregate demand. In such an environment, countries become very vulnerable to self-reinforcing downward spirals of economic stagnation: downward revisions in real growth and inflation are associated with upward revisions in public and private debt as a share of GDP; this may lead firms, households, and governments to cut spending (or governments to raise taxes) in order to lower debt, depressing further economic activity and inflation.

To address these risks, a passive fiscal policy response, based solely on automatic stabilizers, may not be sufficient. Recent research shows that a (discretionary) fiscal expansion, combined with structural reforms and monetary accommodation, can break countries away from debt-deflation traps by raising nominal GDP. For instance, in Canada and Japan, continued weakness in private domestic demand underlines the need for supportive fiscal policies to continue in the near term. In Korea, given the weak conjuncture and downside risks, the authorities should remain open to a new fiscal stimulus this year, should the output gap widen further. In the euro area, the aggregate cyclical position also argues for a slightly more expansionary fiscal stance in 2017. However, this is difficult to achieve at the individual-country level because member states in need of fiscal support (those where economic slack is still large) are also those where fiscal space is the most limited. In addition, fiscal support could conflict with the Stability and Growth Pact rules in most euro area countries. A more accommodative overall stance would be better achieved at the centralized level by creating a central fiscal capacity that would help cushion economic shocks. This central capacity could be a new institution or extend existing centralized schemes (IMF 2016b, 2016c). In Germany, where there is no economic slack, using the room available under the fiscal rules to finance initiatives that lift potential growth could generate positive demand spillovers to the rest of the euro area.

Three factors can greatly amplify the effect of countercyclical fiscal support in bad times (Gaspar, Obstfeld, and Sahay 2016). The first one is monetary accommodation. Fiscal stimulus is more effective when monetary policy keeps interest rates low, even when the fiscal stimulus results in a modest and temporary overshooting of the central bank's inflation target. For instance, in Japan, the revised monetary framework committed to inflation overshooting will help provide maximum traction for continued fiscal support in the near term. Second, fiscal expansions must be anchored in a sound and credible medium-term fiscal framework: that is, one consistent with a sustainable path for public debt. Left unanchored, a fiscal stimulus could lose its impact on output because consumers and investors might reduce their current spending in expectation of future tax increases, and higher risk premiums in financial markets might raise funding costs. In Japan, fiscal expansion would benefit from a credible medium-term fiscal consolidation plan that includes a preannounced path of gradual hikes in consumption

taxes. In the euro area, the credibility of the fiscal framework needs to be bolstered through simpler rules and better enforcement. Third, fiscal expansions are more effective when they are coordinated across countries. The "fiscal spillovers" of coordinated actions—that is, their impact on the economic activity of other countries—are found to be particularly large among countries with strong trade and financial links, especially in bad economic times (Auerbach and Gorodnichenko 2013). Model simulations also show that, under conditions of very low interest rates and wide output gaps, the gains from international fiscal policy coordination following a global contractionary shock could be quite large and amplify the effectiveness of national policy actions.

Case 2: Countercyclical fiscal policy in upturns. The second case covers economies with limited or no economic slack, and where there are signs of inflationary pressures. For those countries that previously relaxed their fiscal stances, fiscal support should, in general, be withdrawn to rebuild fiscal space and prevent the emergence of macroeconomic and fiscal imbalances. In the United States, where the economy is close to full employment, output is near potential, and inflation is expected to rise moderately above the target in the near term, the fiscal stance should remain neutral this year, and fiscal consolidation could start afterward, to put debt firmly on a downward path. Some reorientation of the current fiscal envelope toward more infrastructure spending would help boost growth over the medium term. In China, given robust employment levels, growth above sustainable levels, and the expected pickup in inflation, the augmented deficit should decline in order to stabilize the augmented debt and support economic rebalancing. In Russia and Vietnam, initiating a medium-term fiscal consolidation is the best course of action now that output is approaching or at potential.

Case 3: Procyclical fiscal policy in downturns. The third case comprises countries that have no choice but to conduct procyclical fiscal policies, at least in the short term, because they have run out of options. Some of these countries built insufficient fiscal buffers in good times and lack room to support demand when economic growth slows and revenues shrink. High debt or other forms of fiscal vulnerabilities may also prompt governments to consolidate regardless of the cyclical conditions; fiscal sustainability considerations often prevail over the need to smooth the economic cycle. In commodity exporters, which have experienced an average decline in commodity prices of almost 50 percent from the 2011 peak, the main priority is consolidation to put debt on a sustainable path. For instance, in Nigeria, an up-front fiscal adjustment centered on the mobilization of non-oil revenues is deemed critical. Finally, some countries must resort to procyclical consolidation when they face market-financing pressures and credibility challenges. This is, for instance, the case in Mexico, where, despite the envisaged near-term economic slack, commitment to the ongoing fiscal consolidation needs to remain firm to maintain investor confidence in a volatile financial market environment.

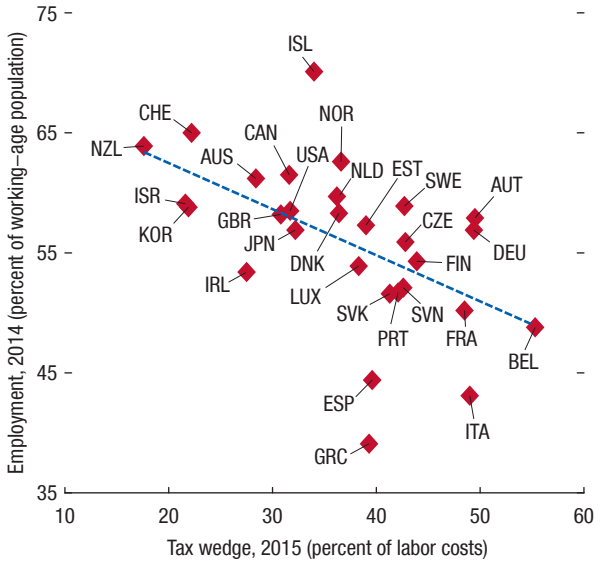
But even when procyclical fiscal adjustment is needed and cannot be postponed, its pace and composition should be calibrated to reduce the short-term drag on economic activity. In other words, procyclicality should, as much as possible, be mitigated. In many countries, this means that the speed of adjustment should be adjusted, so as not to undermine economic recovery. In the United Kingdom, the slower pace of fiscal consolidation announced in the Autumn Statement 2016 is appropriate in the context of a subdued growth outlook and heightened uncertainty. In Italy, an evenly phased adjustment, alongside an improved progrowth composition of the policy mix over the near term, will continue to support the recovery while increasing the credibility of adjustment. Commodity exporters with large financial buffers should also phase in deficit reduction measures gradually, containing their negative impact on growth (Husain and others 2015). With regard to composition, countries should move away from indiscriminate tax increases or spending cuts and take into account their near-term growth impact. For instance, in Spain, further adjustment in the form of a preannounced gradual increase in preferential VAT rates toward the standard rate could support growth in the near term by bringing households' consumption forward.

Fiscal Policy Should Be Growth Friendly

The capacity of fiscal policy to lift growth has recently gained prominence in the policy debate for two main reasons. The search for growth-enhancing measures has become more pressing in light of the deceleration of potential output in a majority of coun-

Figure 1.10. Relationship between Tax Wedge and Employment Rate in Advanced Economies

Labor tax cuts can boost employment in advanced economies.



Sources: Organisation for Economic Co-operation and Development; World Bank; and IMF staff estimates.
Note: Data labels in the figure use International Organization for Standardization (ISO) country abbreviations; see "Country Abbreviations" for definitions.

tries (April 2015 *World Economic Outlook,* Chapter 3). Debt sustainability has also been an important motivation: historically, public debt reduction efforts have been far more successful in high-growth environments (Abbas and others 2013).

"Growth-friendly fiscal policies" are commonly defined as fiscal measures that have an impact on medium- to long-term growth. In contrast to countercyclical fiscal policy, whose main purpose is to smooth output fluctuations around trend, growth-friendly fiscal policies are meant to affect the trend itself. The distinction is not clear-cut, though, given that stabilization policies can also foster potential growth by reducing output volatility (April 2015 *Fiscal Monitor*, Chapter 2). Growth-friendly fiscal policies can affect long-term growth both directly and indirectly. They can take the form of structural tax or expenditure policies that *directly* boost employment, the accumulation of physical and human capital, and productivity. They can also operate *indirectly* by enhancing the effectiveness and implementation of structural reforms in labor and product markets. The rest of this section examines these two channels in more detail.

Focusing first on the *direct* channel, there is scope in almost all countries to achieve a more growth-friendly tax system. This means principally cutting distortionary taxes and inefficient tax expenditures, better targeting tax incentives, and lowering burdensome tax administration practices. As shown in Chapter 2, tax measures can be used effectively to reduce the misallocation of resources across firms, which weigh on productivity and long-term growth. Empirical evidence shows that the growth dividend of more efficient tax systems can be quite large. For instance, the IMF (2015a) finds that reducing tax rates on either labor or capital income by 5 percentage points in a revenue-neutral manner could add about ¼ percentage point to long-term economic growth in advanced economies. That said, there is no "one-size fits all" recommendation for growth-friendly fiscal policies, and reforms should be tailored to the country-specific growth bottlenecks. For instance, in the United States, a reform of corporate taxation is needed to revitalize business dynamism and investment, although some reform options could entail negative international spillovers (see Box 1.1 on the benefits and risks associated with the introduction of a destination-based cash flow tax). In France and Italy, there is scope for further reducing labor tax wedges to improve incentives to work (Figure 1.10). Eliminating tax-induced work disincentives for secondary earners in Germany and spousal income tax deductions in Japan could help boost female labor force participation.

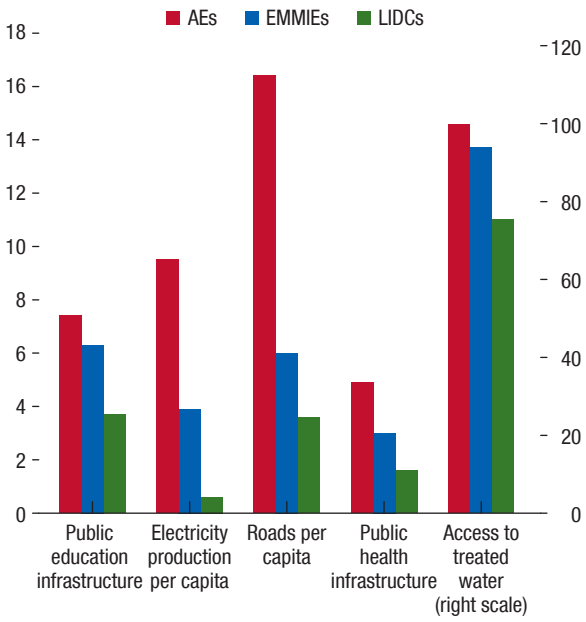
Turning to the expenditure side, resources should be oriented toward more productive spending. Growth-friendly expenditure measures support long-term economic growth by stimulating its three main engines: the stock of physical and human capital, the labor force, and productivity. Starting with the first engine (capital), the case for increasing public investment is very strong almost everywhere in the world in light of the low long-term borrowing costs and substantial infrastructure deficiencies (October 2014 *World Economic Outlook,* Chapter 3; Figure 1.11). Advanced economies, including Germany, the United Kingdom, and the United States, should bring forward planned investments in the current environment of low potential growth and funding costs. Addressing infrastructure bottlenecks is also

critical in emerging market and developing economies, but countries with limited fiscal space, such as Brazil, should put in place incentives for private sector participation and financing as well as more efficient public investment management of projects (IMF 2015b). To address the second engine of economic growth—labor—countries should pursue efforts to create a better environment for job creation. In advanced economies facing rising dependency ratios and shrinking populations, such as Germany, Italy, and Japan, more intense use of active labor market policies and targeted spending measures for specific groups such as women and migrant workers (for example, greater provision of child care) could elicit a larger labor supply response. In emerging market and developing economies, improving access to health and education through well-designed social transfers and better-targeted spending will create a larger and more productive labor force. In India, this will require continued progress in reducing gender inequality in education and health and additional spending on gender-targeted skills training. Turning to the third engine of growth—productivity—some expenditure measures can foster innovation, such as direct subsidies for research and development (October 2016 *Fiscal Monitor*, Chapter 2). Australia is currently reviewing its existing policies with regard to subsidizing research and development to ensure that they are cost effective and simple so as to minimize compliance costs and facilitate firms' growth. Finally, well-targeted transfers and subsidies can also play an important role in supporting the repair of bank balance sheets and creating incentives for private debt restructuring—essential ingredients for eliminating excessive private debt levels that constrain growth in the long term (October 2016 *Fiscal Monitor*).

Fiscal policy can also support long-term growth *indirectly* by enhancing the effectiveness and implementation of structural reforms. Recent research shows that, under weak economic conditions, a temporary fiscal stimulus can enhance the growth effect of certain reforms by mitigating their short-term macroeconomic and distributional costs (April 2016 *World Economic Outlook*, Chapter 3; Banerji and others 2017). The case for fiscal relaxation to accompany structural reforms is ultimately specific to the reform and the country and also depends on the fiscal position of the economy and the likely reaction of financial markets. For instance, fiscal support is not warranted in countries where the commitment to fiscal prudence and reforms lacks credibility. However, in countries with fiscal space and a good track record in implementing reforms, temporary fiscal support to some labor market reforms (in particular, reforms of employment protection or unemployment benefits) in times of economic slack can front-load their macroeconomic benefits (Box 1.2). In the case of Japan, fiscal support could ensure that structural reforms boosting labor supply do not create deflationary pressures. In Germany, despite the absence of economic slack, a looser fiscal position could be justified by the need to finance policies that lift potential growth, including tax and expenditure reforms that increase incentives for female labor force participation, support

Figure 1.11. Measures of Infrastructure Access, 2015 (or Latest Year Available)

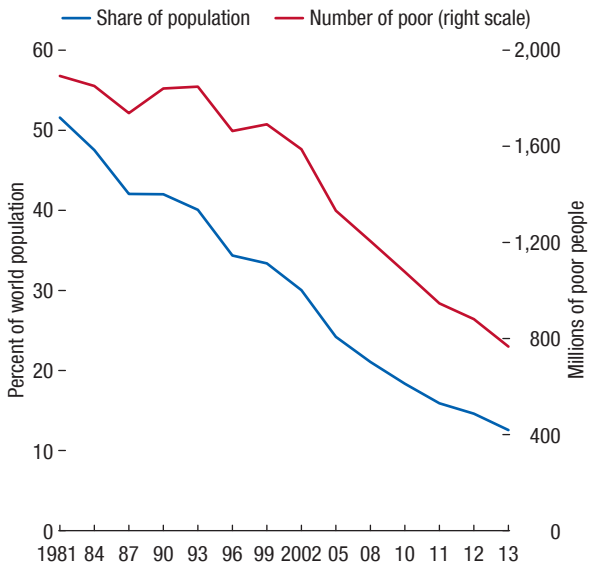
Better infrastructure access, particularly among emerging market and developing economies, is critical to support long-term growth.



Source: World Bank, *World Development Indicators*.
Note: Units vary to fit scale: Public education infrastructure is measured as secondary teachers per 1,000 persons, electricity production per capita as thousands of kilowatt-hours per person, roads per capita as kilometers per 1,000 persons, public health infrastructure as hospital beds per 1,000 persons, and access to treated water as percentage of the population. AEs = advanced economies; EMMIEs = emerging markets and middle-income economies; LIDCs = low-income developing countries.

Figure 1.12. Global Poverty Trends

About 1 billion people worldwide have escaped poverty since the 1980s.



Source: PovcalNet.
Note: In this figure, the poverty limit is defined as $1.90 per day in 2011 dollars at purchasing-power parity.

the integration of low-skilled migrants, and boost the labor supply of low-income earners in general.

Overall, a wide range of fiscal measures can boost potential growth. It is important to note that not all growth-friendly fiscal policies are associated with short-term budgetary costs, and certainly not with medium-term costs. This means that growth-friendly policies could and should be pursued everywhere. In countries with limited or no fiscal space, other measures would have to compensate for growth-friendly revenue and spending measures in a budget-neutral way or along the country's envisaged fiscal consolidation path. For instance, in India, growth-friendly fiscal consolidation should continue by reorienting public expenditure away from untargeted subsidies, especially on food and fertilizers, and toward capital and social spending. In Spain, a growth-friendly fiscal adjustment could be achieved by broadening the VAT base and increasing excise duties and environmental levies. Additional revenues could, in part, fund more effective active labor market policy programs that bolster labor supply, as well as public research and development programs that increase productivity growth.

Fiscal Policy Should Promote Inclusion

Global economic integration and technological change have contributed to economic growth and prosperity, lifting millions out of poverty. Many emerging market and developing economies, especially in Asia, have benefited from integration into the world economy and have seen their income levels converge toward those in advanced economies over the last 30 years. The worldwide dispersion of individual incomes—as measured by a global Gini index—has declined since the late 1980s (Lakner and Milanovic 2016; Bourguignon 2015). Changes in poverty rates have been even more dramatic. The number of people living in poverty has diminished by more than 1 billion and their share in the world population has decreased from 50 percent to about 10 percent since the early 1980s (Figure 1.12).

While global inequality has decreased, income inequalities have increased *within* most advanced economies and the largest emerging market economies (in particular, China and India). For instance, in advanced economies, incomes of the top 1 percent have grown at annual rates almost three times higher than those of the rest of the population over the past three decades (Figure 1.13). After some narrowing at the onset of the global financial crisis, income distributions have widened again over the past five years (OECD 2016a).

Not only have incomes become more unequal, but economic uncertainty has increased for many groups of workers amid a downward trend in labor income shares (April 2017 *World Economic Outlook*, Chapter 3). Evidence from the International Labour Organization (2014) points to longer average durations of unemployment in the past decade in advanced economies. The prevalence of nonstandard work arrangements, such as self-employment and workers engaged under temporary contracts or with no contracts at all, is high in many countries. In addition, a large and growing share of the labor force has limited coverage from social protection programs against unemployment because of restrictive qualifying conditions. The share of the labor force with limited coverage is even higher in emerging market and developing economies with large informal sectors (ILO 2015).

Excessively high and increasing levels of inequality and uncertainty seem to be detrimental to welfare and growth, as shown by a growing body of research (Berg and Ostry 2011; Ostry, Berg, and Tsangarides

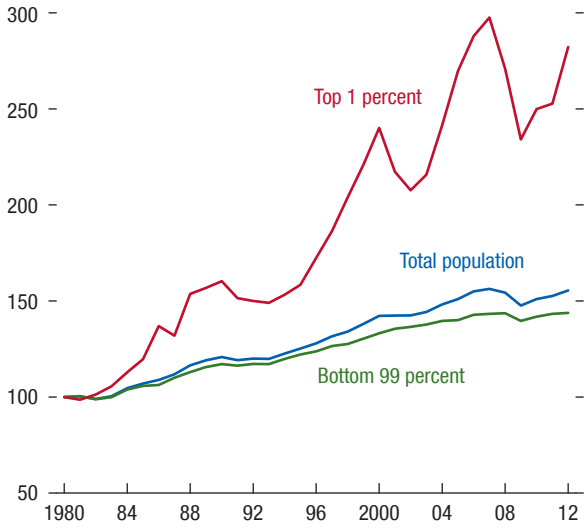
2014; Dabla-Norris and others 2015; OECD 2015). Several channels have been identified, including lower human capital investment through education and training, poorer health outcomes for cash-constrained households, and more challenging political climates in which to implement necessary growth-enhancing reforms. Uncertainty and economic instability can lead to excessive saving by households, thereby lowering short-term demand and contributing to stagnating growth. It also appears that greater uncertainty reduces the willingness of firms to hire and invest (Bloom 2014). Longer time periods spent in unemployment can have long-term effects through diminished labor market attachment, skill depreciation, and lower labor productivity.

Fiscal policy has an important role to play to ensure that the benefits of growth are shared more widely within populations. In a majority of advanced economies, however, fiscal policy has been less and less effective at fulfilling this role over the last 20 years (Caminada, Goudswaard, and Wang 2012; IMF 2014a). Reductions in the generosity of social benefits coupled with less progressive taxation have reduced the ability of fiscal policy to narrow income disparities since the mid-1990s. In many countries, this trend has been reinforced by benefit cuts in recent years, as illustrated by Figure 1.14 (OECD 2016a). These average trends, however, mask important heterogeneity, with countries such as Italy and Japan having improved the redistributive role of their tax and transfer systems. In emerging market and developing economies, the impact of fiscal policy on inequality remains relatively modest, in part because of lower tax revenues and a lower share of total spending allocated to social transfers. In these countries, the lack of access to public education and health services among the poor has also translated into a lower ability to integrate low-skilled and vulnerable groups into the productive economy (IMF 2014a).

Overall, fiscal policy could do more to promote inclusive growth at all levels of economic development, as part of a comprehensive approach including labor, product market, and financial sector reforms. This can be achieved in two main ways: first, fiscal policy can affect income inequality through the improved use of taxes and transfers; second, fiscal policy can promote "equality of opportunity" by helping individuals—through investment in human capital and protection against risk—take an active

Figure 1.13. Per Capita Real Market Income in Advanced Economies, 1980–2012
(Index, 1980 = 100)

In advanced economies, the incomes of the top 1 percent have grown three times faster than those of the rest of the population over the last three decades.



Sources: World Wealth & Income Database; IMF, *World Economic Outlook*; and IMF staff calculations.
Note: The sample comprises Australia, Canada, Denmark, France, Germany, Ireland, Italy, Japan, Korea, the Netherlands, New Zealand, Norway, Portugal, Singapore, Spain, Sweden, Switzerland, the United Kingdom, and the United States. Market income refers to individuals' income before taxes and transfers.

part in the fast-changing global economy.[15] The paragraphs that follow describe these two sets of policies in greater detail.

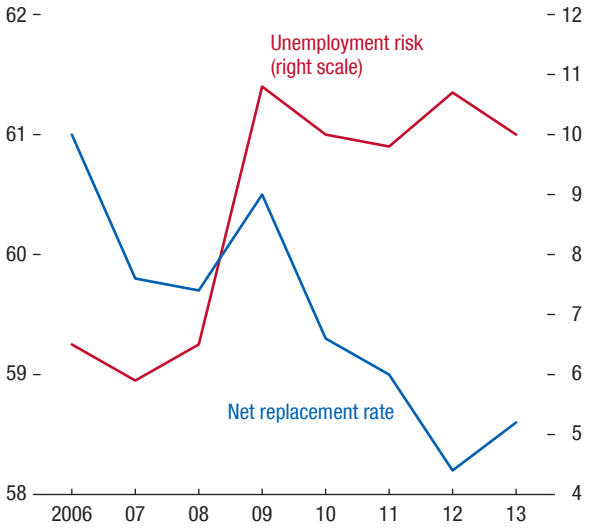
The first task of inclusive fiscal policy is to identify combinations of transfer and tax instruments that achieve the desired level of income redistribution—which is country specific—in the most efficient way:

- *Improved design of transfers to households.* Broader use of in-work tax credits, in which benefits are available only to working individuals, is an efficient way in advanced economies to support low-income families while encouraging work. For instance, in the United States, an extension of the Earned Income Tax Credit in combination with a raise in the minimum wage could promote employment for low-income work-

[15]This definition of "equality of opportunity" is broader than the one traditionally used in the economic literature, which focuses on the concepts of level playing field, nondiscrimination, and merit-based social mobility.

Figure 1.14. Benefit Generosity and Unemployment Risk in Advanced Economies, 2006–13
(Percent)

During the global financial crisis, benefits to unemployed workers were significantly reduced.



Source: Organisation for Economic Co-operation and Development.
Note: Net replacement rate refers to the average net replacement rate over 60 months following unemployment for a one-earner couple with two children in which the earner previously earned the average wage. Benefits include net-of-tax unemployment and family benefits, social assistance, and other means-tested benefits. Unemployment risk is the probability of becoming unemployed times the average duration of an unemployment spell (in months).

ers while also ensuring higher wages. In addition, conditional cash transfer programs—transfers to poor households that, for instance, make benefits conditional on the attendance of children at health clinics and at school—could be expanded in a number of emerging market and developing economies, including Indonesia, Jamaica, and Pakistan. Such transfers would support the income of the poor, while generating incentives for the development of human capital, for instance, through improved school attendance and better health outcomes.

- *More progressive tax systems.* In some advanced economies, income tax progressivity could be further enhanced by reducing regressive tax exemptions, such as those on mortgage interest payments in the United States and to a lesser extent Sweden. In addition to income taxes, there is scope to make further use and improve the design of property and wealth taxes in many countries, including Ireland, Italy, and the Netherlands. Not only are recurrent value-based property taxes an efficient source of revenues, but they are also progressive, as wealth is usually concentrated among high-income households. In emerging market and developing economies, expanding the coverage of the personal income tax by reducing exemptions and bringing more firms and individuals into the formal sector could increase fiscal revenues and equity. For instance, in China, despite a nominally progressive personal income tax, reducing the level of the basic personal income tax exemption to ensure that more middle-income earners are liable to pay some tax could be an efficient way of increasing revenues in a fair manner (Box 1.3).

The second aim of inclusive fiscal policy is the promotion of "equality of opportunity," which involves helping people acquire and maintain the appropriate skills to fully participate in and adapt to a changing economy through quality education and health, as well as insurance against risks such as employment shocks.

- *Public education and training.* As countries face shifting demand for labor due to global economic integration and technological change, governments should help workers acquire and maintain the appropriate skills for the evolving global economy. In the United Kingdom, further expanding vocational training and apprenticeship programs could improve employment prospects for youth.[16] Similarly, in Canada, more vocational and specialized skills training would facilitate labor mobility and help workers and firms move into high-value-added activities. In emerging market and developing economies, education reform should focus on improving access of low-income groups to primary and secondary education, especially for girls and in rural areas.
- *Public health care.* Better access to basic health services can also contribute to promoting social and economic inclusion. Indeed, healthier children achieve better schooling outcomes and enjoy better prospects. Healthier workers can stay active in the labor market, ensuring sustained earnings and longer periods of productive employment. For instance, in the United States, further subsidies to health care for the poor would contribute to reducing the persistence of poverty. In Nigeria, the challenge is to ensure efficient delivery and broader

[16]With this aim, the apprenticeship program in England is being expanded and reformed, funded by a new apprenticeship levy, and the U.K. government has announced an expansion in vocational training in its FY2017/18 budget.

coverage of health services for the poor, while in Thailand, coordination of fragmented health insurance schemes would result in more equal coverage in terms of benefits and contributions.

- *Employment and social insurance.* Governments should take measures to prevent workers from drifting away from the "core" labor market and losing their skills following shocks such as layoffs or illness. In the United States, reforming the disability insurance program could help workers maintain an attachment to the labor market by creating better incentives for beneficiaries to work part-time, as opposed to dropping out of the labor force entirely. France should seek to enhance active labor market policies, such as job-search support programs for recipients of unemployment and welfare benefits, to help them find new work more quickly. In Japan, clarifying the legal framework and providing subsidies for converting nonregular workers to "intermediate" contracts that balance job security and wage increases would reduce labor market duality and encourage greater skill acquisition. China could improve the equity and insurance components of social security by reforming the household residency system that currently discriminates between urban dwellers and migrants.

As is the case with growth-friendly policies, inclusive policies can be implemented without increasing the overall budget envelope and the fiscal deficit. In countries with limited or no fiscal space, inclusive policies would have to be accompanied by offsetting measures. In Egypt, for instance, full implementation of the VAT and tax administration reform could free resources for higher spending on health, education, and social protection. In Nigeria, better non-oil revenue mobilization could finance a range of social measures, including better access to education, enhanced social safety nets, and a scaling up of vocational training to better equip job seekers with relevant skills. Recent experience with IMF programs shows that it is possible to enhance social spending along a path of fiscal adjustment, while mitigating the negative impact on vulnerable groups (Clements, Gupta, and Nozaki 2013, 2014; IMF 2015c).

Greater Use of Fiscal Policy May Require Additional Resources

The implementation of countercyclical, growth-friendly, and inclusive policies often requires additional resources, which need to be made available in a way that is the least harmful for growth.[17] As discussed earlier in this chapter, some fiscal reforms are associated with larger fiscal deficits, while others can be conducted in a budget-neutral way, by changing the composition of taxes or expenditures.

For countries that have fiscal room, one option is to finance the policies through additional borrowing. But debt should be used wisely. The return on debt-financed projects should clearly outweigh the cost and risks that higher leverage creates. Assessing the extent to which public debt can be safely increased is a difficult task. The IMF has recently developed a new approach to measuring "fiscal space" based on a variety of tools and indicators (Annex 1.1).

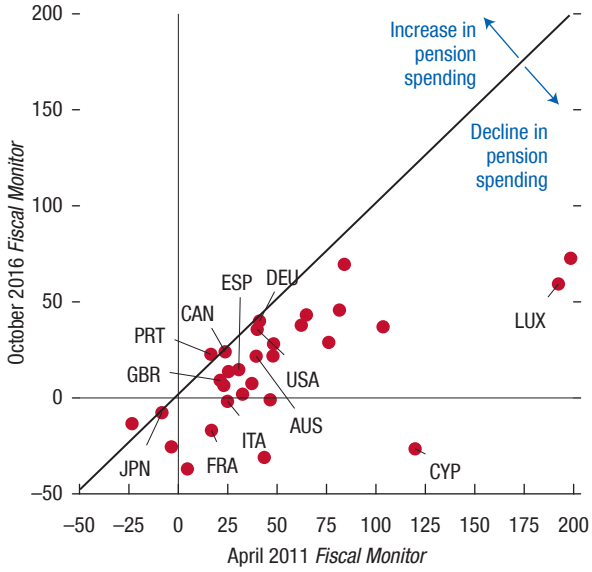
Although this assessment is country specific, it seems that fiscal space may be higher than previously believed in a number of advanced economies. First, the difference between the interest rate and GDP growth may be persistently lower than it has been in the past. This might be for a number of reasons; for example, this lower difference would be consistent with expectations adjusting, with a lag, to the low-growth low-inflation environment;[18] with the risk-free rate declining (because of either higher demand or lower supply of safe assets, as discussed in Chapter 3 of the April 2012 *Global Financial Stability Report*); or with structural changes in the economy, particularly demographics, that may have a stronger negative effect on interest rates than growth in the long term (Carvalho, Ferrero, and Nechio 2016; Favero, Gozluklu, and Yang 2016). Box 1.4 examines how a structurally lower interest–growth rate differential would affect the maximum level of sustainable debt and finds that a permanent decline of 1 percentage point in the differential could allow advanced economies to borrow safely an additional 25 percent of GDP, on average. Second, many countries have made significant progress in containing age-related spending; therefore, their "implicit" debt obligations, measured as the present value of

[17]This section refers to fiscal measures for which financing requires additional resources. It implicitly excludes the case of measures that are self-financed, for example, because their very strong positive effects on GDP offset the initial costs (see, for instance, Box 1.2).

[18]Assuming that economic agents set interest rates based on expected growth, it is easy to show that ex post, the interest–growth rate differential moves with the forecast errors on real growth and inflation.

Figure 1.15. Net Present Value of Future Pension Obligations in Advanced Economies, 2015–50
(Percent of GDP)

In advanced economies, future pension obligations have declined by 25 percent of GDP in the past six years, on average.



Source: IMF staff estimates.
Note: Future obligations are measured as the net present value of future increases in pension spending relative to 2015. For net present value calculations, a discount rate of 1 percent a year in excess of GDP growth is used. To ensure consistency in comparing the data from the two *Fiscal Monitor* reports, the 2011 estimate is recalculated to cover the same period as the 2016 report, and the 2011 projections are rescaled to start at the same 2015 pension spending value. Data labels in the figure use International Organization for Standardization (ISO) country abbreviations; see "Country Abbreviations" for definitions.

future increases in pension and health spending, have declined. On average, the stock of implicit debt in advanced economies has shrunk by 25 percent of GDP in the past six years, creating more room to accumulate "explicit" debt (Figure 1.15).[19] In emerging market economies, the average decline has been more modest. Nonetheless, the additional space related to pension reforms should not be taken for granted. Age-related spending remains high in many countries, and reforms are always at risk of being reversed. In addition, there is no one-to-one equivalence between implicit and explicit debts, meaning that a one-dollar reduction in pension obligations does not translate automatically into the ability to borrow an additional dollar: one of the reasons is that future commitments are generally less binding than financial obligations.

Fiscal institutions also play an important role in expanding fiscal space. First, sound fiscal institutions can improve the credibility of fiscal policy. Credible commitment mechanisms, such as well-designed and effectively implemented medium-term budget frameworks and fiscal rules, can lower the interest risk premium and create budgetary room. Empirical evidence suggests that the introduction of credible fiscal rules can reduce borrowing costs (Box 1.5). Nonetheless, to achieve this result, fiscal rules need to be well designed, well calibrated, and regularly reviewed. Poorly designed fiscal rules may, on the contrary, unduly constrain countries' ability to use available fiscal space or may increase the risk of fiscal positions becoming unsustainable. Second, fiscal institutions may be necessary to tap available but not readily accessible resources. This is well illustrated by the recent discussion on the creation of a central fiscal capacity in the euro area. In some variants of the proposal, the central capacity would borrow from the market at favorable rates and on-lend the funds to individual member states, thereby creating fiscal space in countries that cannot fully take advantage of the low-interest-rate environment. Such a scheme would require appropriate safeguards to preserve fiscal discipline and reform incentives (IMF 2016b).

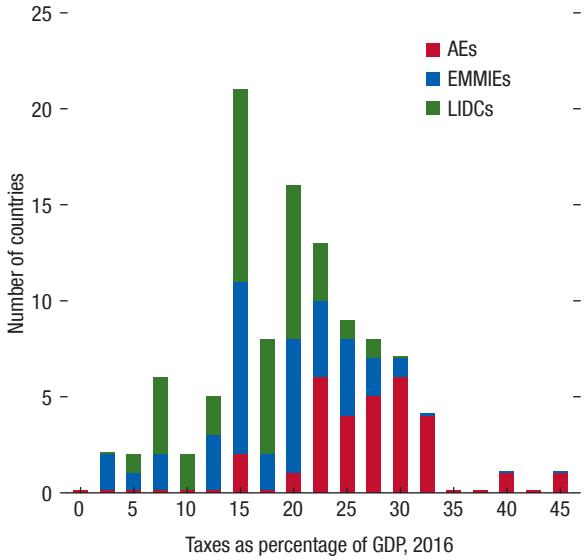
For countries that do not have fiscal space, room has to be created within the budget by raising more revenue or by cutting expenditures. In this way, desired policies can be implemented in a budget-neutral manner—meaning without increasing the fiscal deficit—although this may be difficult to achieve politically.

On the revenue side, the priority is to identify revenue-enhancing measures that are the least "distortionary"—meaning that they have minimal effects on individuals' incentives to work, save, and invest. A first approach is to broaden the tax base (by eliminating tax exemptions and preferential tax rates) or raise indirect and property taxes, which are found to be less detrimental to growth than other forms of taxation. In the United States, revenues could be generated by introducing a federal-level VAT, which might also entail efficiency and revenue administration gains but be difficult to implement, given the need to coordinate with existing state sales taxes (Duncan and Sedon 2011; CBO 2016). Italy should rationalize its relatively large tax

[19]Adding health spending slightly increases the amount of space created, but some changes in the methodology used to forecast health expenditure make the comparison less reliable than that for pensions.

Figure 1.16. World Distribution of Tax-to-GDP Ratio, 2016

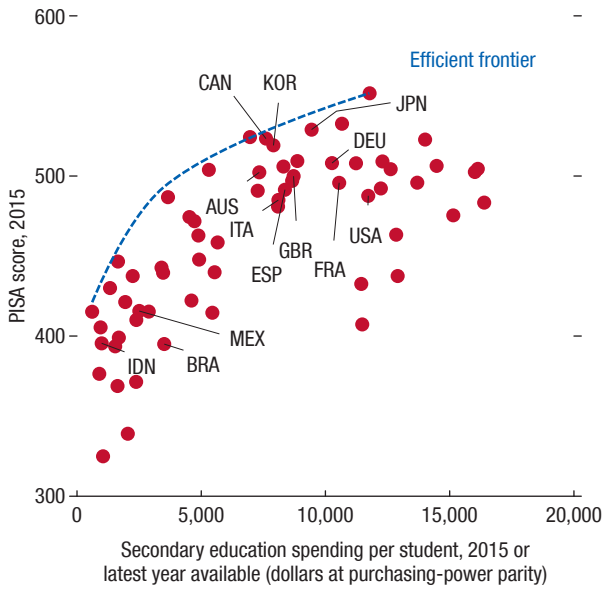
Revenue mobilization remains limited in low-income developing countries.



Source: IMF staff estimates.
Note: AEs = advanced economies; EMMIEs = emerging markets and middle-income economies; LIDCs = low-income developing countries.

Figure 1.17. Secondary Education Spending per Student, 2015

Some countries achieve better education outcomes at no additional cost to public finances.



Sources: Organisation for Economic Co-operation and Development; World Bank; and IMF staff estimates.
Note: PISA (Program for International Student Assessment) scores assess the competencies of 15-year-olds in reading, mathematics, and science. Data labels in the figure use International Organization for Standardization (ISO) country abbreviations; see "Country Abbreviations" for definitions.

expenditures, broaden the tax base, and create a modern real estate tax. In the United Kingdom, scaling back distortionary tax expenditures (such as nonstandard zero VAT rates) could improve efficiency, increase tax neutrality, and free resources. In Japan, the consumption tax should be raised in a preannounced and gradual manner to generate a stable source of revenue in an aging society. Gulf countries should continue working on introducing a VAT. Environmental taxes can also create substantial fiscal resources while promoting environmentally sustainable growth. In China, significantly raising taxes on fossil fuel and pollution (in the form of a carbon or coal tax, for example) would generate revenue, while helping curtail emissions and improving energy efficiency. In India, the authorities should continue to raise taxes on petroleum products while oil prices remain low. One important factor to consider when assessing the scope and need for enhancing revenue is the initial tax burden. As shown in Figure 1.16, there is a large disparity in tax ratios across the world. Almost half of low-income developing countries have a tax ratio below 15 percent of GDP, suggesting ample room to mobilize revenues further in these economies. In fact, recent research shows that in countries with tax ratios significantly below this thresh old, raising tax revenue is a critical element for state capacity building and long-term economic growth (Gaspar, Jaramillo, and Wingender 2016). The second approach to raising revenue entails improving revenue administration. Long a priority in low-income developing countries, ensuring strong tax compliance has acquired greater importance in advanced economies facing high revenue needs and where compliance worsened markedly during the financial crisis (IMF 2015d).

On the spending side, savings can be generated by improving the targeting of expenditures and increasing efficiency, preferably as part of comprehensive expenditure reviews. In almost all categories of spending, there is room to achieve desired outcomes at a lower cost (Figure 1.17). Countries may opt to eliminate generalized subsidies that disproportionately benefit higher-income

groups in favor of targeted measures that tie benefits more closely to those in need. For instance, overhauling India's food and fertilizer subsidy regime through better targeting and efficiency could generate substantial fiscal gains. In Nigeria, implementing an automatic fuel-price-setting mechanism could help eliminate the recurrence of fuel subsidies. In France, increasing the targeting of social transfers, for instance, by further expanding means testing (notably for family and housing allowances) could yield savings without adversely affecting social outcomes. In addition, many countries have scope to lower the government wage bill while preserving the quality of public services. In France, for instance, reducing public employment (notably at the local level) and pursuing measures to limit wage drift could translate into greater expenditure efficiency. In Argentina, a structural reduction in public employment would be facilitated by strengthening payroll management to track and control public employees, undertaking a census to identify ghost workers, and putting in place an attrition-based system. Finally, in many advanced and emerging market economies, pension and health reforms could tremendously improve the fiscal outlook. In Brazil, where pension and other benefits represent nearly half of federal noninterest spending, the success of the strategy to contain expenditures will depend on reforming the social security system, whose outlays have a strong growth momentum in real terms.

Box 1.1. The Destination-Based Cash Flow Tax—A Primer

The idea of replacing the corporate income tax (CIT) with a "destination-based cash flow tax" (DBCFT) has attracted much discussion—and been a source of much confusion—over the past few months.[1] But what exactly is the DBCFT, and how would it affect both any country that adopted it and those that did not?

Design of a DBCFT

The international tax architecture is now based largely on "source taxation": that is, taxation where production takes place. This generates significant cross-border spillovers of various kinds by distorting the location of investment, encouraging profit shifting to low-tax jurisdictions, and spurring competitive rate cuts and tax incentives (IMF 2014b). The search has continued for alternative approaches that resolve these difficulties, and the DBCFT has emerged as a potential candidate. No country has yet introduced a DBCFT, although many have sought to move in a similar direction by relying more on a value-added tax (VAT) and reducing labor taxes and the rate of CIT.

The "cash flow" part of "DBCFT" refers to allowing immediate full deduction for capital expenses (in lieu of depreciation allowances), but not allowing deduction of net interest expense. This makes it a "rent tax": one that taxes only those profits above the minimum required by the investor.[2] This means that the tax would not affect marginal investment decisions. Cash flow treatment also eliminates the tax bias toward debt finance—which is a source of concern for financial stability—and the use of loans between related companies to avoid tax.

The "destination-based" part of "DBCFT" refers to "border-adjusting" the tax by exempting exports and taxing imports[3]—or, equivalently, not taxing imports at the border, but denying companies a deduction for them when calculating tax liability. This border adjustment in itself has no direct impact on real activity in the DBCFT described in Auerbach and others 2017. Relative prices would not change because the border adjustment would be exactly offset by some combination of an exchange rate appreciation and an increase in domestic prices. What the border adjustment does do is put the tax base not where production occurs, but at the location of final consumption, which is much less mobile than investment. This eliminates the tax advantage from locating production or profits in low-tax jurisdictions, and along with it a host of base erosion and profit-shifting (BEPS) activities that plague the current system.

DBCFT in a Global Setting

The properties of the DBCFT mentioned above point to collective efficiency gains if *all* countries were to replace their source-based income taxes with destination-based taxes.[4] Opportunities for profit shifting would also be reduced: there would be no tax benefit, for instance, from manipulating transfer prices between entities within a multinational group, since exports between them would not be taxed and imports would not be deducted.

In the discussion so far, we have assumed that the DBCFT would be adopted by all countries. If, however, only a subset of countries was to adopt it, significant adverse spillovers would likely arise as other countries would adjust and, potentially, retaliate. Because source-based tax rates in countries that adopted the DBCFT would, in effect be zero, those that did not adopt it would suffer from both a loss of real investment and increased incentives for outward profit shifting (although nontax factors also matter for investment decisions). They would likely react, though it is not clear how; they might take measures to protect their own tax bases and/or ultimately feel pressed to adopt a DBCFT, or something like it, themselves.

There would be numerous legal, practical, and political challenges to face in adopting a DBCFT. A fundamental concern is whether, as currently described, it would be WTO consistent. There would also be issues for double tax treaties, which set out and to some degree constrain the taxing rights of the signatory countries. Like any major tax reform, shifting to a DBCFT would create winners and losers across

[1]In the United States, movement to a DBCFT is a centerpiece of the June 2016 Republican tax reform "Blueprint" (https://waysandmeans.house.gov/taxreform/); it was also proposed—under the label of a "growth and investment tax"—by the President's Advisory Panel on Federal Tax Reform in 2005. In the United Kingdom, it was proposed by the Mirrlees Review (Auerbach, Devereux, and Simpson 2010). The account here draws on Auerbach and others (2017).

[2]If an investment yields exactly that minimum, the present value of tax payments, discounted at that rate, is zero. There are many forms of rent tax other than the DBCFT.

[3]Note, though, that sales by domestic producers are subject to the same tax.

[4]In fact, some degree of source taxation is likely to remain important, notably for the extractive industries, for which mobility of production is a much lesser concern.

Box 1.1 *(continued)*

different industries. Importers, in particular, fear that the loss of tax deductions for their inputs would not in practice be offset by either price or exchange rate adjustment.

Implementation Considerations

Moreover, the properties of the DBCFT as described above rest on design features that may be difficult to achieve in practice. For instance, in order for such a tax to operate as a tax on rents, exporters (which would have perpetual tax losses) should receive refunds—but that could be difficult to institute politically and carries the risk of fraud. The efficiency properties also require uniform tax treatment of all sectors and transactions, which may be hard to sustain in the face of lobbying. Key design issues (notably, the treatment of financial transactions) have not been fully developed, and some thorny transition issues (such as the treatment of "old" investments) would need careful attention. Many of the effects of adoption remain highly uncertain, notably the impact on exchange rates and prices, calling for great caution in judging its impact on both adopters and nonadopters.

As with any major tax reform, a key concern with the DBCFT is its distributional impact. As a tax on rents, the DBCFT in itself[5] has the potential to be mildly progressive. The precise distributional impact would depend on whether adjustment to the DBCFT came through domestic prices, the exchange rate, or some combination of the two.[6] If it came mainly through prices, the burden would fall on those spending domestically from nonwage income—largely the relatively wealthy and those on unindexed nominal incomes. If the adjustment came predominantly through the nominal exchange rate, the tax would burden those spending domestically from incomes denominated in foreign currency (such as foreign corporate earnings). The final effect would also depend, of course, on any accompanying changes to personal taxes. Adding to the spillover effects stressed above, there would also be windfall gains to foreigners with income or assets in the currency of the adopter and potential impacts abroad from debts and contracts specified in the appreciating currency.

[5]The discussion here relates to adoption of the DBCFT in isolation; if it were to replace a CIT, the distributional effects of that would need consideration too.

[6]This is true, at least, when viewed over a lifetime in which consumption and wage income effectively balance; viewed over a shorter horizon, the burden would fall on those whose consumption is high relative to their wage income.

Box 1.2. What Are the Budgetary Costs and Gains of Structural Reforms?

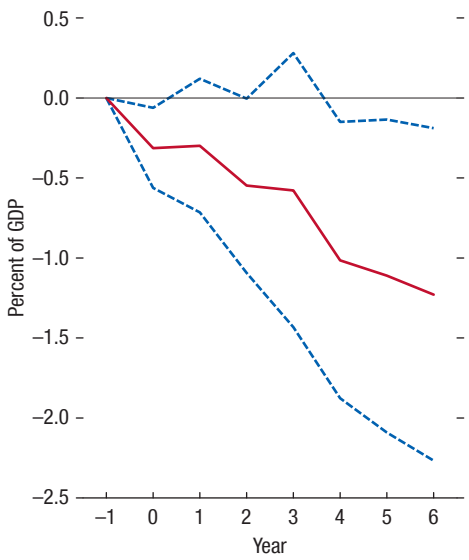
To assess the impact of labor and product market reforms on fiscal positions in advanced economies, this box relies on the analysis conducted by Banerji and others (2017). The authors use a new database that identifies major policy changes in five reform areas for a sample of 26 advanced economies spanning four decades. The reform areas include product market deregulation, relaxation of employment protection legislation for regular workers (such as the rules governing recruitment and dismissal of employees), reductions in unemployment benefits, higher spending on active labor market policies, and cuts in labor tax wedges. The empirical analysis traces out the average evolution of output, the fiscal balance, and the public-debt-to-GDP ratios in the aftermath of historical policy changes (in the form of estimated "impulse responses"). To examine the sensitivity of the impact of the reforms on debt dynamics, the empirical analysis is supplemented by numerical simulations using a framework inspired by DeLong and Summers (2012) but departs from it by assuming a zero fiscal multiplier over the medium term.

Three main results emerge from this empirical and simulation work:

- *Most labor and product market reforms strengthen public finances in the medium term.* The short-term impact depends on the type of reform: some reforms are mainly associated with direct budgetary costs (for example, labor tax cuts or higher spending on active labor market policies) or savings (for example, reduction in the duration of unemployment benefits). Others affect public finances mainly indirectly through their gradual effects on output (for example, product market or job protection reforms). Importantly, indirect effects can be large and can partly or even fully offset the direct up-front costs. Thus, some structural reforms with direct fiscal costs may generate net fiscal benefits over the medium term. In the case of labor tax wedge cuts, for example, empirical results suggest that, on average, these reforms have not been associated with an increase in the public-debt-to-GDP ratio over the medium term (Figure 1.2.1). This is in part because the fiscal gains from higher output have outweighed the direct fiscal costs, but also because such reforms have often been accompanied by offsetting tax increases or spending cuts or both. Simulations confirm that if the direct costs of these reforms are financed through higher borrowing (rather than offset in a budget-neutral way), fiscal benefits in terms of improved debt dynamics may not materialize.
- *The effect of certain structural reforms on fiscal positions depends on the business cycle conditions at the time the reforms are implemented.* Because the macroeconomic impact of some reforms varies depending on the cyclical conditions, so does its impact on budgetary outcomes (April 2016 *World Economic Outlook*, Chapter 3). For instance, the analysis of past reforms shows that employment protection legislation reforms reduce the public-debt-to-GDP ratio in the medium term when carried out during expansions, but not if implemented during periods

Figure 1.2.1. Impact of Labor Tax Wedge Cut on Public-Debt-to-GDP Ratio

Even structural reforms with up-front budgetary costs can improve public finances in the medium term.

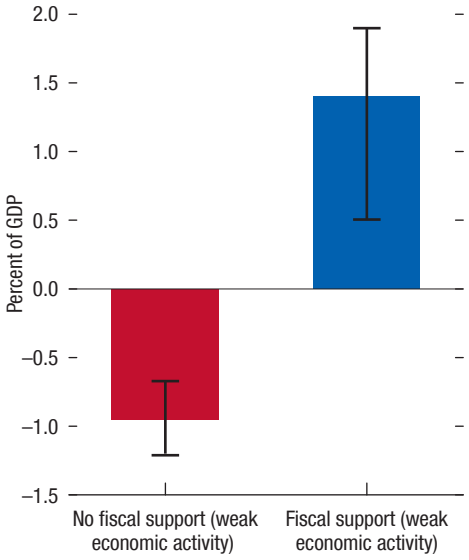


Source: Banerji and others 2017.
Note: The figure shows the effect of a 1 percentage point cut in the labor tax wedge and is based on empirical analysis; $t = 0$ is the year of the reform shock (for details, see Chapter 3 of the April 2016 *World Economic Outlook* and Banerji and others 2017). The solid red line denotes the average estimated response to the shock; the dashed blue lines denote 90 percent confidence intervals.

Box 1.2 *(continued)*

Figure 1.2.2. Net Medium-Term Fiscal Benefit of Job Protection Reforms under Weak Economic Conditions

Fiscal support for structural reforms can pay for itself in the medium term.



Source: Banerji and others 2017.
Note: The figure is based on numerical simulations. The bars represent the net fiscal gains associated with job protection reforms, as measured by the increase in tax revenues net of the financing burden of the additional debt incurred at the time of reform (in the case of fiscal support) over the medium term, relative to the no-reform scenario. The error bars indicate minimum and maximum values in member countries of the Organisation for Economic Co-operation and Development.

of major slack, when they entail short-term output costs. To a lesser extent, the same holds true for unemployment benefit reforms.

- *A package combining structural reforms and fiscal stimulus can yield a net budgetary gain in the medium term.* By improving business cycle conditions, a temporary and well-designed fiscal stimulus can front-load the macroeconomic benefits of structural reforms that are found to be less effective in periods of economic slack. This is because the stimulus supports the economy and enhances the growth dividend of reform, with positive effects on tax revenues. For instance, when employment protection legislation is relaxed, a fiscal stimulus can make firms more willing to hire new workers rather than dismissing existing ones in a downturn. In this case, the cost of the fiscal stimulus may be fully offset by subsequent gains (Figure 1.2.2). Nonetheless, country-specific circumstances—such as government funding costs and their response to stimulus, the magnitude and quality of that stimulus, and the credibility and strength of the implementation of the reform—will affect the extent to which such gains can be reaped.

Box 1.3. Making Growth More Inclusive in China

China has experienced unprecedented levels of economic growth over the past 35 years. The number of people living in poverty (on less than $1.90 a day in real purchasing-power parity terms) has declined by 850 million since the early 1980s, and the average per capita income has increased almost tenfold over the period. However, the proceeds from development have not been evenly distributed. China's Gini coefficient, which is a measure of income inequality, has increased and now ranks high among the world's largest economies (Cevik and Correa-Caro 2015). Estimates indicate that wealth is also extremely concentrated. A recent survey found that the top 1 percent of the wealthiest families possess about one-third of the country's total wealth, compared to 18 percent on average for countries belonging to the Organisation for Economic Co-operation and Development.

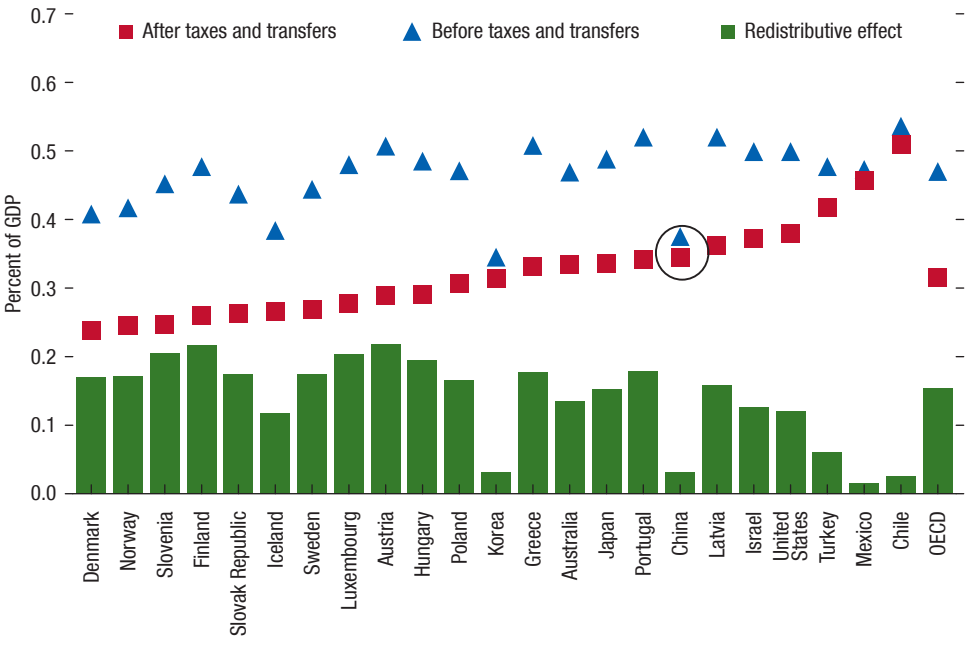
Fiscal policy contributes relatively little to narrow these rising inequalities, as reflected in the difference between Gini coefficients before and after taxes and transfers (Figure 1.3.1). This can be explained in part by a relatively low overall tax burden. China also relies comparatively more on indirect taxes and on a largely regressive design of direct taxation, especially for social security contributions. Local governments—which are broadly responsible for social insurance, health, and education—rely on limited, inefficient, and uncertain revenue sources and have been reluctant to undertake reforms to expand and improve public service delivery.

Important reforms, described in greater detail by de Mooij, Lam, and Wingender (2017), could be implemented to make fiscal policy more redistributive and promote household consumption in support of economic rebalancing. Options include

- *Making direct taxation more progressive.* The individual income tax provides little redistributive effect despite relying on a nominally progressive tax rate schedule. Recent estimates based on household survey data indicate that close to 80 percent of urban workers are not liable to pay this tax (Lam and Wingender 2015). Lowering the currently high level of the basic personal allowance and redesigning

Figure 1.3.1. Redistributive Effect of Fiscal Policy in Selected Advanced and Emerging Market Economies, 2009
(Gini coefficient)

Taxes and transfers in China achieve relatively little income redistribution.



Sources: Ding and He 2016; and Organisation for Economic Co-operation and Development (OECD) Income Distribution Database.
Note: The redistributive effect is the difference in the Gini coefficient before and after taxes and transfers.

Box 1.3 *(continued)*

the tax brackets could ensure that more middle- and high-income taxpayers contribute to revenue collections.

- *Introducing a property tax.* Recurrent property taxes based on market values are largely absent in China. Such taxes are also broadly viewed as progressive, because high-income households usually tend also to have higher property wealth (Norregaard 2013).
- *Reforming the household registration system.* The quality of and access to social entitlements—health care, education, and housing—varies with the residency status of households. Relaxing residency constraints and allowing more urban migrants to contribute to and benefit from the social safety net would reduce disparities and strengthen the redistributive effect of fiscal policy.

Box 1.4. Can Countries Sustain Higher Levels of Public Debt?

The global decline in interest rates over the past three decades has dramatically reduced sovereign borrowing costs in many countries. Some commentators have argued that in this environment, governments can sustain higher levels of public debt, particularly in advanced economies (Furman 2016; OECD 2016b; Buti and Carnot 2016). The argument is simple: lower interest rates reduce the cost of debt service, so governments can afford to borrow more.

This box examines an extended version of this argument: that debt sustainability is determined not by the interest rate alone, but by the differential between the interest and growth rates. A smaller differential implies that the debt ratio increases more slowly (if the differential is positive) or decreases more quickly (if the differential is negative) for a given level of the primary balance, hence allowing a government to sustain a higher debt ratio without the need for tighter fiscal policy. As the results in this box show, what matters most for debt sustainability is not the short-term evolution of the differential, which reflects cyclical factors, but its longer-term structural level.

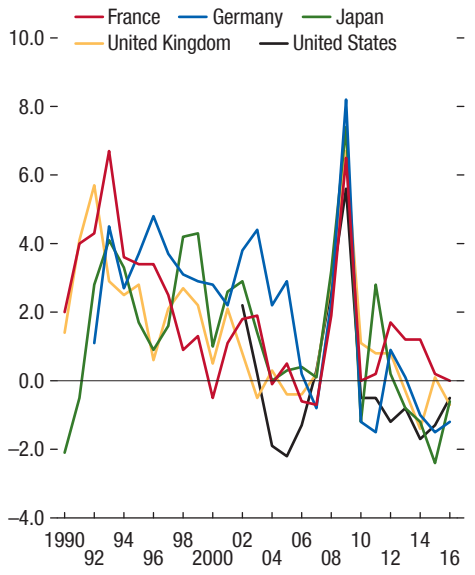
Figure 1.4.1 shows the difference between the effective interest rate on government debt and the rate of nominal growth since 1990 for a sample of advanced economies.[1] During this time, there has been a marked downward trend in the interest–growth rate differential; even though interest and growth rates have both declined, the interest rate has fallen further than the growth rate. Rather than its being a recent phenomenon, declines in the past five years (reflecting higher growth rather than lower interest rates) are simply the continuation of this trend.

What might have driven the persistent decline in the interest–growth rate differential? The likely causes are structural. For example, this pattern would arise if expectations about nominal growth took time to adjust to the lower rates seen in the 1990s and 2000s. Likewise, a worldwide reduction in safe assets or decreasing global risk appetite would also have pushed down the interest rate on government bonds. And demographic changes may have increased the demand for savings instruments, reducing the compensation governments must offer to public debt holders.

Given the structural nature of these factors, this trend is unlikely to be reversed in the near term. As a result, future interest–growth rate differentials are likely to be lower than they were on average in the past decade. This box reports on two experiments to assess the impact of a transitory and permanent decline in the interest–growth rate differential on sustainable debt levels. The analytical framework, which is an extension of the work done by Ghosh and others (2013), produces a debt limit—the maximum debt level before default—for each country in the sample. An important feature of this approach is that the evolution of the interest–growth rate differential is partly unpredictable. In technical terms, the differential follows a persistent stochastic process.[2] The model is calibrated to important aspects of public finance data for seven countries: Canada, France, Germany, Japan, the Netherlands, the United Kingdom, and the

Figure 1.4.1. Interest–Growth Rate Differentials in Advanced Economies, 1990–2016
(Percent)

Interest–growth rate differentials have been generally declining over the past 25 years or so but remain volatile.



Source: IMF staff estimates.
Note: The interest rate is computed as interest payments divided by outstanding debt at the end of previous year.

[1]Ongoing structural changes in emerging market economies make it harder to identify similar trends there.

[2]Further details of this framework are discussed by Barrett (forthcoming).

Box 1.4 *(continued)*

United States. The process governing the evolution of the interest–growth rate differentials is estimated from the data since the early 1990s.

Transitory decline in the interest–growth rate differential. This experiment simulates the impact the recent decline in the interest–growth rate differential has had on the debt limit for each country in the sample by assuming that the observed decline is a draw from the estimated distribution of the interest–growth rate distribution. Specifically, the model-generated debt limit in 2012 is compared to that consistent with the *World Economic Outlook* forecast for 2022 (to allow for the dissipation of expected monetary policy changes). Between these two points, the interest–growth rate differential is forecast to fall by an average of 1.6 percentage points for the countries in the sample. The results of this experiment are quite small. They suggest that this fall could increase debt limits by about 2 percent of GDP, on average.

Permanent decline in the interest–growth rate differential. This experiment assumes that the decline in the interest–growth rate differential is permanent. This is implemented by shifting to the left the distribution of the differential by 1 percentage point. The key finding is that the sensitivity of debt limits to a permanent decline in the interest–growth rate differential is much larger than that for a transitory decline. A permanent decline of 1 percentage point increases the maximum sustainable debt level by an average of 25 percent of GDP in the sample. Across countries, this figure ranges from a low of 10 percent of GDP to a high of 40 percent of GDP. Of course, in reality, it is difficult to assess whether the decline in the interest–growth rate differential is transitory or permanent. But even if only a portion of the decline is permanent, the impact on debt limits is likely to be large.

The intuitive explanation for the larger sensitivity to structural changes is that public debt issued today is rolled over and repaid over long periods of time. Thus, the sustainability of debt is driven principally by future interest–growth rate differentials, which ultimately depend on the shape of the distribution. The exact results also depend on the simplifying assumptions of the model, including that debt is short term, growth is exogenous, and shocks to the surpluses are uncorrelated with growth. However, the results are robust to various estimation periods of the process for the interest–growth rate differential and are of similar magnitude to those found in other studies, such as OECD 2016b.

Box 1.5. Do Fiscal Rules Lower Sovereign Borrowing Costs in Countries with Weak Track Records of Fiscal Performance?

In many advanced economies, there is widespread concern that fiscal policy has run out of space because of high debt levels. In this constrained environment, governments are exploring new ways to create fiscal space to finance much-needed reforms. Fiscal rules are often seen as a mechanism to enhance credibility that can, in turn, lower the government's interest risk premium and the interest bill, thereby creating room to raise productive public expenditures or reduce distortionary taxes.

The empirical literature, mostly focused on Europe and the United States, is cautiously optimistic about the ability of fiscal rules to lower government borrowing costs—measured as sovereign bond yields or spreads.[1] Results are nonetheless controversial because of the suspicion of "spurious correlation." The intuition is that a country's preference for fiscal prudence may explain both its fiscal performance and the adoption of fiscal rules, but there is no evidence that rules themselves could effectively constrain and change policies. In this case, rules would act only as signaling devices of voters' preferences toward fiscal prudence. Knowing that, financial markets would not reward the introduction of rules in countries that are fiscally less prudent because they know that rules are not sufficient to alter their fiscal behavior.

To assess whether rules reduce borrowing costs by enhancing fiscal credibility or simply reveal fiscal preferences, this box proposes an alternative approach relying on Jordà's (2005) methodology, which estimates the response of interest rates over the medium term following the introduction of a fiscal rule. The sample covers 33 advanced economies between 1980 and 2016. For each future year k the following regression is estimated:

$$Y_{i,t+k} - Y_{i,t} = \alpha_i^k + \sum_{j=1}^{l} \gamma_j^k \Delta Y_{i,t-j} + \beta_k rule_{i,t} + \boldsymbol{X}'_{i,t}\delta_k + \varepsilon_{i,t}^k, \qquad (1.5.1)$$

in which k = 1 to 4 (in years) and $Y_{i,t}$ corresponds to the 10-year sovereign government bond yield; $rule_{i,t}$ denotes a dummy variable that equals 1 for the date when the rule is first implemented (in country i at time t) and is 0 otherwise; and $\boldsymbol{X}'_{i,t}$ is a vector of controls that includes real GDP growth, the inflation rate, and lagged level of debt. The main coefficient of interest is β_k, which measures the impact of fiscal rules on yields for each future year k. Given that the introduction of rules (and the decision concerning their design features) may be subject to the omitted-variables bias previously described, the estimation uses the Arellano and Bond (1991) difference generalized method of moments, which partly addresses the endogeneity problem.

A plain estimation of equation (1.5.1) confirms the standard literature result that fiscal rules are associated with lower interest rates (result not shown). Yields of government bonds in advanced economies are found to decline by about 2 percentage points, on average, in the four years following the rule's introduction. However, this result does not hold when the countries' fiscal track records are explicitly taken into account. In countries that are fiscally less prudent, there is no evidence that rules lower borrowing costs, while the opposite is true for better performers (Figure 1.5.1, panel 1). The underlying regression, adapted from the smooth-transition autoregressive model of Granger and Teräsvirta (1993), interacts the rule variable with a nonlinear function of either the public debt ratio or an index of fiscal stabilization (computed in Chapter 2 of the April 2015 *Fiscal Monitor*).

Nonetheless, further analysis shows that the design of rules can make a difference. In the sample of countries that are fiscally less prudent, equation (1.5.1) is reestimated by interacting $rule_{i,t}$ with a binary variable taking the value 1 if a specific design feature of the fiscal rule is present and 0 otherwise. The characteristics that are considered in this exercise include the legal basis of the rule, enforcement and monitoring mechanisms, rule coverage, escape clauses, and provisions for cyclical adjustment (IMF 2009). The results show that, even in countries with a mixed record of fiscal responsibility, rules can lower financing costs if they are

[1]Studies looking more specifically at the United States include Eichengreen and Bayoumi 1994, Poterba and Rueben 1999, Lowry and Alt 2001, and Johnson and Kriz 2005. For European countries, examples include Hallerberg and Wolff 2008, Iara and Wolff 2010, and Feld and others 2017. For advanced economies in general, see IMF 2009.

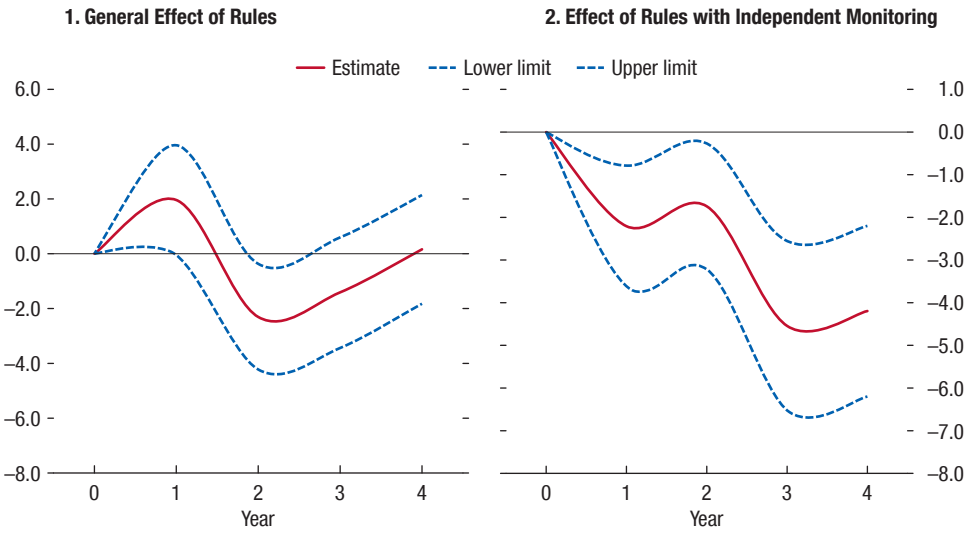
Box 1.5 *(continued)*

Figure 1.5.1. Impact of Fiscal Rules on Government's Borrowing Costs in Countries with Weak Track Records of Fiscal Performance

(Percent of GDP)

Fiscal rules are, in general, not associated with lower borrowing costs in countries with a weak fiscal track record, …

… but monitoring mechanisms can make the rules effective in these countries.



Source: IMF staff estimates based on data from IMF, World Economic Outlook database, and IMF, Fiscal Rules Dataset.
Note: The figure plots the impulse response functions following the introduction of a fiscal rule in high-debt countries. Dashed lines show 90 percent confidence bands. Interest rates above the 95th percentile of the distribution have been removed to exclude outliers. In the sample of countries that are fiscally less prudent, interest rates have historically been relatively high (up to 22 percent over the period, with a mean of 7 percent).

accompanied by independent monitoring mechanisms (Figure 1.5.1, panel 2). This is consistent with past evidence on the role of fiscal councils and their synergies with fiscal rules (IMF 2013). On the contrary, flexibility in the rule design (such as escape clauses) is not found to affect the ability to lower the risk premium. Results on enforcement procedures (sanctions and correction mechanisms) are not conclusive.

Annex 1.1. Defining and Measuring Fiscal Space

There is no widely accepted definition of fiscal space. The IMF (2016d) approach focuses on the government's ability to undertake discretionary fiscal policy (that is, raise spending or lower taxes) while preserving market access and debt sustainability. When fiscal space exists, discretionary policy can take the form of either a fiscal expansion or a slower pace of consolidation—both of which require additional borrowing relative to an unchanged policy scenario. Conversely, the inability to conduct such policies is interpreted as an absence of fiscal space.

Fiscal space has a number of important characteristics:

- *Fiscal space is a multidimensional concept*. Whether or not there is room to raise spending or lower taxes depends on multiple factors, including the sustainability of the level and trajectory of public debt and financing needs over the medium term, the availability of financing on favorable terms and the risk of market perceptions sharply increasing funding costs, and the realism of the medium- and long-term fiscal adjustment needed to achieve prudent debt ratios. All these aspects need to be assessed with different tools. Thus fiscal space cannot be summarized using a single indicator. Annex Tables A.1.1 and A.1.2 report an illustrative subset of potential fiscal space indicators, partly drawing from IMF 2016d and focusing on four main dimensions: the debt burden, the debt profile, the financing conditions, and the adjustment needed to stabilize debt in a context of rising aging costs. As discussed next, these indicators do not account for the dynamic impact of future policies on financing availability and debt sustainability, which is an important component of fiscal space.
- *Fiscal space is a forward-looking and dynamic assessment*. Today's fiscal space depends on the future effect of policies. For instance, in the face of a large negative shock, excessive fiscal consolidation could reduce fiscal space by reducing GDP growth. Alternatively, a temporary stimulus could create space and improve medium-term debt prospects, especially if it is used to fund investment in productive infrastructure, support structural reforms, and help repair balance sheets of the private sector. Therefore, fiscal space should be assessed under alternative assumptions on future policies and states of the economy.
- *The assessment of fiscal space should take into account fiscal spillovers from policies in other countries, when relevant*. There are interdependencies between the fiscal positions of economies. For instance, a stimulus in the United States could benefit its trading partners and indirectly improve their fiscal positions, creating more room in their budgets. This is particularly important in the case of an international fiscal stimulus, which would create positive spillovers, amplifying the beneficial effects from each country's policies. In this way, coordinated actions could increase the amount of fiscal space (Gaspar, Obstfeld, and Sahay 2016).

For all these reasons, fiscal space is a concept that is difficult to operationalize. To inform its assessment, a variety of tools and indicators should be used. Ultimately, assessing fiscal space is and should remain a matter of economic judgment.

Annex Table 1.1.1. Advanced Economies: Selected Potential Indicators of Fiscal Space

	Current and Future Debt Burden Indicators		Financing Availability and Condition			Debt Profile			Adjustment Needs		
	Public Debt, 2016	Public Debt Change, 2016–22	Gross Financing Needs, 2017[1]	10-Year Sovereign Yield Spreads (Against U.S.)[2]	Projected Interest Rate–Growth Differential, 2017–22[3]	Share of Foreign Currency Public Debt, 2017	Nonresident Holding of General Government Debt, 2016[4]	Share of Short-Term External Debt, 2017	Primary Gap in 2017[5]	Primary Gap in 2022[6]	Health and Pension Spending Change, 2022–50[7]
	(percent of GDP)	*(percent of GDP)*	*(percent of GDP)*	*(percent)*	*(percent)*	*(percent)*	*(percent of total)*	*(percent)*	*(percent of GDP)*	*(percent of GDP)*	*(percent of GDP)*
Australia	41.1	–4.5	3.2	0.3	–1.3	0.0	41.9	. . .	0.7	–1.6	4.2
Austria	83.9	–14.1	4.9	–1.8	–0.9	. . .	85.2	. . .	–1.2	–1.3	4.9
Belgium	105.5	–6.2	17.5	–1.5	–0.9	0.0	66.7	27.0	–0.9	–0.6	6.8
Canada	92.3	–9.6	10.6	–0.8	–0.4	. . .	24.2	. . .	1.2	0.1	2.8
Cyprus	108.0	–21.3	. . .	. . .	–1.1	. . .	75.2	. . .	–3.2	–3.5	. . .
Czech Republic	37.7	–8.1	5.5	–1.5	–1.6	16.7	44.2	43.6	–1.3	–0.9	2.5
Denmark	39.9	–7.6	4.7	–1.8	–1.0	. . .	33.4	. . .	0.7	–0.8	2.1
Estonia	9.5	–1.3	. . .	. . .	–4.8	. . .	79.3	46.4	–0.6	0.0	0.4
Finland	63.6	–3.7	7.8	–1.9	–1.6	. . .	79.4	32.3	1.0	–0.8	0.8
France	96.6	–6.3	13.2	–1.4	–1.2	0.0	65.1	. . .	1.1	–2.5	0.5
Germany	67.6	–16.8	2.7	–2.1	–1.4	. . .	63.2	. . .	–2.3	–2.5	4.8
Greece	181.3	–18.5	. . .	4.6	–1.6	3.7	. . .	29.6	. . .	. . .	. . .
Hong Kong SAR	0.1	–0.1	. . .	–0.7	0.8	. . .	. . .	70.7	–0.8	–0.4	. . .
Iceland	53.2	–23.5	0.2	2.6	–0.2	. . .	34.5	29.1	–3.9	–1.9	5.4
Ireland[8]	76.4	–15.2	5.8	–1.4	–1.6	. . .	68.7	17.7	–2.5	–3.7	3.5
Israel	62.2	1.4	. . .	. . .	0.9	21.2	13.7	. . .	1.9	1.5	2.0
Italy	132.6	–11.3	16.5	–0.1	0.8	. . .	38.9	31.2	0.3	–2.6	2.1
Japan	239.2	–6.8	40.8	–2.3	–1.1	. . .	10.1	. . .	1.4	–0.8	4.5
Korea	38.6	–2.5	1.6	–0.2	–1.3	1.1	12.4	29.0	–1.1	–2.1	9.9
Latvia	34.3	–7.7	. . .	. . .	–2.5	. . .	84.4	52.0	–0.4	–1.3	1.0
Lithuania	40.0	–8.1	5.6	. . .	–0.1	. . .	84.8	47.7	–0.9	–1.2	3.3
Luxembourg	22.6	0.2	. . .	. . .	–3.3	0.0	37.2	. . .	–1.1	–0.2	4.6
Malta	59.4	–10.3	6.4	–0.8	–1.5	. . .	11.0	43.0	–2.9	–1.9	. . .
Netherlands	62.6	–12.5	5.6	–1.8	–1.2	. . .	55.1	. . .	–1.7	–1.7	8.0
New Zealand	29.5	–17.1	3.4	0.8	1.1	0.0	79.6	. . .	–1.3	–2.9	7.5
Norway	33.2	0.0	. . .	–0.7	–1.5	. . .	55.3	. . .	–2.3	–2.5	4.6
Portugal	130.3	–7.4	12.0	1.6	0.7	. . .	64.2	33.5	–1.8	–0.4	4.4
Singapore	112.0	–9.6	. . .	–0.1	–3.6	. . .	. . .	. . .	–3.4	–5.0	. . .
Slovak Republic	52.3	–7.4	9.2	–1.3	–2.1	. . .	63.2	32.1	0.0	–1.9	3.2
Slovenia	78.9	–1.0	8.1	2.1	–0.5	. . .	73.6	17.3	–0.7	–0.7	6.6
Spain	99.3	–5.4	17.8	–0.7	–0.7	. . .	50.4	. . .	–0.3	–0.5	5.0
Sweden	41.7	–6.1	4.5	–1.8	–2.1	. . .	41.7	. . .	–0.8	–0.9	0.5
Switzerland	45.4	–6.6	2.1	–3.2	–1.2	. . .	11.3	. . .	–0.3	–0.9	7.0
United Kingdom	89.2	–6.0	9.2	–1.2	–0.8	. . .	33.8	. . .	0.4	–1.8	4.1

(continued)

Annex Table 1.1.1. Advanced Economies: Selected Potential Indicators of Fiscal Space (continued)

	Current and Future Debt Burden Indicators		Financing Availability and Condition			Debt Profile			Adjustment Needs		
	Public Debt, 2016	Public Debt Change, 2016–22	Gross Financing Needs, 2017[1]	10-Year Sovereign Yield Spreads (Against U.S.)[2]	Projected Interest Rate–Growth Differential, 2017–22[3]	Share of Foreign Currency Public Debt, 2017	Nonresident Holding of General Government Debt, 2016[4]	Share of Short-Term External Debt, 2017	Primary Gap in 2017[5]	Primary Gap in 2022[6]	Health and Pension Spending Change, 2022–50[7]
	(percent of GDP)	*(percent of GDP)*	*(percent of GDP)*	*(percent)*	*(percent)*	*(percent)*	*(percent of total)*	*(percent)*	*(percent of GDP)*	*(percent of GDP)*	*(percent of GDP)*
United States[9]	107.4	10.0	19.3	0.3	–1.0	. . .	31.0	29.6	–0.1	2.5	6.7
Group Median	62.6	–7.4	6.1	–0.8	–1.2	0.0	52.8	32.1	–0.8	–1.2	4.3

Sources: Bloomberg L.P.; Joint External Debt Hub, Quarterly External Debt Statistics; national authorities; and IMF staff estimates and projections.

[1] Gross financing need is defined as the projected overall deficit and maturing government debt in 2017; for more details on the assumptions, see note 1 in Table A23. Data are from Bloomberg L.P. and IMF staff projections.

[2] Data are as of March 31, 2017.

[3] Interest rate refers to the interest payments divided by outstanding debt at the end of previous year in nominal term. Growth rate refers to the nominal GDP growth rate.

[4] Nonresident holdings of general government debt data are for the fourth quarter of 2016 or latest available from the Joint External Debt Hub (JEDH), Quarterly External Debt Statistics, which include marketable and nonmarketable debt. For some countries, tradable instruments in the JEDH are reported at market value. External debt in U.S. dollars is converted to local currency, then taken as a percentage of 2015 gross general government debt.

[5] Primary gap in 2017 refers to the change in primary balance in 2017 (relative to the forecast in the *World Economic Outlook*) to stabilize the debt-to-GDP ratio at the 2016 level.

[6] Primary gap in 2022 refers to the change in primary balance in 2022 (relative to the forecast in the *World Economic Outlook*) to stabilize the debt-to-GDP ratio at the 2021 level.

[7] Projections rely on authorities' estimates when these are available. For the European Union countries, pension projections are based on *The 2015 Ageing Report* of the European Commission. When authorities' estimates are not available, IMF staff projections use the methodology described in Clements, Eich, and Gupta 2014. Staff projections for health care spending are driven by demographic and other factors. The difference between the growth of health care spending and real GDP growth that is not explained by demographics ("excess cost growth") is assumed to start at the country-specific historical average and converge to the advanced economy historical average by 2050 (0.8 percent).

[8] Ireland's headline metrics are affected by the one-time shift in nominal GDP recorded in 2015.

[9] For the United States, 10-year sovereign yield spreads refer to 5-year credit default swap spreads.

Annex Table 1.1.2. Emerging Market and Developing Economies: Selected Potential Indicators of Fiscal Space

	Current and Future Debt Burden Indicators		Financing Availability and Condition			Debt Profile			Adjustment Needs		
	Public Debt, 2016	Public Debt Change, 2016–22	Gross Financing Needs, 2017[1]	10-Year Sovereign Yield Spreads (Against U.S.)[2]	Projected Interest Rate–Growth Differential, 2017–22[3]	Share of Foreign Currency Public Debt, 2017	Nonresident Holding of General Government Debt, 2016[4]	Share of Short-Term External Debt, 2017	Primary Gap in 2017[5]	Primary Gap in 2022[6]	Health and Pension Spending Change, 2022–50[7]
	(percent of GDP)	*(percent of GDP)*	*(percent of GDP)*	*(percent)*	*(percent)*	*(percent)*	*(percent of total)*	*(percent)*	*(percent of GDP)*	*(percent of GDP)*	*(percent of GDP)*
Algeria	20.4	–6.9	. . .	. . .	–3.8	4.9	3.6	50.6	0.9	–0.9	. . .
Angola	71.9	–10.0	. . .	. . .	–8.1	59.9	. . .	0.3	–10.6	–3.3	. . .
Argentina	51.3	–6.5	10.5	–0.8	–12.6	69.2	35.5	53.0	–5.2	–1.9	7.1
Azerbaijan	37.7	–8.8	. . .	. . .	–5.3	75.0	. . .	. . .	5.8	–3.2	7.0
Bangladesh	33.1	–0.1	. . .	. . .	–5.3	. . .	. . .	2.6	0.7	–0.5	2.8
Belarus	52.3	8.1	. . .	. . .	–2.4	. . .	51.5	32.3	3.9	. . .	4.4
Brazil[8]	78.3	9.5	17.4	2.4	2.4	4.4	8.7	7.0	4.5	–0.2	13.2
Chile	21.2	10.0	4.2	1.6	–1.8	18.6	21.9	11.4	2.4	–0.4	2.9
China	46.2	12.7	. . .	. . .	–5.6	0.4	. . .	61.2	–0.1	–1.1	7.8
Colombia	47.6	–8.8	5.1	4.3	0.9	49.1	32.8	9.1	0.3	–1.5	3.9
Croatia	84.4	–8.6	15.4	0.7	0.3	. . .	38.7	8.4	–0.5	. . .	0.3
Dominican Republic	34.4	9.5	7.6	. . .	0.9	72.8	67.4	8.0	1.0	0.7	2.5
Ecuador	29.2	1.9	7.1	. . .	6.9	. . .	77.3	1.7	2.3	–1.2	4.9
Egypt	97.1	–17.3	44.8	. . .	–7.0	. . .	7.6	13.2	–10.1	–5.6	1.3
Hungary	74.2	–4.5	16.3	0.9	–1.5	26.1	53.6	10.9	–0.9	–0.6	3.7
India	69.5	–10.3	10.5	4.3	–4.1	3.8	6.0	18.5	–0.8	–1.3	0.2
Indonesia	27.9	1.4	4.3	4.7	–3.1	37.8	59.1	10.8	–0.1	–0.1	1.2
Iran	35.0	–18.8	. . .	. . .	–5.1	4.8	. . .	31.8	–5.5	–2.2	12.3
Kazakhstan	21.1	3.3	. . .	. . .	–4.5	. . .	43.6	6.8	4.6	–0.5	2.7
Kuwait	18.6	12.6	. . .	. . .	–3.1	. . .	. . .	48.4	6.9	11.2	15.9
Malaysia	56.3	–9.5	10.5	1.8	–2.8	. . .	34.5	37.3	–0.6	–2.1	2.8
Mexico	58.1	–4.0	8.5	4.6	0.4	. . .	31.3	18.5	–1.6	–0.7	2.0
Morocco	64.7	–7.6	10.9	. . .	–1.7	. . .	22.4	0.1	0.8	–1.5	. . .
Nigeria	18.6	6.3	. . .	. . .	–7.8	. . .	. . .	20.4	2.1	0.2	0.8
Oman	34.3	15.1	. . .	. . .	–2.2	. . .	. . .	32.6	7.3	5.1	5.2
Pakistan	66.9	–4.3	32.0	. . .	–2.4	32.2	. . .	5.7	–1.5	–1.6	1.1
Peru	24.8	3.7	4.8	3.4	–1.0	40.4	41.6	10.6	1.1	–0.7	4.7
Philippines	33.7	–4.4	7.9	. . .	–4.3	38.4	29.5	19.7	–2.2	–1.1	1.4
Poland	53.5	–2.5	9.5	1.1	–2.1	33.7	53.5	14.6	0.4	–0.5	3.4
Qatar	47.6	5.7	. . .	. . .	–4.1	. . .	. . .	44.6	–1.5	–4.7	. . .
Romania	39.2	5.7	8.3	. . .	–2.6	. . .	47.2	25.1	1.4	0.4	2.7
Russia	17.0	1.4	4.2	5.6	0.0	23.0	16.5	5.6	1.8	–1.1	4.6

(continued)

Annex Table 1.1.2. Emerging Market and Developing Economies: Selected Potential Indicators of Fiscal Space (continued)

	Current and Future Debt Burden Indicators		Financing Availability and Condition			Debt Profile			Adjustment Needs		
	Public Debt, 2016	Public Debt Change, 2016–22	Gross Financing Needs, 2017[1]	10-Year Sovereign Yield Spreads (Against U.S.)[2]	Projected Interest Rate–Growth Differential, 2017–22[3]	Share of Foreign Currency Public Debt, 2017	Nonresident Holding of General Government Debt, 2016[4]	Share of Short-Term External Debt, 2017	Primary Gap in 2017[5]	Primary Gap in 2022[6]	Health and Pension Spending Change, 2022–50[7]
	(percent of GDP)	*(percent of GDP)*	*(percent of GDP)*	*(percent)*	*(percent)*	*(percent)*	*(percent of total)*	*(percent)*	*(percent of GDP)*	*(percent of GDP)*	*(percent of GDP)*
Saudi Arabia	12.4	14.1	. . .	. . .	0.3	38.6	. . .	27.5	10.6	2.5	7.7
South Africa	50.5	3.2	11.9	6.5	0.1	10.4	32.1	27.4	0.1	–1.4	4.0
Sri Lanka	77.3	–11.0	17.0	. . .	–2.4	. . .	39.8	16.8	–1.8	–3.2	2.5
Thailand	42.2	–0.4	7.3	0.3	–1.5	5.1	12.3	40.3	0.0	0.1	7.1
Turkey	29.1	–0.1	8.1	3.1	–1.5	36.4	35.3	24.0	0.1	–0.5	3.9
Ukraine	81.2	–21.1	7.2	5.5	–5.2	70.9	48.3	13.9	–7.4	–4.1	7.0
United Arab Emirates	19.3	–1.2	. . .	. . .	–4.6	. . .	. . .	20.0	0.9	–1.2	4.4
Uruguay	60.9	3.1	12.3	. . .	–3.7	50.9	43.7	11.0	–1.4	–3.0	5.6
Venezuela	28.2	–10.4	. . .	. . .	–95.2	3.2	. . .	. . .	–10.9	0.0	5.6
Vietnam	62.4	4.8	. . .	. . .	–6.1	47.0	. . .	12.3	–0.2	. . .	. . .
Group Median	44.2	–0.3	9.0	3.1	–2.9	35.1	35.4	15.7	0.1	–1.1	3.9

Sources: Bloomberg L.P.; Joint External Debt Hub, Quarterly External Debt Statistics; national authorities; and IMF staff estimates and projections.

[1] Gross financing need is defined as the projected overall deficit and maturing government debt in 2017; for more details on the assumptions, see note 1 in Table A23. Data are from Bloomberg L.P. and IMF staff projections.

[2] Data are as of March 31, 2017.

[3] Interest rate refers to the interest payments divided by outstanding debt at the end of previous year in nominal terms. Growth rate refers to the nominal GDP growth rate.

[4] Nonresident holdings of general government debt data are for the fourth quarter of 2016 or latest available from the Joint External Debt Hub (JEDH), Quarterly External Debt Statistics, which include marketable and nonmarketable debt. For some countries, tradable instruments in the JEDH are reported at market value. External debt in U.S. dollars is converted to local currency, then taken as a percentage of 2015 gross general government debt.

[5] Primary gap in 2017 refers to the change in primary balance in 2017 (relative to the forecast in the *World Economic Outlook*) to stabilize the debt-to-GDP ratio at the 2016 level.

[6] Primary gap in 2022 refers to the change in primary balance in 2022 (relative to the forecast in the *World Economic Outlook*) to stabilize the debt-to-GDP ratio at the 2021 level.

[7] Projections rely on authorities' estimates when these are available. For the European Union countries, pension projections are based on *The 2015 Ageing Report* of the European Commission. When authorities' estimates are not available, IMF staff projections use the methodology described in Clements, Eich, and Gupta 2014. Staff projections for health care spending are driven by demographic and other factors. The difference between the growth of health care spending and real GDP growth that is not explained by demographics ("excess cost growth") is assumed at the advanced economy historical average by 2050 (0.8 percent).

[8] The IMF staff projects an increase in pension spending in Brazil to 5.9 percent of GDP by 2030. See IMF 2016e.

References

Abbas, A., B. Akitoby, J. Andritzky, H. Berger, T. Komatsuzaki, and J. Tyson. 2013. "Dealing with High Debt in an Era of Low Growth." IMF Staff Discussion Note 13/07, International Monetary Fund, Washington, DC.

Alvaredo, F., A. Atkinson, T. Piketty, and E. Saez. 2013. "The Top 1 Percent in International and Historical Perspective." *Journal of Economic Perspectives* 27 (3): 3–20.

Arellano, M., and S. Bond. 1991. "Some Tests of Specification for Panel Data: Monte Carlo Evidence and an Application to Employment Equations." *Review of Economic Studies* 58 (2): 277–97.

Atkinson, A. B. 2015. *Inequality: What Can Be Done?* Cambridge, MA: Harvard University Press.

———, T. Piketty, and E. Saez. 2011. "Top Incomes in the Long Run of History." *Journal of Economic Literature* 49 (1): 3–71.

Auerbach, A., M. Devereux, M. Keen, and J. Vella. 2017. "Destination-Based Cash Flow Taxation." Oxford University Centre for Business Taxation WP 17/01, Oxford, U.K.

Auerbach, A., M. Devereux, and H. Simpson. 2010. "Taxing Corporate Income." In *Dimensions of Tax Design: The Mirrlees Review*, edited by J. A. Mirrlees, S. Adam, T. Besley, R. Blundell, S. Bond, R. Chote, M. Gammie, P. Johnson, G. Myles, and J. Poterba. Oxford, U.K.: Oxford University Press.

Auerbach, A., and Y. Gorodnichenko. 2012. "Fiscal Multipliers in Recession and Expansion." In *Fiscal Policy after the Financial Crisis*, edited by A. Alesina and F. Giavazzi, 63–98. Cambridge, MA: National Bureau of Economic Research.

———. 2013. "Output Spillovers from Fiscal Policy." *American Economic Review Papers and Proceedings* 103 (3): 141–46.

Baker, S., N. Bloom, and S. Davis. 2016. "Measuring Economic Policy Uncertainty." *Quarterly Journal of Economics* 131 (4): 1593–1636. https://doi.org/10.1093/qje/qjw024.

Banerji, A., V. Crispolti, E. Dabla-Norris, R. Duval, C. Ebeke, D. Furceri, T. Komatsuzaki, and T. Poghosyan. 2017. "Labor and Product Market Reforms in Advanced Economies: Fiscal Costs, Gains, and Support." IMF Staff Discussion Note 17/03, International Monetary Fund, Washington, DC.

Barbiero, O., and B. Cournède. 2013. "New Econometric Estimates of Long-term Growth Effects of Different Areas of Public Spending." OECD Economics Department Working Paper 1100, Organisation for Economic Co-operation and Development, Paris.

Barrett, P. Forthcoming. "The Impact of the Interest-Growth Differentials on Debt Sustainability in Advanced Economies." IMF Working Paper, International Monetary Fund, Washington, DC.

Berg, A., and J. Ostry. 2011. "Inequality and Unsustainable Growth: Two Sides of the Same Coin?" IMF Staff Discussion Note 11/08, International Monetary Fund, Washington, DC.

Blanchard, O., G. Dell'Ariccia, and P. Mauro. 2010. "Rethinking Macroeconomic Policy." *Journal of Money, Credit and Banking* 42 (Supplement 1): 199–215.

Bloom, N. 2014. "Fluctuations in Uncertainty." *Journal of Economic Perspectives* 28 (2): 153–76.

Bourguignon, F. 2015. *The Globalization of Inequality*. Princeton, NJ: Princeton University Press.

Brewer, M., E. Saez, and A. Shephard. 2010. "Means Testing and Tax Rates on Earnings." In *Dimensions of Tax Design: The Mirrlees Review*, edited by J. Mirrlees, S. Adam, T. Besley, R. Blundell, S. Bond, R. Chote, M. Gammie, P. Johnson, G. Myles, and J. Poterba. Oxford University Press.

Buti, M., and N. Carnot. 2016. "Fiscal Space and Low Interest Rates: A Eurozone Perspective." VoxEU.org. Center for Economic and Policy Research. http://voxeu.org/article/fiscal-space-and-low-interest-rates-eurozone-perspective.

Caminada, K., K. Goudswaard, and C. Wang. 2012. "Disentangling Income Inequality and the Redistributive Effect of Taxes and Transfers in 20 LIS Countries over Time." LIS Working Paper 581, Luxembourg Income Study, Luxembourg.

Carvalho, C., A. Ferrero, and F. Nechio. 2016. "Demographics and Real Interest Rates: Inspecting the Mechanism." *European Economic Review* 88 (C): 208–26.

Cevik, S., and C. Correa-Caro. 2015. "Growing (Un)equal: Fiscal Policy and Income Inequality in China and BRIC+." IMF Working Paper 15/68, International Monetary Fund, Washington, DC.

Chetty, R., and A. Finkelstein. 2013. "Social Insurance: Connecting Theory to Data." In *Handbook of Public Economics*, Vol. 5, edited by A. J. Auerbach, R. Chetty, M. Feldstein and E. Saez. 111–93. Elsevier.

Christiano, L., M. Eichenbaum, and S. Rebelo. 2011. "When Is the Government Spending Multiplier Large?" *Journal of Political Economy* 119 (1, February): 78–121.

Clements, B. J., F. Eich, and S. Gupta. 2014. *Equitable and Sustainable Pensions: Challenges and Experiences.* Washington, DC: International Monetary Fund.

Clements, B. J., S. Gupta, and M. Nozaki. 2013. "What Happens to Social Spending in IMF-Supported Programmes?" *Applied Economics*, *45*(28), 4022-4033.

———. 2014. "What Happens to Public Health Spending in IMF-Supported Programs? Another Look." IMFBlog available at https://blog-imfdirect.imf.org/2014/12/21/what-happens-to-public-health-spending-in-imf-supported-programs-another-look/.

Congressional Budget Office (CBO). 2016. "Options for Reducing the Deficit: 2017 to 2026." Available at https://www.cbo.gov/publication/52142.

Cottarelli, C., P. Gerson, and A. Senhadji, eds. 2014. *Post-Crisis Fiscal Policy*. Cambridge, MA: MIT Press.

Dabla-Norris, E., K. Kochhar, N. Suphaphiphat, F. Ricka, and E. Tsounta. 2015. "Causes and Consequences of Income Inequality: A Global Perspective." IMF Staff Discussion Note 15/13, International Monetary Fund, Washington, DC.

DeLong, J. B., and L. H. Summers. 2012. "Fiscal Policy in a Depressed Economy." *Brookings Papers on Economic Activity* (1): 233–97.

de Mooij, R., W. R. Lam, and P. Wingender. 2017. "Modernizing the Tax Policy Regime." In *Modernizing China: Investing in Soft Infrastructure*, edited by R. W. Lam, M. Rodlauer, and A. Schipke. Washington, DC: International Monetary Fund.

Diamond, P., and E. Saez. 2011. "The Case for a Progressive Tax: From Basic Research to Policy Recommendations." *Journal of Economic Perspectives* 25 (4): 165–90.

Ding, H., and H. He. 2016. "A Tale of Transition: An Empirical Analysis of Economic Inequality in Urban China, 1986–2009." IMF Working Paper 16/239, International Monetary Fund, Washington, DC.

Duncan, H., and J. Sedon. 2011. "Coordinating a Federal VAT with State and Local Sales Taxes." *Tax Notes* 127 (9): 1029–38.

Egger, P., S. Loretz, M. Pfaffermayr, and H. Winner. 2009. "Firm-Specific Forward-Looking Effective Tax Rates." *International Tax and Public Finance* 16: 850–70.

Eichengreen, B., and T. Bayoumi. 1994. "The Political Economy of Fiscal Restrictions: Implications for Europe from the United States." *European Economic Review* 38 (3–4): 783–91.

Fabrizio, S., D. Furceri, R. Garcia-Verdu, B. Li, S. Lizarazo, M. Mendes, F. Narita, and A. Peralta-Alva. 2017. "Macro-Structural Policies and Income Inequality in Low-Income Developing Countries." IMF Staff Discussion Note 17/01, International Monetary Fund, Washington, DC.

Favero, C. A., A. E. Gozluklu, and H. Yang. 2016. "Demographics and the Behavior of Interest Rates." *IMF Economic Review* 64 (4): 732–76.

Feld, L., A. Kalb, M.-D. Moessinger, and S. Osterloh. 2017. "Sovereign Bond Market Reactions to No-Bailout Clauses and Fiscal Rules—The Swiss Experience." *Journal of International Monetary and Finance* 70 (February): 319–43.

Furman, J. 2016. "The New View of Fiscal Policy and Its Application." VoxEU.org. Center for Economic and Policy Research. http://voxeu.org/article/new-view-fiscal-policy-and-its-application.

Gaspar, V., L. Jaramillo, and P. Wingender. 2016. "Tax Capacity and Growth: Is There a Tipping Point?" IMF Working Paper 16/234, International Monetary Fund, Washington, DC.

Gaspar, V., M. Obstfeld, and R. Sahay. 2016. "Macroeconomic Management When Policy Space Is Constrained: A Comprehensive, Consistent, and Coordinated Approach to Economic Policy." IMF Staff Discussion Note 16/09, International Monetary Fund, Washington, DC.

Gemmell, N., R. Kneller, D. McGowan, I. Sanz, and J. F. Sanz-Sanz. 2016. "Corporate Taxation and Productivity Catch-Up: Evidence from European Firms." *Scandinavian Journal of Economics*, accepted online manuscript. doi:10.1111/sjoe.12212.

Ghosh, A., J. Kim, E. Mendoza, J. Ostry, and M. Qureshi. 2013. "Fiscal Fatigue, Fiscal Space and Debt Sustainability in Advanced Economies." *Economic Journal* 123 (566): F4–F30.

Granger, C. W. J., and T. Teräsvirta. 1993. *Modelling Nonlinear Economic Relationships*. New York: Oxford University Press.

Hallerberg, M., and G. Wolff. 2008. "Fiscal Institutions, Fiscal Policy and Sovereign Risk Premia in EMU." *Public Choice* 136 (3/4): 379–96.

Helpman, E., O. Itskhoki, M. A. Muendler, and S. J. Redding. 2017. "Trade and Inequality: From Theory to Estimation." *The Review of Economic Studies* 84 (1): 357–405.

Husain, A., R. Arezki, P. Breuer, V. Haksar, T. Helbling, P. Medas, and M. Sommer. 2015. "Global Implications of Lower Oil Prices." IMF Staff Discussion Note 15/15, International Monetary Fund, Washington, DC.

Iara, A., and G. B. Wolff. 2010. "Rules and Risk in the Euro Area: Does Rules-Based National Fiscal Governance Contain Sovereign Bond Spreads?" *European Economy—Economic Papers* 433, Directorate General Economic and Monetary Affairs, European Commission, Brussels.

International Labour Organization (ILO). 2014. *Global Employment Trends 2014: Risk of a Jobless Recovery?* Geneva.

———. 2015. *World Employment and Social Outlook 2015: The Changing Nature of Jobs*. Geneva.

International Monetary Fund (IMF). 2009. "Fiscal Rules—Anchoring Expectations for Sustainable Public Finances." IMF Policy Paper, Washington, DC.

———. 2013. "Reassessing the Role and Modalities of Fiscal Policy in Advanced Economies." IMF Policy Paper, Washington, DC.

———. 2014a. "Fiscal Policy and Income Inequality." IMF Policy Paper, Washington, DC.

———. 2014b. "Spillovers in International Corporate Taxation." IMF Policy Paper, Washington, DC.

———. 2015a. "Fiscal Policy and Long-Term Growth." IMF Policy Paper, Washington, DC.

———. 2015b. "Making Public Investment More Efficient." IMF Policy Paper, Washington, DC.

———. 2015c. "Crisis Program Review." IMF Policy Paper, Washington DC.

———. 2015d. "Current Challenges in Revenue Mobilization: Improving Tax Compliance." IMF Policy Paper, Washington, DC.

———. 2016a. "Analyzing and Managing Fiscal Risks: Best Practices." IMF Policy Paper, Washington, DC.

———. 2016b. "Options for a Central Fiscal Capacity in the Euro Area." In *Euro Area Policies: Selected Issues,* IMF Country Report 16/220, International Monetary Fund, Washington, DC.

———. 2016c. *Staff Report of the 2016 Article IV Consultation.* IMF Country Report 16/219, International Monetary Fund, Washington, DC.

———. 2016d. "Assessing Fiscal Space: An Initial Consistent Set of Considerations." IMF Policy Paper, Washington, DC.

———. 2016e. "Fiscal Challenges of an Aging Population in Brazil." In *Brazil: Selected Issues,* IMF Country Report 16/349, Washington, DC.

———. 2017. "Macroeconomic Developments and Prospects in Low-Income Developing Countries–2016." IMF Policy Paper, Washington, DC.

Jaumotte, F., S. Lall, and C. Papageorgiou. 2013. "Rising Income Inequality: Technology, or Trade and Financial Globalization?" *IMF Economic Review* 61 (2): 271–309.

Johnson, C. L., and K. A. Kriz. 2005. "Fiscal Institutions, Credit Ratings, and Borrowing Costs." *Public Budgeting & Finance* 25 (1): 84–103.

Jordà, O. 2005. "Estimation and Inference of Impulse Responses by Local Projections." *American Economic Review* 95 (1): 161–82.

———, and A. Taylor. 2016. "The Time for Austerity: Estimating the Average Treatment Effect of Fiscal Policy," *Economic Journal* 126 (590): 219–55.

Kim, J. I., and J. D. Ostry. Forthcoming. "Boosting Fiscal Space: The Roles of GDP-Linked Debt and Longer Maturities." IMF Staff Discussion Note, International Monetary Fund, Washington, DC.

Lagarde, C. 2016. "Decisive Action to Secure Durable Growth." Speech at an event hosted by Bundesbank and Goethe University, Frankfurt, April 5.

Lakner, C., and B. Milanovic. 2016. "Global Income Distribution: From the Fall of the Berlin Wall to the Great Recession." *World Bank Economic Review* 30 (2): 203–32.

Lam, W. R., and P. Wingender. 2015. "China: How Can Revenue Reforms Contribute to Inclusive and Sustainable Growth?" IMF Working Paper 15/66, International Monetary Fund, Washington, DC.

Lowry, R. C., and J. Alt. 2001. "A Visible Hand? Bond Markets, Political Parties, Balanced Budget Laws, and State Government Debt." *Economics and Politics* 13 (March): 49–72.

Lustig, N., C. Pessino, and J. Scott. 2014. "The Impact of Taxes and Social Spending on Inequality and Poverty in Argentina, Bolivia, Brazil, Mexico, Peru, and Uruguay: Introduction to the Special Issue." *Public Finance Review* 42 (3): 287–303.

Mankiw, N. G. 2013. "Defending the One Percent," *Journal of Economic Perspectives* 27 (3): 21–34.

———, M. C. Weinzierl, and D. F. Yagan. 2009. "Optimal Taxation in Theory and Practice," *Journal of Economic Perspectives* 23 (4): 147–74.

Musgrave, R. 1959. *The Theory of Public Finance: A Study in Public Economy.* New York: McGraw-Hill.

Norregaard, J. 2013. "Taxing Immovable Property: Revenue Potential and Implementation Challenges." IMF Working Paper 13/129, International Monetary Fund, Washington, DC.

Organisation for Economic Co-operation and Development (OECD). 2010. "Tax Policy Reform and Economic Growth." OECD Tax Policy Studies 20, Paris.

———. 2015. *In It Together: Why Less Inequality Benefits All*. Paris.

———. 2016a. *Income Inequality Update*. Paris.

———. 2016b. "Using the Fiscal Levers to Escape the Low-Growth Trap." Chapter 2 in *Economic Outlook* 2016 (2). Paris.

Ostry, J. D., A. Berg, and C. G. Tsangarides. 2014. "Redistribution, Inequality, and Growth." IMF Staff Discussion Note 14/02, International Monetary Fund, Washington, DC.

Piketty, T. 2015. "Putting Distribution Back at the Center of Economics: Reflections on Capital in the Twenty-First Century." *Journal of Economic Perspectives* 29 (1): 67–88.

———, E. Saez, and S. Stantcheva. 2014. "Optimal Taxation of Top Labor Incomes: A Tale of Three Elasticities." *American Economic Journal: Economic Policy* 6 (1): 230–71.

Poterba, J. M., and K. Rueben. 1999. "State Fiscal Institutions and the U.S. Municipal Bond Market." In *Fiscal Institutions and Fiscal Performance*, edited by J. Poterba and J. von Hagen. Chicago: University of Chicago Press.

Romer, C. 2012. "Fiscal Policy in the Crisis: Lessons and Implications." University of California, Berkeley.

Roubini, N. 2016. "The Return of Fiscal Policy." Project Syndicate, https://www.project-syndicate.org/commentary/shift-from-monetary-to-fiscal-policy-by-nouriel-roubini-2016-09?barrier=accessreg.

Summers, L. 2014. "U.S. Economic Prospects: Secular Stagnation, Hysteresis, and the Zero Lower Bound." *Business Economics* 49 (2): 65–73.

———. 2016. "The Age of Secular Stagnation: What It Is and What to Do About It." *Foreign Affairs* (March/April). https://www.foreignaffairs.com/articles/united-states/2016-02-15/age-secular-stagnation.

Tanzi, V., and H. Zee. 1997. "Fiscal Policy and Long-Run Growth." *IMF Staff Papers* 44 (2): 179–209.

Taylor, J. 2000. "Reassessing Discretionary Fiscal Policy." *Journal of Economic Perspectives* 14 (3): 21–36.

Ubide, A. 2016. "The Case for an Active Fiscal Policy." VoxEU.org. Center for Economic and Policy Research. http://voxeu.org/article/case-active-fiscal-policy.

Warner, A. 2014. "Public Investment as an Engine of Growth." IMF Working Paper 14/148, International Monetary Fund, Washington, DC.

Woodford, M. 2011. "Simple Analytics of the Government Expenditure Multiplier." *American Economic Journal: Macroeconomics* 3 (1): 1–35.

CHAPTER 2

UPGRADING THE TAX SYSTEM TO BOOST PRODUCTIVITY

Introduction

A top challenge facing policymakers today is how to raise productivity, the key driver of living standards over the long term. In advanced economies, productivity growth was declining well before the global financial crisis, and the trend worsened in its aftermath (Figure 2.1). A slowdown in productivity has also taken place in developing countries since the crisis, hampering their convergence process toward higher income levels.[1] The IMF's policy agenda has therefore emphasized the need to employ all policy levers, and in particular to promote growth-friendly fiscal policies that will boost productivity and potential output (IMF 2016a).

Total factor productivity (TFP) at the country level reflects the productivity of individual firms, weighted by firm size.[2] Therefore, aggregate TFP depends on firms' individual TFP and also on how available resources (labor and capital) are allocated across firms.[3] Indeed, the poor use of existing resources within countries—referred to here as resource misallocation—has been found to be an important source of differences in TFP levels across countries and over time.[4]

Resource misallocation manifests itself in a wide dispersion in productivity levels across firms, even within narrowly defined industries. High dispersion in firm productivities reveals that some businesses in each country have managed to achieve high levels of efficiency, possibly close to those of the world frontier in that industry. This implies that existing conditions within a country are compatible with higher levels of productivity. Therefore, countries can reap substantial TFP gains from reducing resource misallocation, allowing firms to catch up with the high-productivity firms in their own economies. In some cases, however, the least productive businesses will need to exit the market, releasing resources for the more productive ones. For example, Baily, Hulten, and Campbell (1992) find that 50 percent of manufacturing productivity growth in the United States during the 1980s can be attributed to the reallocation of factors across plants and to firm entry and exit. Similarly, Barnett and others (2014) find that labor reallocation across firms explained 48 percent of labor productivity growth for most sectors in the U.K. economy in the five years prior to 2007.

Resource misallocation is often the result of a large number of poorly designed economic policies and market failures that prevent the expansion of efficient firms and promote the survival of inefficient ones. Reducing misallocation is therefore a complex and multidimensional task that requires the use of all policy levers. Structural reforms play a crucial role, in particular because the opportunity cost of poorly designed economic policies is much greater now in the context of anemic productivity growth.[5] Financial, labor, and product market reforms have been identified as important contributors (see Banerjee and Duflo 2005; Andrews and Cingano 2014; Gamberoni, Giordano, and Lopez-Garcia 2016; and Lashitew 2016). This chapter makes the case that upgrading the tax system is also key to boosting productivity by reducing distortions that prevent resources from going to where they are most productive.[6]

The chapter uses firm-level data and micro-empirical techniques to provide new insights on the following questions:

[1]See Adler and others 2017 on the role of crisis legacies and structural headwinds in slowing the pace of productivity growth.

[2]TFP is the efficiency with which the economy transforms its accumulated factors of production into output.

[3]For a broader discussion of TFP, including drivers of firms' individual TFP, see Adler and others 2017; Adalet McGowen and others 2015; Dabla-Norris and others 2015; Pagés 2010; and the April 2016 *Fiscal Monitor*.

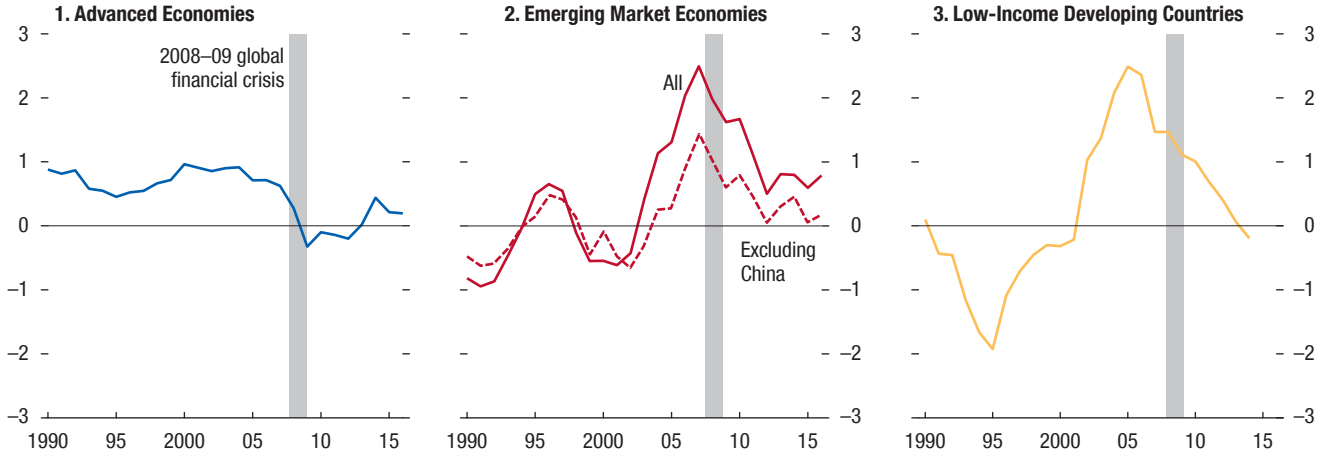
[4]Restuccia and Rogerson (2013) summarize recent literature on resource misallocation. See also Hsieh and Klenow 2009; Caselli 2005; Hall and Jones 1999; Klenow and Rodriguez-Clare 1997; Bartelsman, Haltiwanger, and Scarpetta 2013; and Gopinath and others 2015.

[5]Banerji and others (2017) make the case for complementing and incentivizing structural reforms with fiscal support. The April 2016 *World Economic Outlook* shows that complementary macroeconomic policies are needed to maximize the short-term payoff from product and labor market reforms.

[6]Widely documented channels through which fiscal policy can raise productivity, such as the provision of physical infrastructure and education, are not covered in this chapter. For an overview of these policies, see IMF 2015b.

Figure 2.1. Growth in Total Factor Productivity, 1990–2016
(Five-year average growth rate, percent)

Total factor productivity growth, the key driver of living standards over the long term, is currently anemic across all country groups.



Source: Adler and others 2017.
Note: Group averages are weighted using GDP at purchasing power parity.

- What is the extent of resource misallocation within countries? What are the potential TFP and growth payoffs from reducing resource misallocation?
- How does the tax system affect resource misallocation? To what extent does differential tax treatment of firms affect productivity?
- What tax policy measures can be implemented to reduce distortions and hence misallocation?

The chapter's main findings can be summarized as follows:

- Potential TFP gains from reducing resource misallocation are substantial and could lift the annual real GDP growth rate by roughly 1 percentage point. Payoffs are higher for emerging market and low-income developing countries than for advanced economies, with considerable variation across countries. It is important to note that reforms to tackle resource misallocation will have winners and losers, and therefore the transition will need to be carefully managed.
- Upgrading the design of their tax systems can help countries chip away at resource misallocation by ensuring that firms' decisions are made for business and not tax reasons. Governments can eliminate distortions that they themselves have created. The chapter provides evidence that significant TFP gains can be achieved if countries address tax treatments that discriminate by asset type, sources of financing, or firm characteristics such as informality and size.
- How governments tax matters for productivity.
  - Governments should seek to minimize differentiated tax treatments across assets and financing. This approach would help tilt firms' investment decisions toward assets that are more productive, rather than more tax-favored. For instance, the current debt bias feature of some tax systems not only distorts financing decisions but hampers productivity as well, especially in the case of advanced economies. Disparity in taxes across capital asset types—present in all country groups—also affects firms' investment decisions. Adopting a well-designed allowance for corporate equity (ACE) system or a cash flow tax can eliminate these distortions.
  - Governments should also seek to level the playing field across firms to encourage growth of productive firms. For example, in emerging market and low-income developing countries, stronger tax administration could help reduce the unfair cost advantage enjoyed by informal firms that underreport their sales to the tax authorities. This would provide greater room for more productive, tax-compliant firms to increase their market share. Another example, relevant for all country groups, is to encourage growth and productivity among small firms through efforts to reduce tax compliance costs, freeing

resources that can be used for more productive activities, and targeting tax relief to new rather than small firms in order to avoid the "small business trap."

It is important to acknowledge that eliminating differences in tax treatments across firms may not be feasible or desirable in all cases. Tax policy might want to influence resource allocation when firms do not take into account their externalities—the full economy-wide benefits and costs of their activities. Examples include underinvestment in research or excessive carbon emissions. Importantly, tax reform priorities for each country will need to take into account not only their impact on productivity, but also other government objectives, including better income distribution and revenue mobilization needs.

This chapter first provides an analysis of the extent of resource misallocation within countries. It then focuses on how the design of the tax system may affect resource allocation. More specifically, the chapter shows that distortions created by differential tax treatments across firms—due to their capital intensity across asset types, their sources of financing, their degree of informality, or their size—matter for productivity. The chapter also acknowledges the limitations and extensions of the analysis. Empirical analyses in the chapter are based on extensive firm-level data sets as well as new sources of data on tax policy and tax administration for advanced economies, emerging market economies, and low-income developing countries.

Countries Are Not Using Their Resources Efficiently

What is resource misallocation? Simply put, it is the poor distribution of resources across firms, reducing the total output that can be obtained from existing capital and labor. In a well-functioning economy, businesses that are more productive than their competitors should win market share over time, expanding their production by hiring more labor and acquiring more capital. This implies that firm size and firm productivity should be strongly positively correlated.[7] However, the relationship between size and productivity weakens in the presence of distortions. Distortions can arise from government policies (such as poorly designed tax regimes and regulations, or weak tax enforcement) or ill functioning markets (such as an underdeveloped financial market) that favor some firms over others. Distortions allow less productive businesses to gain market share to the detriment of more productive ones. Distortions can also arise when government policies favor certain types of assets over others, potentially resulting in overinvestment in less productive, tax-favored assets and underinvestment in more productive, tax-disadvantaged assets. Essentially, in the presence of distortions, aggregate TFP suffers because efficient firms produce too little output and inefficient firms produce too much.

How can reducing resource misallocation raise TFP? Resource misallocation manifests itself as the dispersion in *revenue productivity* levels—the product of a firm's physical productivity and the firm's specific output price (see Annex 2.1)—across firms, even within narrowly defined industries that produce similar goods. When dispersion is wide, reallocating resources from firms with low revenue productivity to firms with high revenue productivity increases output, simply by using the same resources more efficiently. For example, consider an economy with two firms within the same industry that have identical technologies but face different tax treatment. Because of a weak tax administration, one firm avoids detection by the tax authority and does not pay taxes, therefore facing a lower user cost of capital. The other firm is tax compliant owing to greater scrutiny from the tax authority, therefore facing a higher user cost of capital. The difference in user cost implies that the subsidized firm can afford to undertake investments in lower-return projects, while the fully taxed firm can only undertake investments in higher-return projects. In this scenario, aggregate output would be higher if capital were to move from the subsidized firm to the fully taxed firm, allowing for more investment in higher-return projects.

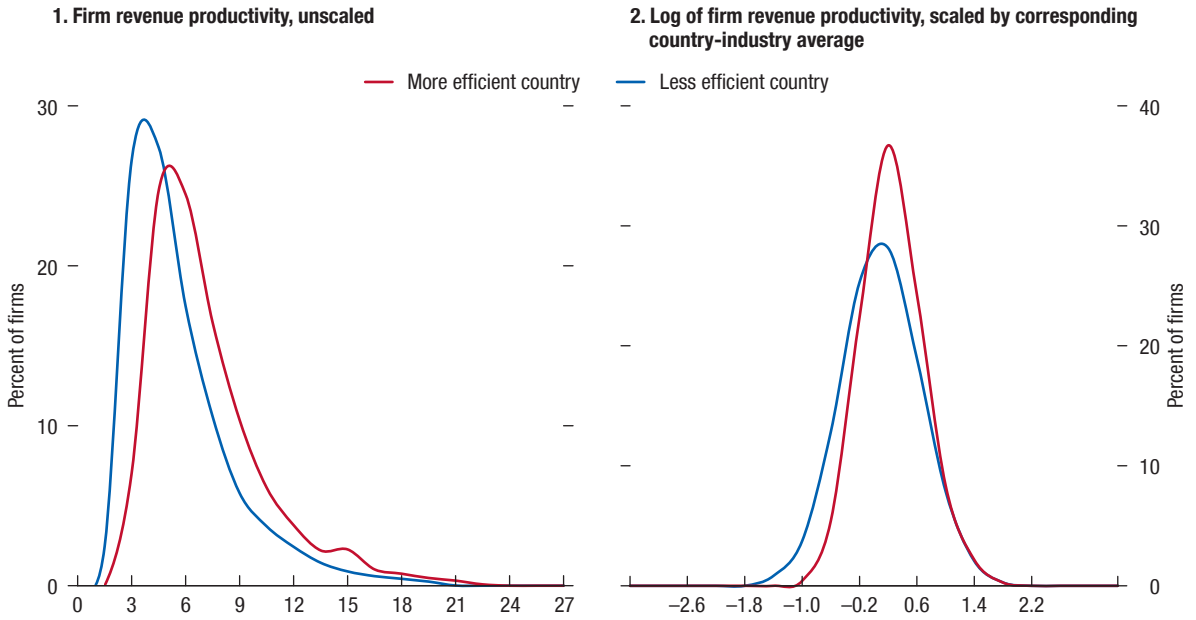
The chapter measures potential TFP gains from reducing resource misallocation by following the framework proposed by Hsieh and Klenow (2009) (see Annex 2.1 for an explanation of the methodology).[8] For the manufacturing sector, Hsieh and Klenow show that if dispersion of firm revenue productivities in China and India were reduced to the levels observed in the United States,

[7]Small firms can be highly productive, for example, if they are new and growing. However, absent other constraints, it is expected that productive firms will grow with age as they access new markets, invest in new technologies, and manufacture a wider variety of higher-quality products. See Hsieh and Klenow 2014; Atkeson and Kehoe 2005; and Foster, Haltiwanger, and Syverson 2013.

[8]The Hsieh and Klenow (2009) model has several important assumptions: (1) a monopolistic competition setting in which each producer makes a distinct variety of a good, with varieties aggregated via a constant elasticity of substitution aggregator, (2) a specific production technology for each industry that is identical across countries, and (3) the presence of firm-specific input and output distortions.

Figure 2.2 Distribution of Firm-Level Revenue Productivities

A higher dispersion in revenue productivities across firms reveals that a country's resources are not going to where they are most productive.



Sources: ORBIS; and IMF staff estimates.
Note: The figure shows the distribution for firms in the manufacturing sector for each type of country. More (less) efficient country is defined as a country at the 75th (25th) percentile of the distribution of resource allocation efficiency, based on the ORBIS sample.

TFP would increase by 30 to 50 percent in China and by 40 to 60 percent in India.[9] In this framework, distortions are derived from data on the dispersion in revenue productivities across firms within narrowly defined industries. Distortions affect *resource allocation efficiency*, an indicator of how well resources are being distributed across firms.[10] This measure of resource allocation efficiency can then be used to estimate the potential *TFP gains* from eliminating distortions (that is, by narrowing the dispersion in revenue productivities across firms).[11]

Resource allocation efficiency is constructed for each industry in each country from firm-level data. For advanced economies, firm-level data from ORBIS are used to estimate resource allocation efficiency in 73 manufacturing industries and 76 services industries (at the four-digit North American Industry Classification System [NAICS] industry level) in nine countries over the period 2006–13.[12] For emerging market economies and low-income developing countries, firm-level data from the World Bank Enterprise Surveys are used to estimate resource allocation efficiency in 18 manufacturing industries (at the two-digit International Standard Industrial Classification [ISIC] industry level) in 54 countries. (See Annex 2.2 for details on data and estimations.)

Panel 1 shows that a less efficient country has some firms with high revenue productivity, but many more firms with low revenue productivity, than a more effi-

[9]In addition to showing the relative TFP gains of China and India with respect to the United States, Hsieh and Klenow (2009) estimate that *fully equalizing* revenue productivities across firms would boost aggregate manufacturing TFP by 86 to 115 percent in China, 100 to 128 percent in India, and 30 to 43 percent in the United States. In this chapter, the potential TFP gains reported are relative to those of a top performer.

[10]Resource allocation efficiency is calculated as the industry's actual TFP (with distortions) divided by the industry's efficient TFP (without distortions). See Annex 2.1.

[11]TFP gains are calculated as the inverse of resource allocation efficiency. See Annex 2.1.

[12]Owing to data constraints, Germany, Japan, the United Kingdom, and the United States are not included in the sample. The chapter uses unconsolidated statements, but many U.S. and Japanese firms report only consolidated statements; therefore, too few observations are left after data cleaning to compute resource allocation efficiency measures. U.K. firms do not report materials use, which is needed to calculate TFP. After cleaning, firm data for Germany cover an insufficient share of gross output of the manufacturing sector to allow a meaningful analysis of misallocation. See Annex 2.2.

cient country. In panel 2, firm revenue productivities are scaled by the country-industry average. The figure reveals that dispersion of revenue productivities, within narrowly defined industries, is much tighter in the case of the more efficient country. This implies that the less efficient country would be able to reap substantial gains by moving resources from firms with lower revenue productivity (those on the left tail) to firms with higher revenue productivity (those on the right tail).

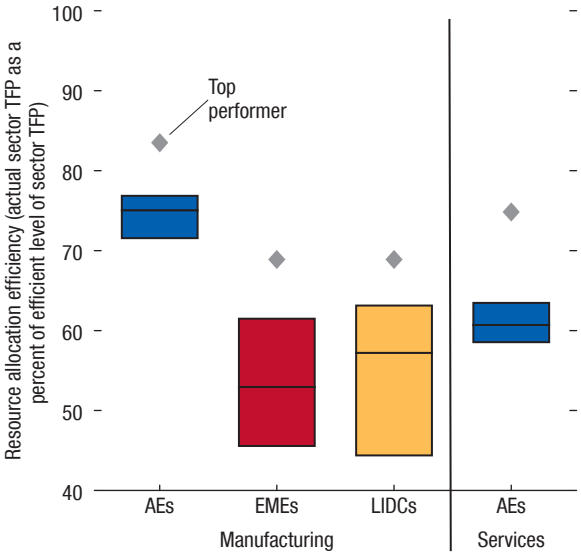
Figure 2.3 estimates resource allocation efficiency across country groups, aggregated at the sector level for manufacturing and services. In all cases, countries are well below 100 percent, indicating that there is ample room to increase efficiency, more so in the case of emerging markets and low-income developing countries.[13]

The potential TFP gains from removing distortions within sectors are substantial. Figure 2.4, panel 1, shows that all country groups could achieve quite substantial TFP gains by fully equalizing revenue productivity across firms. However, these numbers could overstate the potential efficiency gains because of measurement error and factors omitted from the model (for example adjustment costs and price markup variation). Therefore, to control for these factors that may bias the estimates, panel 2 measures the TFP gains that countries could achieve from moving to the efficiency level of a top performer within each sample (that is a country at the 90th percentile of the distribution of resource allocation efficiency). For manufacturing, TFP gains for advanced economies are estimated at 16 percent at the median. For emerging market economies, median TFP gains are estimated at 30 percent, but rise to 52 percent at the 75th percentile of the distribution. For low-income developing countries, median TFP gains amount to 20 percent, but rise to 58 percent at the 75th percentile of the distribution.[14] The potential TFP gains from eliminating distortions in the services sector are estimated to be somewhat larger: 23 percent at the median for advanced economies.[15]

Removing distortions offers potentially significant transitional real GDP growth effects. Assuming a transition path of 20 years, reducing resource misallocation (by moving to the efficiency level experienced by a top performer, as in Figure 2.4, panel 2) translates into a

Figure 2.3. Resource Allocation Efficiency
(Median and interquartile range across country groups)

There is ample room for countries to improve their allocation of resources.



Sources: ORBIS; World Bank, Enterprise Surveys (WBES); and IMF staff estimates.
Note: The middle line in each bar is the median. The interquartile range refers to the 25th to 75th percentile of the distribution. For emerging market economies (EMEs) and low-income developing countries (LIDCs), estimates use WBES data. The WBES also include a few advanced economies (AEs) in the sample. ORBIS data are used for AEs. Estimates of resource allocation efficiency follow Hsieh and Klenow (2009) (see Annexes 2.1 and 2.2). A top performer is defined as a country at the 90th percentile of the sample distribution of resource allocation efficiency, which is estimated separately for the WBES and ORBIS samples. In the case of the manufacturing sector, the top performer corresponds to Sweden in both the WBES and ORBIS samples. In the case of services, the top performer corresponds to Slovenia. The figure uses 2013 data in the case of AEs and the latest available data in the case of EMEs and LIDCs. TFP = total factor productivity.

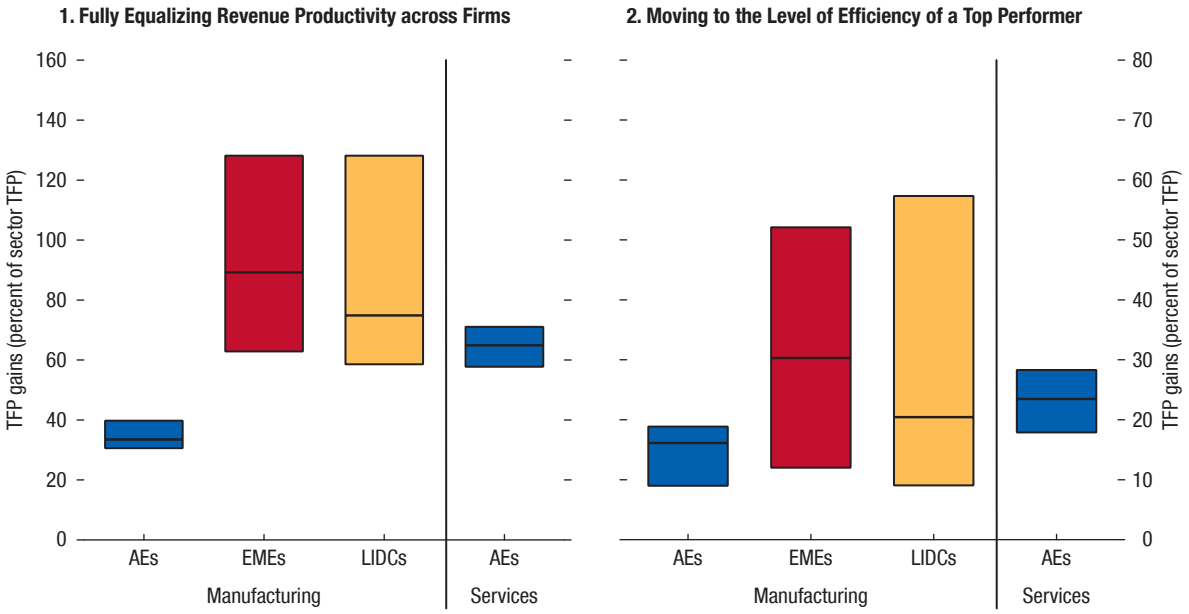
[13]Although the results suggest that emerging market economies have worse resource allocation efficiency than low-income developing countries, this point is under debate in the literature. For example, recent work by Cirera, Fattal Jaef, and Maemir (2017) uses rich census data for four low-income developing countries in sub-Saharan Africa to compute resource misallocation using the Hsieh and Klenow (2009) methodology and finds that the magnitude of misallocation is much larger than that computed using World Bank Enterprise Surveys data.

[14]These results are broadly in line with (and in some cases lower than) other findings in the literature on individual countries (Hsieh and Klenow 2009; Busso, Madrigal, and Pagés-Serra 2012; Crespo and Segura-Cayuela 2014; and Cirera, Fattal Jaef, and Maemir 2017).

[15]Though few studies exist that contrast the services sector with manufacturing, all have found higher resource misallocation in services than in manufacturing (Garcia-Santana and others 2016; Beņkovskis 2015; Dias, Robalo Marques, and Richmond 2016). Studies attribute higher misallocation in services to more sensitivity to regulations and tax structures (Arias-Ortiz and others 2014), higher price rigidities that result in greater adjustment costs when faced with a shock, and the larger presence of informal firms that benefit from implicit subsidies (Dias, Robalo Marques, and Richmond 2016).

Figure 2.4. Gains in Total Factor Productivity from Narrowing Dispersion of Firm Revenue Productivities within Industries
(Median and interquartile range across country groups)

Countries can reap substantial total factor productivity (TFP) gains by removing distortions.



Sources: ORBIS; World Bank, Enterprise Surveys (WBES); and IMF staff estimates.
Note: The middle line in each bar is the median. The interquartile range refers to the 25th to 75th percentile of the distribution. For emerging market economies (EMEs) and low-income developing countries (LIDCs), estimates use WBES data. The WBES also include a few advanced economies (AEs) in the sample. ORBIS data are used for AEs. Estimates of resource allocation efficiency follow Hsieh and Klenow (2009) (see Annexes 2.1 and 2.2). A top performer is defined as a country at the 90th percentile of the sample distribution of resource allocation efficiency, which is estimated separately for the WBES and ORBIS samples. In the case of the manufacturing sector, the top performer corresponds to Sweden in both the WBES and ORBIS samples. In the case of services, the top performer corresponds to Slovenia. The figure uses 2013 data in the case of AEs and the latest available data in the case of EMEs and LIDCs.

higher annual real GDP growth rate of 0.7 percent for advanced economies, 1.3 percent for emerging market economies, and 0.9 percent for low-income developing countries (Figure 2.5).[16]

Upgrading the Tax System Helps Chip Away at Resource Misallocation

What policies and market failures are behind these high levels of resource misallocation? There are many culprits. Restuccia and Rogerson (2013, 2016) survey the literature and point to (1) legislated provisions that vary by firm characteristics (for example tax incentives that depend on size or location, tariffs applied to particular goods, employment protection measures, and product market regulations that limit market access); (2) discretionary provisions made by the government that favor specific firms (for example, subsidies, selective tax enforcement, and preferential loans granted to specific firms because of corruption); and (3) market imperfections (for example, monopoly power and incomplete financial markets).

This chapter makes the case that both tax policy and tax administration are among the important factors that policymakers need to bear in mind when tackling the productivity challenge. This adds to the extensive existing literature on the effect of the level and composition of taxes on productivity and growth.[17] The

[16]These estimates are for the median country in each country group. Calculations are made under the assumption that the estimated TFP gains in the manufacturing sector could be similarly achieved across other sectors (which is reasonable, as there is broad consensus that resource misallocation is worse in services and agriculture) and that there are no adjustment costs. Also, these estimates are limited to the first-round effects because they do not consider that higher TFP will also result in greater aggregate investment, which would feed back into higher productivity.

[17]See, for example, IMF 2015b and Arnold and others 2011.

chapter examines a selection of tax policies to explore the channels through which they generate misallocation. The selection of policies is not exhaustive. Rather, it aims at giving concrete examples of how the specific design of tax policies can result in differentiated tax treatments across firms. This includes taxes that discriminate across capital asset types (leading to differentiated treatment of firms because of variation in their propensity to use the various asset types) or across firm characteristics such as their sources of financing (debt or equity), their degree of informality, or their size.[18]

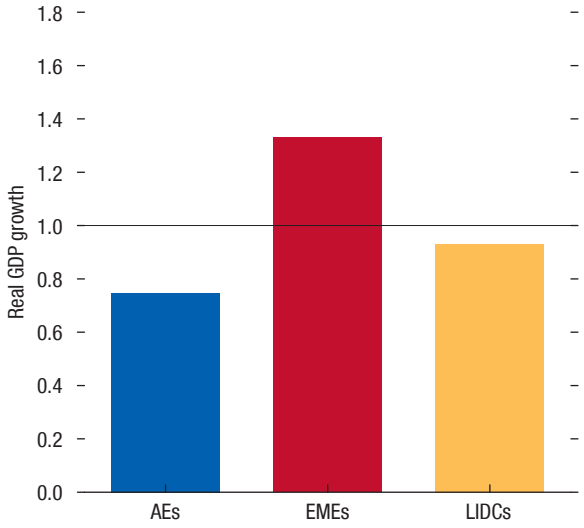
The analysis in the chapter relies on the fact that, even when subject to the same tax rules, heterogeneous firms within the same industry will face firm-specific tax rates if there are differences in taxation by asset type, source of financing, or firm characteristics. The effective marginal tax rate (EMTR) on capital income measures an investor's tax burden on the returns from an investment (see Box 2.1 and Annex 2.4 on EMTR definition and estimation). If EMTRs are the same across assets, financing, and firm characteristics, then all firms in a given industry face the same tax rate. However, when EMTRs are different, tax rates will vary considerably across firms even within narrowly defined industries as a result of firm-level differences in their asset composition, sources of financing, ownership structure, and profitability (whether the firm has incurred losses) (see Annex 2.1 for further discussion). For example, companies vary widely in how they combine machinery and buildings to produce the final output, even if total capital is the same.

This chapter tests whether resource allocation efficiency is lower in countries with higher tax distortions that result from differences in EMTRs across asset types, sources of financing, and firm characteristics. Firm-specific EMTRs are not readily available across a wide set of countries. Therefore, to test the hypothesis that tax distortions affect resource allocation efficiency, the analysis exploits the fact that firms in certain industries are more exposed to specific tax distortions that disfavor more productive firms and, therefore those industries would see greater resource misallocation (see Annex 2.1 for the model derivation). For example, a higher tax disparity favoring buildings over machinery—measured as the EMTR on machinery minus the EMTR on buildings—would disproportionately affect firms in industries that are more intensive in machinery (such as paper products) than firms in industries that are more intensive in buildings (such as food products). In this example, resource allocation efficiency in the paper industry would be lower in countries with a high tax disparity than in countries with a low tax disparity. The empirical strategy relies on a difference-in-differences approach as proposed by Rajan and Zingales (1998).[19]

[18]Annex 2.3 illustrates the way that taxes can affect the overall level of total factor productivity, using as an example a tax wedge that is positively correlated with productivity.

Figure 2.5. Estimated Annual Real GDP Growth Effects from Reducing Resource Misallocation

Potential total factor productivity (TFP) gains from reducing resource misallocation could lift the annual real GDP growth rate by roughly 1 percentage point, assuming a transition path of 20 years.

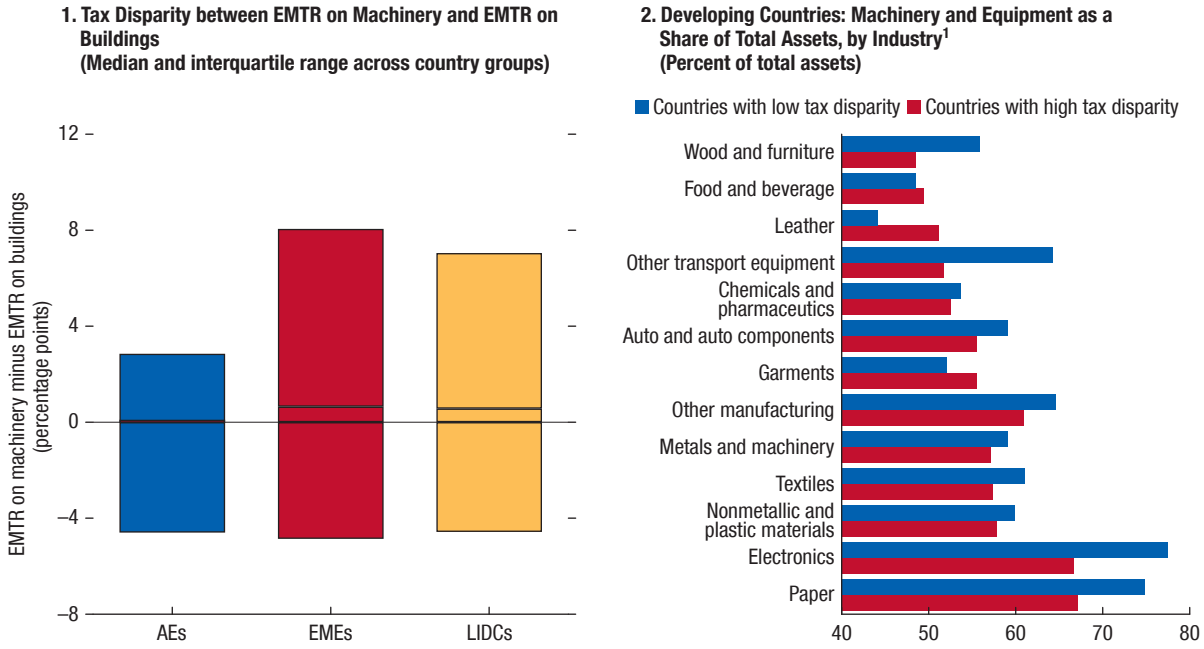


Sources: ORBIS; World Bank, Enterprise Surveys; and IMF staff estimates.
Note: The figure shows medians across country groups. Estimates are computed based on the assumption that the other sectors could achieve TFP gains similar to those estimated for the manufacturing sector and that there are no adjustment costs. AEs = advanced economies; EMEs = emerging market economies; LIDCs = low-income developing countries.

[19]The difference-in-differences approach is based on the assumption that certain industries and firms have an intrinsically high exposure to a given tax policy. Industry and firm exposure to particular tax policies is assumed not to vary across countries. For example, machinery-intensive industries are expected to be more affected by a higher tax disparity that weighs against machinery, while industries with a higher share of small firms are expected to be more affected by preferential tax treatment of small firms. The interaction between this exposure and the relevant tax distortion is then introduced in the empirical model as the main variable of interest to explain resource allocation efficiency at the industry level. A significant coefficient on the interaction term provides evidence that the tax channel identified is indeed valid. Because of data constraints, the specifications used to analyze

Figure 2.6. Tax Disparity and Investment in Machinery

A higher tax for machinery than for buildings affects firms' investment decisions.



Sources: Oxford University Center for Business Taxation; World Bank, Enterprise Surveys; and IMF staff estimates.
Note: The middle line in each bar is the median, and the interquartile range refers to the 25th to 75th percentile of the distribution. Data correspond to 2015. AEs = advanced economies; EMEs = emerging market economies; LIDCs = low-income developing countries.
[1]Tax disparity is the effective marginal tax rate (EMTR) on machinery minus the EMTR on buildings. Countries with high (low) EMTR disparity are those with EMTR differences above (below) the median across countries. Total assets are measured as the sum of machinery and buildings.

Reducing Distortions across Capital Asset Types

Disparities in EMTRs across capital asset types can increase resource misallocation when they steer investors toward lower return, tax-favored, investments. EMTRs vary across asset types because of differences between tax depreciation and economic depreciation.[20]

A wider disparity in EMTRs across asset types can result in over- or underinvestment in particular types of capital assets.[21] Figure 2.6, panel 1, shows that tax disparity—here measured as the EMTR on machinery minus the EMTR on buildings—is above zero in half the countries in the sample, regardless of country group, and is sizable for some emerging market economies and low-income developing countries. Panel 2 illustrates, for developing countries, that those with high tax disparity (meaning higher tax for machinery than for buildings) tend to have a lower share of machinery compared to countries with lower tax disparity. This suggests that taxes are affecting firms' investment decisions.

Empirical evidence shows that greater tax disparity across capital asset types is associated with higher misal-

the role of tax administration have as a dependent variable firm-level productivity rather than resource allocation efficiency at the industry level. In all the specifications, country and industry fixed effects are included. Depending on the data set used, time fixed effects, firm fixed effects, and other controls are added. It is worth noting that the difference-in-differences approach captures only the differential effect of a tax working through the interaction term. It does not capture the direct effect of taxation, which is captured by the fixed effects. This approach was also followed by Andrews and Cingano (2014), Gamberoni, Giordano, and Lopez-Garcia (2016), and Lashitew (2016) to analyze the effect of financial, product, and labor market regulations on resource misallocation.

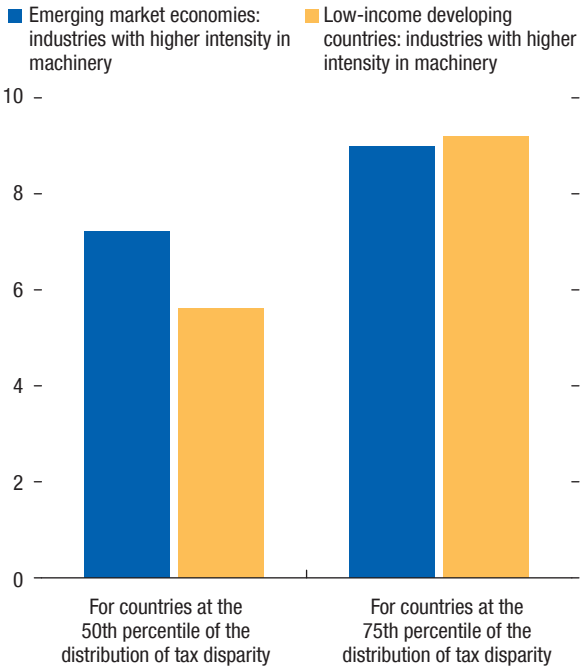
[20]While countries may try to match tax depreciation to economic depreciation, in the interest of simplicity they tend to offer only a limited choice of tax depreciation schemes. Also, some countries allow accelerated depreciation to encourage certain investments.

[21]The case of Mozambique illustrates how the dispersion in EMTRs can be further compounded in the presence of additional tax incentives (see Box 2.3).

location. The analysis looks at the effect of a higher tax disparity between machinery and buildings on resource allocation efficiency (as estimated earlier in the chapter) in manufacturing industries across 54 emerging market economies and low-income developing countries. It finds that machinery-intensive industries—which are more exposed to the tax disparity—have lower resource allocation efficiency in countries where the tax disparity is higher (Annex 2.5). The results suggest that by fully eliminating the tax disparity (that is, an EMTR on machinery equal to the EMTR on buildings), emerging market economies would raise the resource allocation efficiency of those highly exposed industries by 7¼ percentage points, and low-income developing countries would raise it by 5½ percentage points (Figure 2.7). For advanced economies, studies using a more detailed breakdown of asset types find that tax disparities affect investment choices, which corroborates the results for emerging market economies and low-income developing countries. For the United States, Liu (2011) shows that, compared with a uniform tax scheme, differences in EMTRs by asset type cause underinvestment in computing and electronic equipment by about 25 percent and overinvestment in machinery and transportation equipment by about 18 percent. Similarly, for 11 advanced economies, Fatica (2013) finds that differential taxation leads on average to underinvestment in capital related to information and communications technology and overinvestment in other machinery and equipment.

Figure 2.7. Developing Countries: Improvements in Resource Allocation Efficiency from Reducing Tax Disparity to Benchmark
(Percent of industry TFP)

Eliminating the tax disparity between machinery and buildings would significantly raise resource allocation efficiency in machinery-intensive industries.



Source: IMF staff estimates.
Note: Tax disparity is measured as the difference in the effective marginal tax rate (EMTR) on machinery minus the EMTR on buildings. The benchmark is set as the country at the 10th percentile of the distribution for tax disparity.

Reducing Distortions across Sources of Financing

Corporate debt bias can result in resource misallocation when it affects investment decisions that depend more on equity, as is the case with investment in research and development (R&D). Corporate debt bias occurs when firms are allowed to deduct interest expenses, but not returns to equity, in calculating corporate tax liability.[22] This raises the cost of equity financing compared with debt financing. Innovative firms—especially start-ups—tend to rely on equity rather than debt for R&D investments (which have risky, long-horizon payoffs) because there are no collateral requirements and investors share in upside returns (Stiglitz 1985; Hall 2002; Brown, Fazzari, and Petersen 2009).[23] Therefore, not only does debt bias distort the financing choice, but it can also create resource misallocation by imposing a higher marginal tax on R&D investment compared with other capital spending.[24]

Empirical results for nine advanced economies show that corporate debt bias has a significant impact on resource misallocation (Annex 2.5). Debt bias is measured as the EMTR on equity minus the EMTR on debt. While corporate debt bias remains high

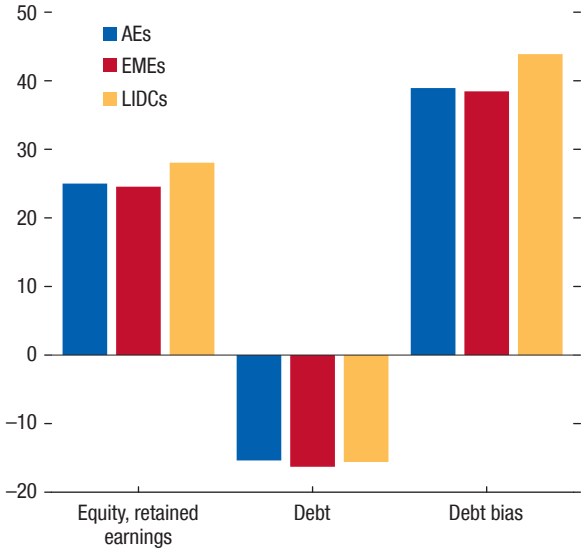
[22]The rationale for allowing deduction for interest expenses is that they are seen as a cost of doing business while equity payments are seen as business income. In economic terms, however, both are a return on capital and there is no a priori reason to tax them differently (De Mooij 2012).

[23]The negative relationship between R&D investment and debt financing is well documented (Aghion and others 2004; Carpenter and Petersen 2002).

[24]Debt bias also poses a stability risk by contributing to excessive private sector leverage (IMF 2016b).

Figure 2.8. Effective Marginal Tax Rates by Source of Financing
(Percent)

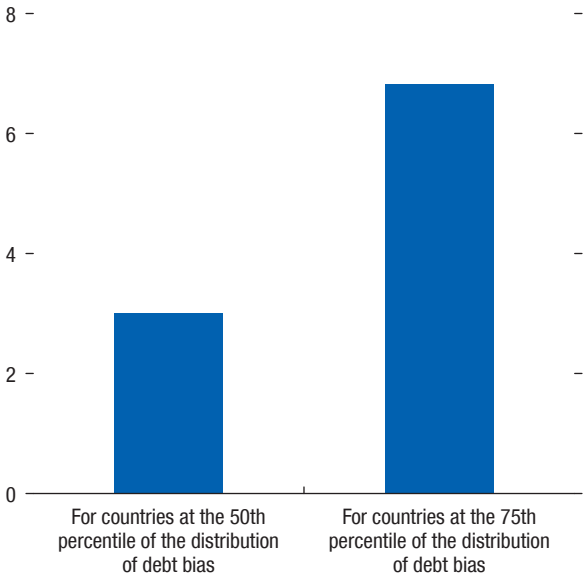
Corporate debt bias remains high across countries.



Sources: Oxford University Center for Business Taxation; and IMF staff estimates.
Note: The figure shows the median across country groups for 2015. Debt bias is measured as the effective marginal tax rate (EMTR) on equity minus the EMTR on debt. Note that in the case of debt-financed investment, the combination of interest deductions and accelerated depreciation can exceed taxes paid on the associated income, resulting in negative EMTRs. EMTR calculations do not take into account personal taxes on capital income. AEs = advanced economies; EMEs = emerging market economies; LIDCs = low-income developing countries.

Figure 2.9. Advanced Economies: Improvements in Resource Allocation Efficiency in R&D-Intensive Industries from Reducing Debt Bias to Benchmark
(Percent of industry total factor productivity)

Reducing debt bias could significantly raise resource allocation efficiency in more research and development (R&D)–intensive industries.



Source: IMF staff estimates.
Note: Debt bias is measured as the effective marginal tax rate (EMTR) on equity-financed investment minus the EMTR on debt-financed investment. The benchmark is set as the country at the 10th percentile of the distribution for debt bias.

across country groups (Figure 2.8), it is more relevant for advanced economies, where access to financing (both debt and equity) is less constrained than in developing countries. The empirical results show that R&D-intensive industries, which are more exposed to debt bias, have lower resource allocation efficiency in countries where debt bias is higher. If the median advanced economy were to reduce its debt bias to the level observed in the 10th percentile of the sample distribution, it could raise the resource allocation efficiency of more R&D intensive industries by 3 percentage points (Figure 2.9).[25] The effects on overall productivity from reducing debt bias would go well beyond these estimates, as higher R&D would also help expand the technology frontier.

[25]This is in line with other findings that link taxation by financing type and R&D investment (Brown and Martinsson 2016).

Several options are available to eliminate the distortions arising from corporate debt bias and from tax disparities across capital asset types, including the allowance for corporate equity system and a cash flow tax.

- *Allowance for corporate equity system.* In an ACE system, investments that earn a "normal" return are exempt from taxation through a deduction for an imputed return on equity. By allowing a deduction for both interest and the normal rate of return on equity, the ACE charges no tax on projects with a return that matches the cost of capital. As such, it is a tax on economic rents (the firm's revenue in excess of the opportunity costs of all its inputs, including financing costs). As a result, an ACE tax system does not distort the choice between debt and equity as sources of finance. The ACE system also removes distortions induced by differences between economic depreciation and tax depreciation. In particular,

accelerated tax depreciation reduces the book value of assets, thereby reducing the ACE in later years, exactly offsetting the benefits from earlier depreciation in present-value terms. ACE systems have been effectively applied in a number of countries, including Belgium, Cyprus, Italy, and Turkey. They require careful design to mitigate potential revenue loss due to a narrowing of the corporate tax base (IMF 2016b).

- *Cash flow tax (CFT).* In the simplest sense, a CFT is a tax levied on the money entering the business less the money leaving the business.[26] A CFT entails immediate expensing of all investment expenditures (that is, 100 percent first-year depreciation allowances) and no deductibility of either interest payments or dividends. Therefore, if it is well designed and implemented, a CFT does not affect the decision to invest or the scale of investment, and it does not discriminate across sources of financing. So far, no country has adopted a comprehensive business cash flow tax, which likely reflects in part the complexities inherent in the transition.[27] The United States is currently considering a destination-based form of a cash flow tax (see Box 1.1), which raises a variety of distinct issues, including the possibility of adverse cross-country spillovers if it were to be implemented by only a subset of countries (Auerbach, Devereux, and Simpson 2010; Auerbach and others 2017).

Reducing Distortions across Formal and Informal Firms

Informality is a problem not only for revenue collection, but also for productivity.[28] Recognizing that there are many reasons why a firm or individual might not pay taxes (Kanbur and Keen 2014), this chapter treats as informal firms all those that fail to pay the full amount of tax due. Noncompliance with taxes reduces productivity by interfering with the process of creative destruction through firm entry and exit. Through tax evasion and circumvention of regulations, informal firms enjoy a relative cost advantage over their tax-compliant competitors. This amounts to a potentially large subsidy that allows informal firms to stay in business despite low productivity, increasing their weight in the economy at the expense of more productive firms (Fajnzylber 2007; Levy 2008; Pagés 2010; Busso, Fazio, and Levy 2012). As a result, informal businesses gain market share even if they are less productive, reducing the market share of more productive, tax compliant businesses.

A view across several measures of informality shows that informal firms are typically less productive than formal firms. Figure 2.10 illustrates this difference in productivity, no matter which of four different indicators is used to proxy informality: self-employment, noncontributors to a retirement pension scheme, the share of unregistered firms, or the prevalence of "cheats." Cheats—borrowing the nomenclature of Kanbur and Keen (2015)— are firms that are registered with the tax authority but underreport their sales for tax purposes.[29] Empirical analysis using firm-level data for manufacturing in emerging market economies and low-income developing countries confirms that cheats are indeed less productive than tax compliant firms (Annex 2.6). The results suggest that cheats that report only 30 percent of their sales (firms at the 25th percentile of the distribution of cheats) have a 4 percent lower TFP than tax-compliant firms in both emerging market economies and low-income developing countries.[30] This finding is in line with those of other studies that use alternative measures of productivity

[26]CFTs occur in several forms, commonly divided into three main classes: CFT on real business activity, CFT on real and financial transactions, and CFT on distribution of dividends (European Commission 2015).

[27]CFTs have been more common in special fiscal regimes for the extractive industries (IMF 2012) and for small and medium-sized enterprises (European Commission 2015).

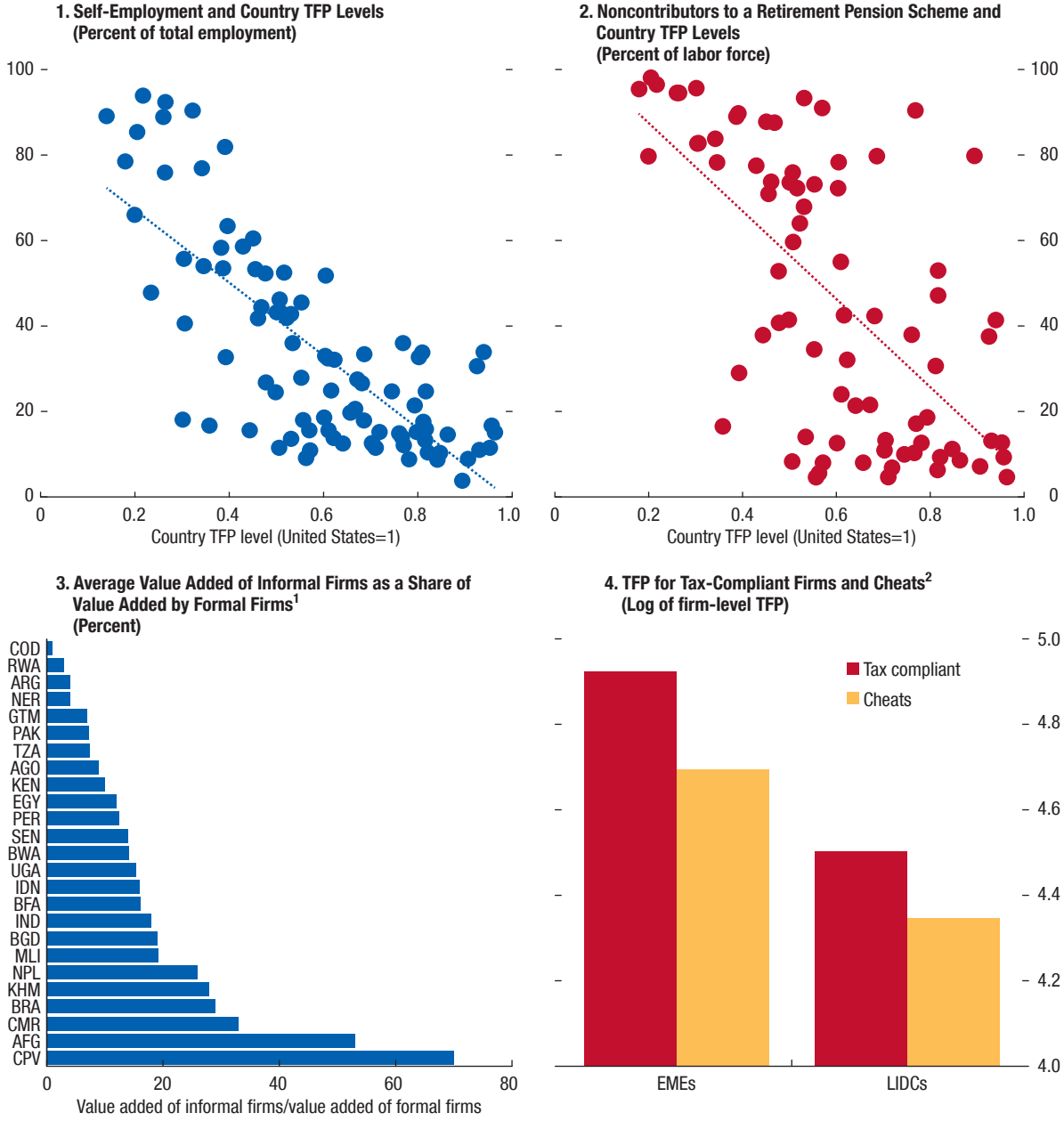
[28]This chapter focuses on the detrimental effect of informality on productivity, although it is important to note that informal firms can contribute to economic activity and employment, especially in developing countries (Dessy and Pallage 2003).

[29]Cheats are defined here as registered firms associated with reporting less than 100 percent of their sales for tax purposes, using firm responses to the question: "What percentage of total annual sales would you estimate the typical firm in your area of business reports for tax purposes?" from the World Bank Enterprise Surveys. Although firms may be reluctant to reveal the extent of their underreporting, survey respondents will presumably tend to answer questions based on their own experiences. Therefore, responses to this question are interpreted as indicating firms' behavior. This proxy for informality has previously been used by La Porta and Shleifer (2008, 2014), Dabla-Norris and Inchauste (2008), and Fajnzylber (2007). The proxy is found to be correlated with a number of other measures of informality, such as self-employment and the fraction of the labor force that does not contribute to a retirement pension scheme. The empirical analysis assumes that survey respondents answer other questions in the survey accurately.

[30]Similar results were found when using alternative country-level measures of informality (see Annex 2.6).

Figure 2.10. Developing Countries: Productivity of Informal Firms

Informal firms are typically less productive than formal firms; therefore, the higher the prevalence of informal firms in an economy, the lower will be the country's productivity.



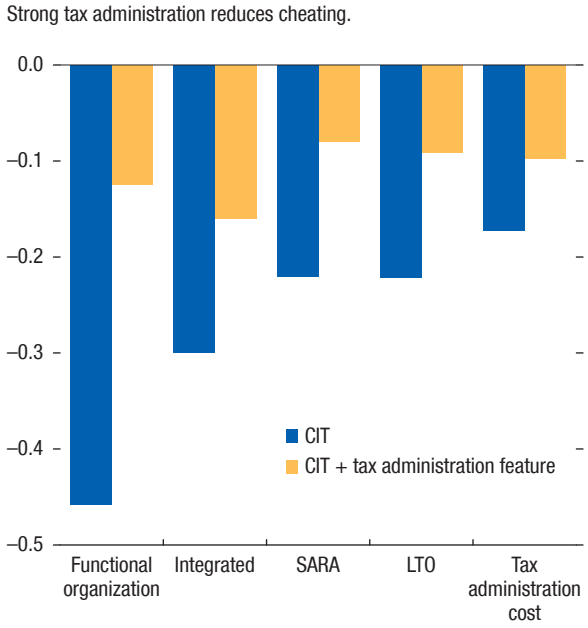
Sources: Feenstra, Inklaar, and Timmer 2015; La Porta and Shleifer 2014; World Bank, Enterprise Surveys; World Bank, Human Development Network Social Protection pensions database; World Bank, World Development Indicators; and IMF staff estimates.
Note: EMEs = emerging market economies; LIDCs = low-income developing countries. Country labels in panel 3 use International Organization for Standardization (ISO) abbreviations; see "Country Abbreviations" in the Methodological and Statistical Appendix for definitions.
[1]Informality in this panel is defined as a firm's being unregistered, from La Porta and Shleifer 2014.
[2]The figure shows the median across groups. Cheats are defined as firms that declare less than 100 percent of their sales for tax purposes. Total factor productivity (TFP) is calculated at the firm level, using the Levinsohn and Petrin (2003) method.

and informality (La Porta and Shleifer 2014; Loayza 2016).

Several studies have shown that tax policy and tax administration affect the prevalence of informality and thus productivity. Colombia provides an interesting case study on the effect of taxation on informality. A 2012 tax reform that reduced payroll taxes was found to incentivize a shift of Colombian workers out of informal into formal employment (Box 2.2). Leal Ordóñez (2014) finds that taxes and regulations play an important role in explaining informality in Mexico. For Brazil, Fajnzylber, Maloney, and Montes-Rojas (2011) show that tax reductions and simplification led to a significant increase in formal firms with higher levels of revenue and profits.[31]

While a higher tax burden contributes to the prevalence of informality, new empirical evidence finds that a strong tax administration can mitigate this effect, thereby supporting higher aggregate productivity. For 130 developing countries, a higher corporate tax rate is found to increase the prevalence of cheats among small manufacturing firms, lowering the share of sales reported for tax purposes. However, the results also show that an effective and efficient revenue administration diminishes this effect (see Annex 2.6).[32] Figure 2.11 shows that the negative effect of the corporate income tax rate on sales reported for tax purposes by small manufacturing firms is considerably lower when tax administrations are stronger.[33] These findings suggest that, as tax administration improves and the prevalence of cheats declines, less productive firms will exit the market, allowing more productive, tax-compliant firms to gain market share and absorb more labor and capital.

Figure 2.11. Developing Countries: Effect of Corporate Income Tax and Tax Administration Features on the Share of Sales Reported for Tax Purposes by Small Firms
(Percent)



Source: IMF staff estimates.
Note: The figure shows the effect for every percentage point of corporate income tax (CIT). The tax administration cost is expressed as a percentage of total revenue. The median tax administration cost across the sample is 1 percent of revenue. Integrated = integrated tax and customs agencies; LTO = large taxpayer office; SARA = semiautonomous revenue agency.

A number of measures can be adopted to strengthen tax administrations and therefore contribute to reducing the unfair cost advantage enjoyed by informal, less productive firms. The first step is to ensure that taxpayers are registered, that they are knowledgeable regarding their tax obligations, and that reporting is accurate. Taxpayer segmentation, primarily by size, can help tailor the provision of taxpayer services and enforcement actions—large, medium-sized, small, and micro taxpayers offer very different revenue possibilities and compliance risks. Audit plays a key role in promoting accurate reporting, including by encouraging higher declarations from firms that are not audited. However, audit is most effective when it is risk based (Khwaja, Awasthi, and Loeprick 2011) and when auditors are well trained. Integrating the tax and customs agencies strengthens enforcement capacity when the agencies work together to identify risks

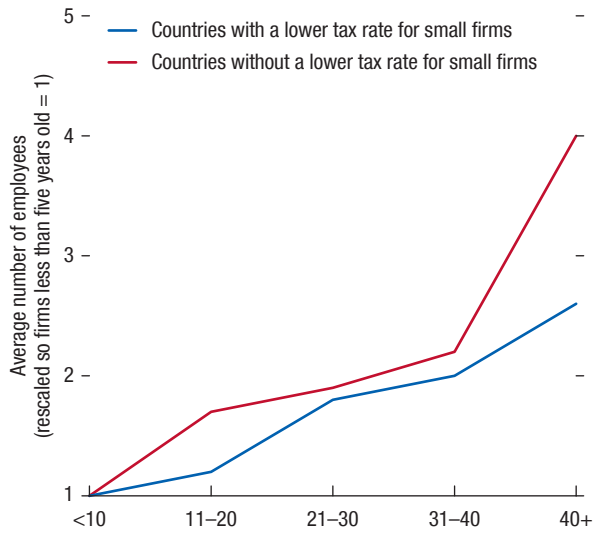
[31]A number of other studies have also found a significant link between the tax system and informality (Johnson, Kaufmann, and Zoido-Lobatón 1998; Loayza 1996; Schneider and Enste 2000; Savić and others 2015).

[32]Proxies used for tax administration in the regression analysis are imperfect (see Annex 2.6). A more comprehensive measure of tax enforcement capacity is the tax gap for the major taxes. The tax gap is the difference between potential and actual tax collections. However, the tax gap measure is currently available only for a limited set of countries and mainly for value-added taxes. The IMF Fiscal Affairs Department's Revenue Administration Gap Analysis Program (RA-GAP) aims to help countries identify and address tax gaps. The program has initially focused on value-added tax gap estimation and is being extended to other taxes. RA-GAP reports for 22 countries have been completed so far.

[33]Similar results are found when the fraction of the labor force that does not contribute to a retirement pension scheme is used as the proxy for informality. See Annex 2.6.

Figure 2.12. Developing Countries: Employment by Firm Age

Firms tend to grow less as they age in countries that offer lower tax rates for small firms than in those that do not.



Sources: KPMG; World Bank, Enterprise Surveys; and IMF staff estimates.
Note: Lines represent the median for each group.

and develop response strategies (IMF 2011). While a semiautonomous revenue agency can be helpful in improving tax enforcement, international experience has so far been mixed (Crandall 2010). The IMF (2015a) discusses these and other options to improve tax compliance in detail.

Reducing Distortions across Small and Large Firms

Preferential tax treatment based on size affects productivity by stunting firm growth. Some governments support small businesses to encourage employment and entrepreneurship, with the justification that small firms are harmed by specific constraints, such as lack of access to credit or disproportionate tax compliance costs. A number of countries therefore offer tax incentives in the form of a lower corporate income tax rate for firms below a certain size—measured by level of profits, turnover, or number of employees (OECD 2015). However, tax differences across firm size can result in misallocation if more productive firms choose to stay small to remain below the eligibility threshold, preventing them from taking advantage of economies of scale and scope (Pagés 2010; Bobbio 2016). This "small business trap" affects aggregate productivity because a larger share of output ends up being produced by smaller, less efficient firms. To illustrate that preferential tax regimes can create a disincentive for small firms to grow, Figure 2.12 shows that older firms are much smaller in countries with lower tax rates for small firms than in countries without a preferential regime. Mozambique exemplifies the "bunching" effect that preferential regimes can create: a very high density of firms with income just below the level at which the size-based tax preference is removed (Box 2.3; Figure 2.3.1).[34]

Empirical analysis for 54 emerging market economies and low-income developing countries finds that preferential tax treatment for small firms is associated with lower productivity (Figure 2.13). Among industries with a high share of small firms, resource allocation efficiency is found to be lower by 1½ percentage points in those countries that provide lower tax rates for small firms (see Annex 2.5). In a similar vein, Benedek and others (forthcoming) find that, among a selection of European countries, firms that receive more size-related tax incentives experience lower TFP growth. These authors' results suggest that the potential TFP gains for small and medium-sized enterprises from eliminating size-related tax incentives range between 0.8 percent and 2.9 percent when weighted by firm employment.

If aimed at compensating for specific constraints, preferential tax treatment should be targeted to new firms rather than small firms.[35] Once a firm is well established, presumably some of these constraints would lessen. Such an approach would provide support to young firms as they start, while setting the right incentives for them to grow and become more productive. Providing support to new firms would nonetheless require rules that limit potential abuse—such as new legal entities created just to renew the tax preference on a continuing activity—and strong enforcement.

Alleviating tax compliance costs can also encourage higher productivity among small firms. These costs represent the burden imposed on firms to comply

[34]This pattern partly reflects underreporting of income, but it may also reflect changes in real activity, such as reducing investment or inefficiently fragmenting the business. Examples of other countries showing evidence of bunching include Armenia (Asatryan and Peichl 2016) and Costa Rica (Brockmeyer and Hernandez 2016).

[35]The April 2016 *Fiscal Monitor* also emphasizes these types of policies to promote greater innovation.

with the tax code over and above the direct financial tax liability; for example, the opportunity cost of the time that employees spend dealing with tax issues or the cost of professional tax advice. Compliance costs include substantial fixed components (for example, filing a value-added tax return costs the same regardless of the net amount remitted) and so are a disproportionate burden on small businesses (Slemrod and Venkatesh 2002; Coolidge 2012; IMF 2015a). Dabla-Norris and others (forthcoming) provide evidence that small and young firms perform better in countries with lower tax compliance costs, using data from 21 emerging markets and developing countries over 2013–15. They compile a novel Tax Administration Quality Index (TAQI) drawing on the Tax Administration Diagnostic Assessment Tool (TADAT).[36] The index captures efforts by tax administrations to improve the quality and flow of information to taxpayers, simplify the structure of tax systems, and streamline reporting requirements and procedures that have a bearing on tax compliance costs for firms (see Annex 2.7 for details). Their results show that countries with a high TAQI score (that is, lower tax compliance costs) see higher labor productivity among small firms (Figure 2.14, panel 1) and young firms (Figure 2.14, panel 2). They also obtain similar results for a wider set of countries and years, using electronic filing available from the Revenue Administration Fiscal Information Tool (RA-FIT) as a proxy of tax compliance costs.[37]

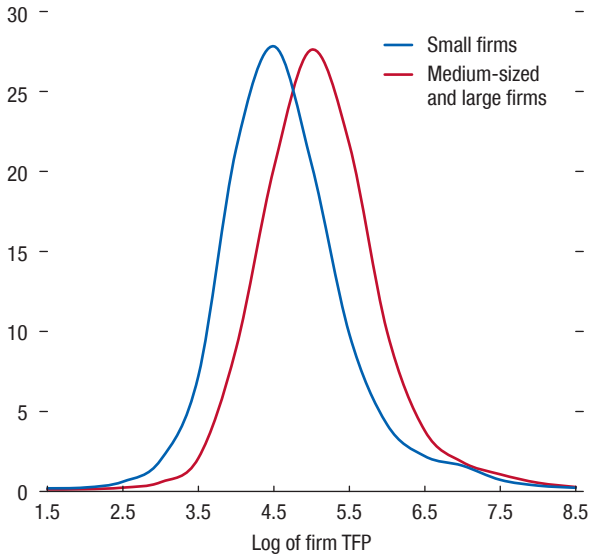
Limitations and Extensions

The Hsieh and Klenow (2009) framework has some well-known caveats. It quantifies misallocation only within sectors, not across sectors. However, reducing misallocation across broad economic sectors can also raise aggregate productivity. For example, Dabla-Norris and others (2015) show that TFP gains from improving factor allocation across sectors average about 9 percent for selected advanced economies. Another limitation of the approach is that it may overestimate the gains from reallocation because of measurement error or model misspecification. Hsieh and Klenow argue that estimating misallocation relative to a top performer, as this chapter does, can mitigate this limitation. And finally, the framework is static, as it does not capture possible shifts in the distribution of firm productivities and available productive resources over time, including those resulting from entry and exit of firms. A growing body of recent research (Bento and Restuccia 2016; Haltiwanger 2016; Decker and others 2016) explores the dynamic implications of misallocation, which is not considered in the chapter owing to data constraints.

It is important to note that the estimates of TFP gains from reducing resource misallocation do not take into account adjustment costs. Improving the

Figure 2.13. Firm-Level Total Factor Productivity by Size
(Percent of firms)

Small firms are typically less productive than medium-sized and large firms.



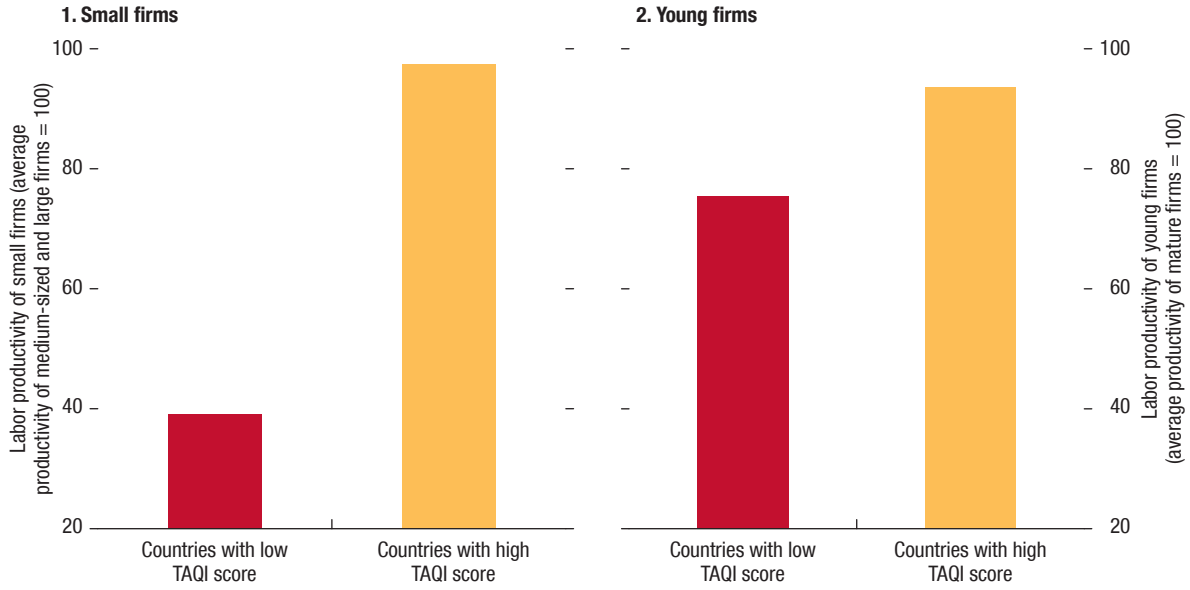
Sources: World Bank, Enterprise Surveys; and IMF staff estimates.
Note: Firm total factor productivity (TFP) is estimated using the Levinsohn and Petrin (2003) method.

[36]TADAT assessments provide an evidence-based and scored assessment of key performance outcome areas that cover most tax administration functions, processes, and institutions. See http://www.tadat.org/.

[37]RA-FIT is an initiative of the IMF Fiscal Affairs Department that compiles a rich, standardized data set of self-reported tax administration performance indicators. The electronic filing rate is currently available across 42 countries over the 2011–13 period. Filing is an important element of firms' tax compliance burden (McCaherty 2014). Albeit imperfect, the electronic filing rate can serve as a proxy because it is driven by initiatives of a country's tax administration to make filing easier for firms and may reflect other associated elements that reduce tax compliance burdens—for example, a "client focus" in a country's tax administration, well-established taxpayer services, and in some cases the provision of prepopulated tax return forms.

Figure 2.14. Developing Countries: Tax Administration Quality Index and Labor Productivity of Small and Young Firms

Small and young firms enjoy higher labor productivity in countries with a higher Tax Administration Quality Index (TAQI) score.



Source: Dabla-Norris and others, forthcoming.
Note: Labor productivity refers to sales divided by the number of employees. Small firms have fewer than 20 employees; young firms are less than seven years old. A higher score on the TAQI implies lower tax compliance costs. Countries with a low (high) TAQI score are those at the 25th (75th) percentile of the sample distribution. The TAQI uses country-specific information on different dimensions of tax administration that are likely to matter for tax compliance costs faced by firms, from the IMF's Tax Administration Diagnostic Assessment Tool (TADAT). Medium-sized and large firms are those with 20 or more employees. Mature firms are those seven or more years old.

allocation of resources will necessarily have an impact on the mix of firms in an economy as well as workers caught up in the process (Haltiwanger 2011; Andrews and Saia 2016). There will be winners and losers; therefore, any such transition needs to be carefully managed.

In the context of international taxation, the productivity impact of narrowing the difference in tax treatment across domestic and multinational companies is not clear-cut. In many cases, such companies enjoy a lower tax burden than their domestic counterparts, thanks to aggressive tax planning to shift profits to low-tax jurisdictions.[38] For example, Finke (2013) finds that in 2007 German multinational companies paid 27 percent less in taxes than a control group of domestic firms. Several countries have implemented policies to limit such companies' ability to shift profits (for example, transfer-pricing regulations or thin-capitalization rules) with the objective of raising domestic revenue collection and curbing unfair competition that affects the profitability and growth of domestic firms competing with these lower-taxed companies (OECD 2013; Fuest and others 2013). However, multinational companies are often at the global productivity frontier (Andrews, Criscuolo, and Gal 2015), providing positive externalities for other firms in the local economy, which is especially relevant in the case of developing countries (Figure 2.15). Because such companies are more mobile than domestic firms, the potential benefits of antiavoidance legislation could be undone if they respond by cutting their investment and reducing their presence in the local economy. Indeed, new empirical analysis from De Mooij and Liu (forthcoming) for 27 advanced economies finds that following the introduction of transfer-pricing regulations, multinational affiliates reduce their investment as a share of fixed assets by 1 to

[38]Transfer prices are the prices used for related-party transactions among multinational company affiliates. By undervaluing goods or services passed from a high-tax affiliate to a low-tax affiliate or overvaluing goods or services passed from a low-tax affiliate to a high-tax affiliate, a multinational company can shift profits to lower-tax firms and minimize its overall tax liability.

3 percentage points (Annex 2.8). The negative impact is mainly concentrated in large, more complex multinationals, and is smaller for multinationals with a higher share of intangible assets that might facilitate profit shifting via royalty payments. Though moderate, these estimates underscore the importance of international coordination in the implementation of antiavoidance legislation and of using part of the revenues generated by antiavoidance measures to support productivity, including by strengthening institutions, human capital, and infrastructure.

It is also important to acknowledge that there are some exceptional cases in which it might be desirable for tax policy to influence resource allocation. This is the case when markets, by themselves, would not result in optimal outcomes; for example, underinvestment in research or excessive carbon emissions. In these cases, firms do not take into account their externalities. Tax policy measures can therefore be used to help correct such externalities.

Finally, tax reform priorities for each country will need to take into account not only their impact on productivity.[39] Reforms may have implications for other government objectives, including better income distribution and revenue mobilization needs.[40] Other reforms to reduce misallocation will also be needed, such as reducing credit market distortions, or easing labor and product market regulatory burdens.[41] Governments will therefore need to tailor their reform strategies in a way that balances their various objectives and needs.

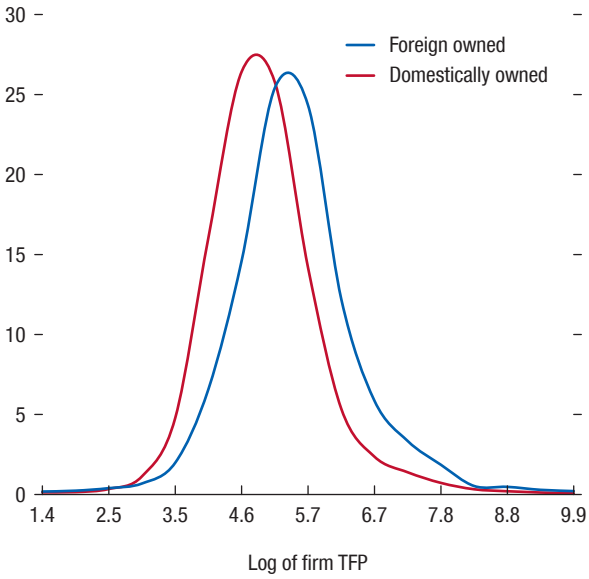
Conclusions

Resource misallocation implies that countries experience lower productivity because they are making poor use of their existing labor and capital. It manifests itself in a wide dispersion in productivity levels across firms, even within narrowly defined industries. This dispersion reveals that some businesses in each country have managed to achieve high levels of efficiency, possibly close to those of the world frontier in their particular industry, which in turn implies that existing conditions within the country can be compatible with higher levels of productivity. Therefore, countries can reap substantial TFP gains from reducing resource misallocation, allowing other firms to catch up with the high productivity firms in their own economies. In some cases, however, the least productive businesses will have to exit the market, allowing the more productive ones to gain market share.

TFP gains from reducing resource misallocation could add roughly 1 percentage point to annual real GDP growth, based on estimates for a sample of 54 developing countries and 9 advanced economies. Payoffs would be higher for emerging market economies and low-income developing countries than

Figure 2.15. Developing Countries: Firm-Level Total Factor Productivity by Ownership
(Percent of firms)

Multinational companies are often more productive than domestic firms.



Sources: World Bank, Enterprise Surveys; and IMF staff estimates.
Note: Firm-level total factor productivity (TFP) is calculated using the Levinsohn and Petrin (2003) method. Foreign-owned firms are firms in which more than 50 percent of shares are held by foreign investors. Domestically owned firms are those in which more than 50 percent of shares are held by domestic investors.

[39]A central result in public economics is that tax systems should maintain full production efficiency even in second-best environments (Diamond and Mirrlees 1971). However, in more recent literature, Emran and Stiglitz (2005), Gordon and Li (2009), and Best and others (2015) explore the trade-off between production efficiency and revenue efficiency in the choice of tax instruments when allowing for tax evasion.

[40]For a discussion of fiscal policies to enhance revenue mobilization and to address income inequality, see IMF 2015b and Clements and others 2015.

[41]Results in this chapter are not directly comparable with those of other studies because of differences in the definitions of resource misallocation, methodologies used, and countries covered. However, in their literature survey, Restuccia and Rogerson (2013) indicate that any one particular factor typically has small effects on TFP relative to the overall scale of resource misallocation.

in advanced economies, with considerable variation across countries. Reforms to improve the allocation of resources will nonetheless have winners and losers, requiring a carefully managed transition.

Misallocation arises from a number of distortions, created by poorly designed economic policies and market failures, that prevent the expansion of efficient firms and promote the survival of inefficient ones. Countries can chip away at resource misallocation by upgrading the design of their tax systems to ensure that firms' decisions are made for business reasons and not tax reasons. This chapter provides evidence that countries that address tax treatments that discriminate by asset type, sources of financing, or firm characteristics such as formality and size can achieve significant TFP gains.

Governments should seek to minimize differentiated tax treatment across assets and financing in order to tilt firms' investment decisions toward assets that are more productive, rather than more tax-favored. If it is well designed, an ACE system or a cash flow tax can address both of these distortions.

Governments should also seek to level the playing field across firms to encourage growth of productive firms. Lower compliance costs and stronger tax enforcement can help reduce the unfair cost advantages informal firms enjoy, which will make room for more productive, tax-compliant firms to increase their market share. Measures include reducing compliance costs (for example, through easy filing) and promoting compliance by ensuring that taxpayers are registered, that they are knowledgeable regarding their tax obligations, and that reporting is accurate. Tax administration should follow a risk-based approach that includes strong audit capacity and taxpayer segmentation. To encourage growth and productivity among small and young firms, tax compliance costs should be reduced. To avoid the "small business trap," tax relief would be more effective if it were targeted to new rather than small firms.

Box 2.1. What Is the Effective Marginal Tax Rate?

Effective marginal tax rates (EMTRs) are most useful as a consolidated indicator of the various tax factors affecting investors who might be weighing new marginal investments. The EMTR summarizes the tax burden applied to before-tax capital income realized over an investment's lifetime, as implied by major provisions of a country's corporate tax code. These major provisions include statutory federal tax rates, surcharges, local tax rates, depreciation rates and accelerated depreciation, treatment of inventories, and interest deductibility.

The significant variation in EMTRs for various capital asset types arises from differences between the rates at which a country's tax code allows businesses to deduct the cost of assets (known as tax depreciation) and the rates at which those assets actually wear out or become obsolete (economic depreciation). The greater the acceleration in tax depreciation relative to economic depreciation, the lower the EMTR.

Variation in EMTRs across sources of financing arise when there are differences in the deductibility of interest expenses and returns to equity from firms' tax liability.

The estimations of EMTRs used in this chapter, unless otherwise stated, have been provided by the Oxford University Center for Business Taxation, following the approach developed in Devereux and Griffith 1998 (see Annex 2.4). EMTRs are calculated across capital asset types (machinery, buildings, intangibles, and inventories) and across sources of financing (debt, equity, and retained earnings), for each country-year in the data set.

Box 2.2. Colombia: Labor Tax Reform and the Shift from Informal to Formal Employment

In 2012, the Colombian government introduced a series of changes in the country's tax code with the aim of increasing labor formality. The reform entailed a significant reduction in nonwage labor costs and a partial shift of the tax base from labor to corporate income in order to finance social programs. Four years later, the informality rate in the 13 main metropolitan areas had fallen by 6½ percentage points, to 51 percent, and part of the decrease has been attributed to the effects of the reform.

The Colombian case is interesting for two reasons. First, nonwage labor costs in the country are very high: before the 2012 reform, they accounted for 60.3 percent of the average wage rate. Second, the share of informal workers is also high, ranging from 50 to 60 percent depending on the definition (Figure 2.2.1).[1]

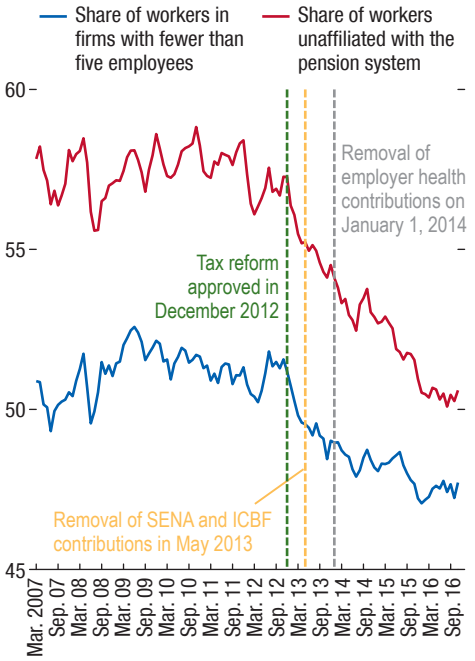
Under the reform, payroll taxes were reduced by 13.5 percentage points for workers earning up to 10 times the minimum wage. In particular, employer contributions for training (2 percentage points), in-kind transfers for low-income households (3 percentage points), and health (8.5 percentage points) were eliminated (Table 2.2.1). This implied a fall of 22.4 percent in the payroll tax. To compensate for the revenue loss, a new tax paid by firms called Contribución Empresarial para la Equidad (CREE) was created. For practical purposes, the CREE is equivalent to a corporate income tax of 8 percent (temporarily set at 9 percent for 2013–15), although with fewer tax deductions so that the tax base is slightly larger. To avoid increasing firms' tax burden, the corporate income tax was simultaneously decreased from 33 to 25 percent. Overall, the reform partially shifted the tax base from labor to corporate income while leaving the total tax rate on corporate income largely unchanged.[2]

Several studies have found that the tax reform had a positive effect on employment and was associated with a shift of workers out of informal into formal employment. By making formal salaried labor cheaper, the reform increased the demand for salaried workers at the expense of informal salaried and own-account workers.

- A series of studies commissioned by the Inter-American Development Bank (Steiner and Forero 2015; Kugler and Kugler 2015; Bernal, Eslava, and Meléndez 2015) found that the reform increased the number of formal jobs by between 3.1 and 3.4 percent and increased wages by between 1.9 and 4.4 percent, with most of the impact among small and medium-sized enterprises. The IMF (2015c) also finds that the reduction in payroll taxes had a positive effect on employment, investment, and GDP.
- Based on general equilibrium models, Steiner and Forero (2015), Anton (2014), and Hernández (2012) find that the tax reform increased formal

Figure 2.2.1. Informal Employment, 2007–16
(Percent of total workforce)

The share of informal workers declined following the 2012 reform.



Source: Departamento Administrativo Nacional De Estadística (DANE), Colombia.
Note: ICBF = Instituto Colombiano de Bienestar Familiar; SENA = Servicio Nacional de Aprendizaje.

[1]The Colombian National Statistics Department (DANE) provides two measures of informality: (1) workers who do not make contributions to either health or pension schemes and (2) workers employed in firms with no more than five employees; unpaid family helpers or housekeepers; self-employed persons with the exception of independent professionals and technicians; and owners of firms with no more than five workers.

[2]An alternative minimum personal income tax and changes in the value-added tax also helped to compensate for revenue losses.

Box 2.2 *(continued)*

Table 2.2.1. Payroll Taxes
(Percent of wage rate)

The 2012 reform reduced payroll taxes by 13.5 percentage points.

Contribution for	Prereform	Postreform
Pensions	16.0	16.0
Employer	12.0	12.0
Employee	4.0	4.0
Health Care	12.5	4.0
Employer	8.5	. . .
Employee	4.0	4.0
Professional Risks	2.0	2.0
Other Payroll Contributions	9.0	4.0
Training (SENA)	2.0	. . .
In-Kind Transfers (ICBF)	3.0	. . .
Compensation Funds	4.0	4.0
Paid Vacations	4.2	4.2
Severance Pay	8.3	8.3
Mandatory Bonuses	8.3	8.3
Total	60.3	46.8
Employer	52.3	38.8
Employee	8.0	8.0

Source: Antón 2014.
Note: ICBF = Instituto Colombiano de Bienestar Familiar; SENA = Servicio Nacional de Aprendizaje.

employment by between 3.4 and 7.4 percent of total employment and lowered informality by between 1.4 and 4.2 percent. Fernández and Villar (2016), using a matching difference-in-differences approach, find that the tax reform reduced the informality rate of the workers affected by the reform in the country's 13 main metropolitan areas by between 4.3 and 6.8 percentage points, which translates to a reduction in the national informality rate of between 2.0 and 3.1 percentage points, given that only 45 percent of the working population was affected by the reform.

Box 2.3. Mozambique: Differential Tax Treatment across Firms

Tax systems in most countries include features that result in differentiated treatment across firms, which can create resource misallocation. The tax system in Mozambique illustrates two mechanisms through which such distortions take effect: (1) tax incentives for investment that vary substantially across capital assets types, sectors, and location, which can distort firm decisions on allocation of resources or production and (2) preferential tax treatment for small taxpayers, which can become a disincentive to firm growth.

Mozambique provides an illustration of the extent to which tax incentives affect effective marginal tax rates (EMTRs) and the extent to which small firms respond to preferential tax treatment by remaining below the eligibility threshold.

Based on an IMF Fiscal Affairs Department technical assistance mission to Mozambique. See Swistak, Liu, and Varsano, forthcoming.

Difference in Effective Marginal Tax Rates across Capital Asset Types, Sectors, and Location

Generous investment incentives result in very low EMTRs, which differ substantially across asset types and across sectors (Table 2.3.1). EMTRs by major capital asset type under general investment incentives (section B of the table) range from 13 percent to 27 percent, well below the EMTRs without incentives (section A). When general incentives and sector-specific incentives are combined, EMTRs fall further and even become negative in the case of agriculture (section C).

Preferential Tax Treatment of Small Firms

Since 2009, Mozambique has offered a simplified tax on gross turnover for small taxpayers (*imposto simplificado para pequenos contribuintes,* or ISPC, regime) that replaces the corporate income tax, personal income tax, and value-added tax (Law 5/2009).

Table 2.3.1. Mozambique: Effective Marginal Tax Rate under Different Investment Incentives

The dispersion in effective marginal tax rates (EMTRs) is compounded in the presence of numerous tax incentives.

		B. With General Investment Incentives				C. With Sector-Specific Investment Incentives	
		Depreciation Rate Increased by 50 percent	Investment Tax Credit, First Five Years				
			5 Percent in Maputo	10 Percent outside Maputo	Incentives Combined	Agriculture and Fisheries	Hotels and Tourism
Asset Type	A. No Incentives	A	B	C	D = A + B	D + Sector Incentive	D + Sector Incentive
Machinery and Equipment	30	24	25	21	16	–2	13
Commercial and Industrial Building	32	. . .	27	22	22	–4	19
Residential Building	20	. . .	16	13	13	–2	11
Intangible: Patents	29	. . .	24	19	19	–3	17

Sources: Code of Fiscal Benefits (Law 4/2009); and Swistak, Liu, and Varsano, forthcoming.

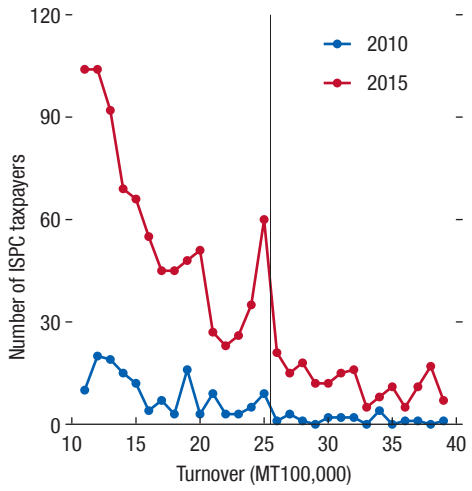
Note: Assumptions: real interest rate = 0.05; economic depreciation rate for machinery = 0.175; economic depreciation rate for commercial building = 0.031; economic depreciation rate for intangible assets = 0.154. Key tax parameters are valued according to Decree 72/2013 of December 23, 2013; statutory corporate tax rate = 32 percent; depreciation of the above assets follows a straight line at a rate of 10 percent for machinery, 2 percent for commercial and industrial building, 10 percent for residential building, and 10 percent for intangible assets (patents).

Box 2.3 *(continued)*

Taxpayers with an annual business volume below Mt2,500,000 can qualify for a flat tax rate of 3 percent on their annual business volume. Taxpayers with an annual business volume lower than 36 times the minimum wage are exempt from tax. The eligibility threshold has remained unchanged despite relatively high inflation in recent years. This has resulted in significant bunching of taxpayers below the eligibility threshold, which has increased dramatically since the introduction of the regime (Figure 2.3.1).

Figure 2.3.1. Distribution of ISPC Taxpayers, 2015 Compared with 2010

The preferential tax regime for small firms creates a "bunching" effect just below the eligibility threshold.



Source: Swistak, Liu, and Varsano, forthcoming.
Note: The horizontal axis shows the distribution of *imposto simplificado para pequenos contribuintes* (ISPC) taxpayers by turnover bins of MT100,000. There are a small number of ISPC taxpayers above the threshold, possibly because the registration requirement is applied to turnover in the previous year instead.

Annex 2.1. Conceptual Framework

Resource Misallocation and Total Factor Productivity

This annex discusses the conceptual framework for the link between resource misallocation and total factor productivity (TFP) developed by Hsieh and Klenow (2009). Consider an industry s with a large number N_s of monopolistically competitive firms. Total industry output is given by a constant elasticity of substitution production function:

$$Y_s = \left[\sum_{i=1}^{N_s} (y_{is})^{\frac{\sigma-1}{\sigma}}\right]^{\frac{\sigma}{\sigma-1}}, \quad \text{(A2.1.1)}$$

in which y_{is} denotes firm i's real output, and σ denotes the elasticity of substitution between output variety i. p_{is} is the price of variety i and P_s the price of industry output Y_s. Firms face an isoelastic demand for their output given by $y_{is} = (p_{is}/P_s)^{-\sigma} Y_s$.

Firms' output is given by a Cobb-Douglas production function:

$$y_{is} = A_{is} k_{is}^{\alpha} l_{is}^{1-\alpha}, \quad \text{(A2.1.2)}$$

in which k_{is} is capital, l_{is} is labor, A_{is} is physical productivity, and α is the elasticity of output with respect to capital.

Firms choose their price, capital, and labor to maximize their profits:

$$\max \Pi_{is} = (1-\tau_{is}^{y}) p_{is} y_{is} - (1+\tau_{is}^{k})(r+\delta_s) k_{is} - \omega l_{is}, \quad \text{(A2.1.3)}$$

in which ω denotes the wage rate, r denotes the real interest rate, δ denotes the economic depreciation rate, τ_{is}^{y} denotes a firm-specific wedge that distorts output decisions, and τ_{is}^{k} denotes a firm-specific wedge that distorts capital relative to labor decisions. The first-order conditions with respect to labor and capital are given by

$$MRP\ L_{is} = \left(\frac{1-\alpha}{\mu}\right)\left(\frac{p_{is} y_{is}}{l_{is}}\right) = \left(\frac{1}{1-\tau_{is}^{y}}\right)\omega, \quad \text{(A2.1.4)}$$

$$MRP\ K_{is} = \left(\frac{\alpha}{\mu}\right)\left(\frac{p_{is} y_{is}}{k_{is}}\right) = \left(\frac{1+\tau_{is}^{k}}{1-\tau_{is}^{y}}\right)\left(r+\delta_s\right), \quad \text{(A2.1.5)}$$

in which $\mu = \sigma/(\sigma-1)$ denotes the constant markup of price over marginal cost. Equation (A2.1.4) states that firms set the marginal revenue product of labor (*MRP L*) equal to the wage rate grossed up to compensate for the tax on output. Similarly, equation (A2.1.5) states that firms equate the marginal revenue product of capital (*MRP K*) equal to the cost of capital times the wedge $(1+\tau_{is}^{k})/(1-\tau_{is}^{y})$. It is easy to see that the higher the τ_{is}^{k}, the higher $MRP\ K_{is}$ needs to be to equate the after-tax return across firms, and the lower the equilibrium level of K is.

Following Hsieh and Klenow (2009), revenue productivity (*TFPR*) is defined at the firm level as the product of price p_{is} and physical productivity A_{is}:

$$TFPR_{is} = p_{is} A_{is} = \left(\frac{p_{is} y_{is}}{k_{is}^{\alpha} l_{is}^{1-\alpha}}\right) = \mu\left(\frac{MPRK_{is}}{\alpha}\right)^{\alpha}\left(\frac{MPRL_{is}}{1-\alpha}\right)^{1-\alpha}. \quad \text{(A2.1.6)}$$

Firms with higher output distortion τ_{is}^{y} or higher capital distortion τ_{is}^{k} have higher marginal revenue products and, as equation (A2.1.6) shows, a higher $TFPR_i$. It is also easy to see that the higher capital distortion $\tau_{is}^{k}$is, the lower the equilibrium level of K_{is} and equilibrium level of y_{is} are.

Resources are allocated optimally when all firms face the same (or no) distortions in output ($\tau_{is}^{y} = \tau_{s}^{y}$) and capital markets ($\tau_{is}^{k} = \tau_{s}^{k}$). In this case, more factors are allocated to firms with higher productivity A_{is}, but there is no dispersion of the returns to factors across firms. In other words, *MRPK* and *MRPL* are equalized across firms. The presence of idiosyncratic distortions τ_{is}^{y} and τ_{is}^{k} leads to dispersion of marginal revenue products and revenue productivity. Industry-level TFP is defined as

$$TFPs = \left[\sum_{i=1}^{N}\left(A_{si}\cdot\frac{\overline{TFPR}_s}{TFPR_{is}}\right)^{\sigma-1}\right]^{\frac{1}{\sigma-1}} \quad \text{(A2.1.7)}$$

in which $\overline{TFPR}_{is} = \mu\left(\frac{MRPK_s}{\alpha}\right)^{\alpha}\left(\frac{MRPL_s}{1-\alpha}\right)^{1-\alpha}$ is a geometric average of the average marginal revenue productivity of capital and labor in the industry. When marginal products are equalized across plants, $TFP_s = \left(\sum_{i=1}^{N} A_{si}^{\sigma-1}\right)^{\frac{1}{\sigma-1}}$ and is larger than TFP_s in the presence of output or capital distortions.

Implication for Empirical Analysis

Under this framework, the extent of resource misallocation is estimated by following a series of steps.

1. *Firm-level revenue productivity (TFPR).* First, for each firm-year, the following three measures are computed:

$$1+\tau_{is}^{K} = \frac{\alpha_s}{1-\alpha_s}\frac{w l_{is}}{r K_{is}}, \quad \text{(A2.1.8)}$$

$$1-\tau_{is}^{Y} = \frac{\sigma}{\sigma-1}\frac{w l_{is}}{(1-\alpha_s) p_{is} y_{is}}, \quad \text{(A2.1.9)}$$

$$A_{is} = \left(\frac{(p_{is} y_{is})^{\frac{\sigma}{\sigma-1}}}{k_{is}^{\alpha} l_{is}^{1-\alpha}} \right), \quad \text{(A2.1.10)}$$

in which A_{is} denotes physical productivity. Equations (A2.1.4) and (A2.1.5) are used to compute $MRP\ L_{is}$ and $MRP\ K_{is}$, and equation (A2.1.6) is employed to estimate firm-level $TFPR_{is}$ for each firm-year observation.

2. *Within-industry TFPR dispersion.* In the second step, equation (A2.1.7) is used to compute industry-level TFP *(*TFP_s*)*.
3. *Sector-level resource allocation efficiency.* In the third step, aggregating industries within the same sector yields the measure of resource allocation efficiency (RAE) at the sector level:

$$(RAE) = \left(\frac{Y}{Y_{efficient}} \right) = \prod_{s=1}^{S} \left[\sum_{i=1}^{M_s} \left(\frac{A_{si}}{\overline{A}_s} \frac{\overline{TFPR}_s}{TFPR_{si}} \right)^{\sigma-1} \right]^{\theta_s/(\sigma-1)}. \quad \text{(A2.1.11)}$$

The TFP gains from eliminating resource misallocation at the sector level can be expressed as

$$TFPgain = 100\left(Y_{efficient}/Y - 1 \right). \quad \text{(A2.1.12)}$$

Tax Dispersion and Resource Misallocation

This annex extends the Hsieh and Klenow (2009) framework to show that industries that rely more on a particular asset (for example, machinery) should see greater resource misallocation as a result of tax dispersion across firms.

For illustration purposes, a Lucas' span of control model of a manager in industry j that must choose how much to invest in machinery (M) and buildings (B) to maximize profits using a decreasing-returns-to-scale technology in a competitive environment is considered. Hsieh and Klenow (2009, Appendix A) show that this model is equivalent to the more complex monopolistic competition model in their analysis, but it is more useful for purposes here.

Machinery and buildings pay the same rental rate (r), but machinery is also subject to a firm-specific tax T_i.[42]

The problem of entrepreneur i (entrepreneurs differ in their managerial ability A_i) in industry j is

$$\max_{M,B} A_i M_i^{\alpha_j} B_i^{\gamma_j} - r(1 + T_i) M_i - r B_i.$$

The first-order conditions of this problem are

$$M: \alpha_j A_i M_i^{\alpha_j - 1} B_i^{\gamma_j} = r\left(1 + T_i\right),$$

$$B: \gamma_j A_i M_i^{\alpha_j} B_i^{\gamma_j - 1} = r.$$

Hence,

$$\frac{B_i}{M_i} = \left(1 + T_i\right) \frac{\gamma_j}{\alpha_j}$$

or

$$B_i = (1 + T_i) \frac{\gamma_j}{\alpha_j} M_i.$$

Simple algebra yields the following input demands as a function of taxes, the capital rental rate, and other parameters:

$$M_i = \left[\frac{\alpha A_i \left(\frac{\gamma_j}{\alpha_j} \right)^{\gamma_j} (1 + T_i)^{\gamma_j - 1}}{r} \right]^{\frac{1}{1-\alpha_j-\gamma_j}},$$

$$B_i = \frac{\gamma_j}{\alpha_j} \left(1 + T_i \right) \left[\frac{\alpha A_i \left(\frac{\gamma_j}{\alpha_j} \right)^{\gamma_j} (1 + T_i)^{\gamma_j - 1}}{r} \right]^{\frac{1}{1-\alpha_j-\gamma_j}}.$$

Plugging input demands into the production function gives

$$Y_i = A_i M_i^{\alpha_j} B_i^{\gamma_j} = \left(1 + T_i \right)^{\frac{-\alpha_j}{1-\alpha_j-\gamma_j}} A_i^{\frac{1}{1-\alpha_j-\gamma_j}} \left(\frac{\gamma_j}{\alpha_j} \right)^{\frac{\gamma_j}{1-\alpha_j-\gamma_j}} \left(\frac{1}{r} \right)^{\frac{\alpha_j+\gamma_j}{1-\alpha_j-\gamma_j}}.$$

To keep the analysis as simple as possible, consider an economy in which each industry has two managers, and even the dispersion of taxes is the same across industries. The output produced by firm 1 relative to firm 2 is

$$\frac{Y_1}{Y_2} = \left(\frac{A_1}{A_2} \right)^{\frac{1}{1-\alpha_j-\gamma_j}} \left(\frac{1 + T_2}{1 + T_1} \right)^{\frac{\alpha_j}{1-\alpha_j-\gamma_j}}$$

The model provides the following results:

1. Holding other factors constant, the higher the productivity of manager 1 relative to that of manager 2, the higher will be the output produced by manager 1. Clearly, Y_1/Y_2 is increasing in A_1.
2. If taxes are the same for managers 1 and 2 in each industry, there is no misallocation in the sense of Hsieh and Klenow. The fraction of output produced

[42]The model could be written with different taxes and rental rates on machinery and buildings; the only thing that matters for allocation is the ratio of the two.

by firms is entirely determined by their total factor productivity A_i. This can be seen as $\left(\frac{1+T_2}{1+T_1}\right) = 1$ if taxes are the same across firms.

3. With other factors held constant, the higher the tax rate on machinery on firm 1, the more distorted the allocation, and the lower the fraction of output produced by manager 1. This can be seen as Y_1/Y_2 is decreasing in T_1.
4. The higher the intensity of machinery in a given industry (which in the model translates to a higher $\propto_j$), the larger the distortion on output, when there is dispersion in taxes across firms. Notice that even if productivity disparities and tax disparities are the same across industries, the reduction in the fraction of output produced by the more productive manager is increasing in $\propto_j$.

For the empirical work in the chapter, results 3 and 4 are tested. The model suggests that industries that rely more on machinery should see larger misallocation as a result of tax dispersion across firms.

Tax Dispersion across Firms under the Same Tax Rules

This annex provides an explanation of why, even when subject to the same tax rules, heterogeneous firms in the same industry will face firm-specific tax rates if there are differences in taxation by asset type, source of financing, or firm characteristics. This is a well-established finding in the tax literature (see, for example, Egger and others 2009; Graham, Lemmon, and Schallheim 2002; Dwenger and Walch, 2014; and Devereux, Maffini, and Xing 2015). If effective marginal tax rates (EMTRs) are the same across assets, financing, and firm characteristics, then all firms in a given industry will face the same tax rate, and there is no misallocation—the fraction of output produced by firms is solely determined by the firm's individual total factor productivity However, when EMTRs are different across assets, financing, and firm characteristics, tax rates will vary considerably across firms within narrowly defined industries because of firm-level differences in their asset composition, sources of financing, ownership structure, and profitability (whether the firm has incurred losses). For instance:

- Companies vary widely in the way they combine different capital inputs to produce the final output, even within a narrowly defined industry and at the same level of aggregate capital (Pindyck 1979). Given that different types of capital assets have different tax depreciation schedules and that these do not necessarily match the assets' true economic depreciation, differences in firms' asset composition will result in different firm-level EMTRs. For example, the EMTR for machinery will play a more important role in affecting investment by firms with a higher share of machinery in their total capital inputs.
- Companies rely on different sources of financing for their investment, including retained earnings, new equity, or external debt. It can be shown that the cost of capital is different under alternative sources of financing when debt, equity, and retained earnings are subject to different tax treatment (see Annex 2.4). In this case too, firm-level heterogeneity will result in differences in firm-level EMTRs.
- In addition, companies differ widely in the extent to which they incur losses. The marginal tax rate for loss-making companies is the statutory rate discounted by the number of years they expect to remain in a loss-making position, and it can vary anywhere between zero and the statutory tax rate. This is another important source of heterogeneity in firm-level effective marginal tax rates. For example, Dwenger and Walch (2014) find that owing to the asymmetric treatment of tax losses and profits, the taxable status of a firm is extremely important in determining the firm-specific marginal tax rate and user cost of capital.

Annex 2.2. Calculation of Resource Allocation Efficiency Using Firm-Level Data

Resource allocation efficiency is a country-industry-specific variable that is constructed from firm-level data. Firm-level data for developing countries in this chapter are from the World Bank Enterprise Surveys (WBES), while firm-level data for advanced economies in this chapter are from ORBIS, provided by Bureau van Dijk. The WBES is survey-based, and is the highest quality source of representative firm-level data available for many developing countries. The information in ORBIS data comes from financial statements of firms that are subject to official reporting requirements. The version used here includes information that is not consolidated for parents and

subsidiaries. Compared to WBES data, ORBIS data includes many more observations, has a much more consistent panel dimension, and employs a much more detailed industry classification (namely, at the four-digit level). These differences imply that the two data sets cannot be combined, and empirical analysis for developing economies and advanced economies is carried out separately.

A careful cleaning methodology is followed:

WBES data. The cleaning procedure is mostly based on Inklaar, Lashitew, and Timmer 2016. It entails the removal of observations with negative sales, capital, labor, and value added and implausibly high values of sales per worker and the removal of the bottom 2.5 and top 97.5 percentiles of the computed output wedges, capital wedges, and total factor productivity. To ensure that the final sample is not too different from the original (representative) sample, all firms in industries for particular countries and years are excluded if they have fewer than five observations or if less than half of the original number of observations remain in the sample. Along the same lines, all firms in countries for particular years are dropped if fewer than 40 observations remain in total across all industries or if fewer than 40 percent of the original number of observations in total across all industries remain. The resulting sample encompasses a strongly unbalanced panel of 30 emerging market economies, 24 low-income developing countries, and 3 advanced economies that spans the 2002–16 period.[43]

ORBIS data. The data are first subjected to a standard cleaning procedure that follows Kalemli-Ozcan and others (2015). The sample encompasses nine countries over the 2006–13 period. Countries are included only if at least 50 percent of the observations in the manufacturing sector were retained after omitting negative, missing, and extreme values of key variables required for the computation of the resource misallocation measure or if, according to Kalemli-Ozcan and others (2015), the TFP sample accounts for at least roughly 70 percent of the manufacturing sector. In addition, countries with large idiosyncratic year-to-year fluctuations in the number of firms are omitted. The countries selected are Belgium, the Czech Republic, France, Italy, Portugal, the Slovak Republic, Slovenia, Spain, and Sweden.[44] In addition, ORBIS data are cleaned in line with the recent literature on misallocation in advanced economies, including Crespo and Segura-Cayuela 2014; Dias, Robalo Marques, and Richmond 2016; and García-Santana and others 2016. In addition to removing the top and bottom percentiles of the wedges and TFP, the 1 percent tails of the firm-level to industry-level total factor (revenue) productivity ratios are removed. Finally, all firms in industries in particular countries and years with fewer than 10 observations are removed, firms with fewer than 10 employees are dropped, and firms that had fewer than 20 employees in the first year they appear in the sample are dropped as well. This ensures that the resource efficiency estimates are not upwardly biased and that the results are comparable to those found in the literature.

Resource allocation efficiency is estimated following Hsieh and Klenow (2009) (see Annex 2.1). Calculations are undertaken for the manufacturing sector at the two-digit International Standard Industrial Classification (ISIC) industry level for the WBES sample and at the four-digit North American Industry Classification System (NAICS) industry level for the ORBIS sample. Resource allocation efficiency is also calculated for the services sector in the case of advanced economies, but not for developing countries because of data constraints. Annex Table 2.2.1 provides the number of observations in each case.

The choice of parameter values used in the estimations follows Hsieh and Klenow (2009) and Inklaar, Lashitew, and Timmer (2016). The output elasticities of labor and capital for each industry are approxi-

[43]The countries in the sample are Angola, Argentina, Azerbaijan, Bangladesh, Botswana, Brazil, Bulgaria, Burundi, Cambodia, Chile, China, Colombia, Croatia, the Democratic Republic of the Congo, the Dominican Republic, Ecuador, Egypt, El Salvador, Estonia, Ethiopia, Ghana, Guatemala, Guinea, Honduras, India, Indonesia, Iraq, Jamaica, Jordan, Kenya, the Lao People's Democratic Republic, Mali, Mauritania, Mexico, Moldova, Mongolia, Mozambique, Namibia, Nepal, Nigeria, Pakistan, Peru, the Philippines, Senegal, Serbia, Slovenia, South Africa, Sri Lanka, Sweden, Tanzania, Thailand, Tunisia, Uganda, Uzbekistan, Vietnam, Zambia, and Zimbabwe.

[44]Owing to data constraints, Germany, Japan, the United Kingdom, and the United States are not included in the sample. This chapter uses unconsolidated statements, but many Japanese, U.K., and U.S. firms report only consolidated statements, and in many cases, there is no information provided on whether a particular firm is a stand-alone firm. As a result, there are too few observations left after data cleaning to compute resource allocation efficiency measures. Coverage of other potential data sources such as Compustat is also insufficient, because only listed firms are included. The use of country-specific sources of firm-level data (such as official business census data) is beyond the scope of this chapter and would raise issues related to international comparability of different data sources used.

Annex Table 2.2.1. Number of Observations

	Manufacturing Sector		Services Sector
	World Bank, Enterprise Surveys	ORBIS	ORBIS
Coverage			
Number of Countries	30 EMEs, 24 LIDCs, 3 AEs	9 AEs	9 AEs
Number of Industries	18	73	76
Number of Years	1 year for most countries	8 years, 2006–13	8 years, 2006–13
Revenue Productivity: Firm-Level Observations			
Total	26,649	364,357	306,908
Sector-Country-Year Average	45	96	115
Country-Year Average	375	5,061	4,263
Resource Allocation Efficiency: Country-Industry Observations	590	3,784	2,930

Source: IMF staff compilations.
Note: AEs = advanced economies; EMEs = emerging market economies; LIDCs = low-income developing countries.

mated by their cost shares in the United States from the Bureau of Economic Analysis. The elasticity of substitution between output of different firms is set to 3. The rental price of capital is set to 0.1, assuming a real interest rate of 5 percent and a depreciation rate of 5 percent. The cost of labor is used to measure employment at the firm level to account for differences in hours worked and human capital (implying that no assumption with respect to the wage rate needs to be made).

Annex 2.3. A Simple Example of Distortive Taxes and Resource Misallocation

This annex illustrates how taxes can affect the fraction of capital and labor employed by firms with different productivity levels and, as a result, aggregate total factor productivity (TFP). It departs from the standard model of span of control by Lucas (1978), in which managers differ in their ability to manage existing productive resources. The production technology relating output to labor is the same across managers (with decreasing returns to scale), but TFP is given by managerial talent. Without distortive taxes and with efficient financial markets, input demands will be such that the value of marginal products equals factor prices and thus the value of marginal products is equated across all firms. The most productive firms will also employ the largest share of labor and capital available in the economy. Under distortive taxes, however, less productive firms could in principle employ more productive factors than they would without such frictions. This would translate into more value added produced by lower-productivity firms and thus lower economy-wide TFP.

Setup

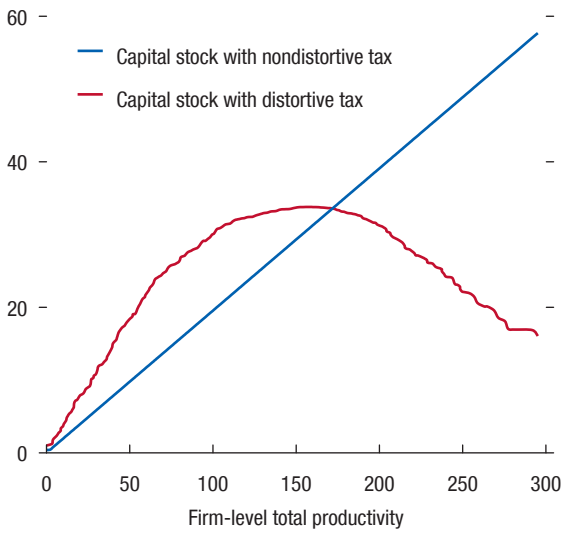
For illustration, it is assumed managerial productivity (A^i) is drawn from a Pareto density (as is common in the literature, to match firm size distribution).

In the presence of a nondistortionary tax, where $\tau_s^K = 0.35$, $\tau_s^Y = 0.4$, for all firms in the industry, the distribution of capital by firm productivity is shown in Annex Figure 2.3.1. In this case, the amount of capital input is perfectly correlated with firm-level productivity. Taxes that affect all firms equally do not change the fact that more productive firms are larger and employ more capital and labor than less productive firms.

One key distortion emphasized by the literature is the impact of taxes that are correlated with productivity (or size). For illustration purposes, consider that taxes are given by $1 + \tau_{is}^K = a + b(A^i)$, and $1 - \tau_{is}^Y = c - d(A^i)$, with $b > 0$ and $d > 0$, so that taxes penalize more productive firms. A representative distribution of K under the distortive taxes is illustrated by the solid green line in Annex Figure 2.3.1, where more capital is allocated to less productive firms. Annex Figure 2.3.2 further compares the amount of capital allocated to firms of different productivity ranges relative to the total amount of capital in the economy, with and without the distortive tax. Again, compared with a nondistortionary tax, the distortive taxes allocate more capital to less productive firms.

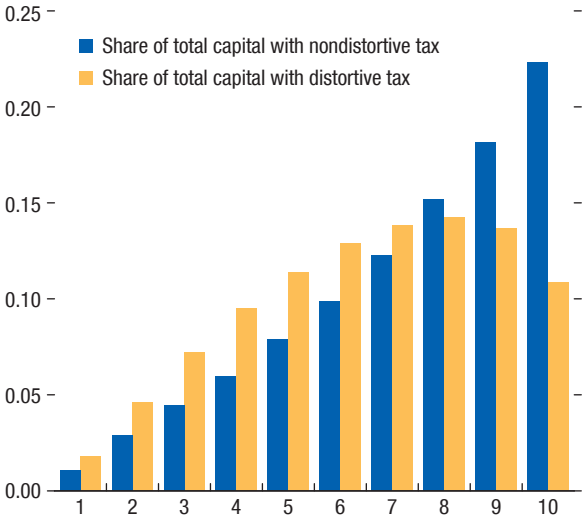
Note that in this example, the specific shape of the distribution of the capital is an artifact of the tax function, which increases linearly in the level of firm-level productivity. However, the general message carries beyond this simple example; that is, distortive tax policy results in resource misallocation and loss in aggregate TFP.

Annex Figure 2.3.1. Capital Allocation with Distortive Taxes



Source: IMF staff estimates.

Annex Figure 2.3.2. Share of Total Capital: Distortive versus Nondistortive Taxes



Source: IMF staff estimates.

Annex 2.4. Estimates of the Effective Marginal Tax Rate

Estimates of effective marginal tax rates (EMTRs) used in this chapter, unless otherwise noted, were provided by the Oxford University Center for Business Taxation.[45]

The calculation of EMTRs follows the approach developed by Devereux and Griffith (1998), which starts with the Hall and Jorgenson (1967) user cost of capital. The user cost of capital ($\tilde{p}$) is the real before-tax rate of return that a marginal investment must earn to recover the cost of the investment, pay taxes on business income, cover the economic depreciation, and pay an expected after-tax rate of return on marginal saving:

$$\tilde{p} = \frac{(1 - A)}{(1 - \tau)(1 + \pi)}\{\rho + \delta(1 + \pi) - \pi\} - \frac{F_t(1 + \rho)}{\gamma(1 - \tau)(1 + \pi)} - \delta,$$

in which τ is the statutory corporate tax rate; π is the expected inflation rate; δ is the economic rate of depreciation; $A = \tau\phi(1 + \rho)/(\rho + \phi)$ is the net present value of the depreciation allowance, in which ϕ is the rate at which capital expenditure can be offset against tax; $\rho = (1 - m^i)i/(1 - z)$ is the shareholders' nominal discount rate, with m^i the personal tax rate on interest income, i the nominal interest rate, and z the accruals-equivalent capital gains tax rate.

Moreover, $\gamma = \left(1 - m^d\right)/\left(1 - c\right)\left(1 - z\right)$ is a term measuring the tax discrimination between new equity and distributions, with m^d the personal tax rate on dividend income and c the rate of tax credit available on dividends paid. To capture the impact of financing cost, F_t is a term capturing the additional cost of raising external finance, defined as[46]

$$\text{Retained earnings: } F_t = 0, \tag{A2.4.1}$$

$$\text{New equity: } F_t = \frac{-\rho(1 - \gamma)}{(1 + \rho)}\left(1 - \phi\tau\right), \tag{A2.4.2}$$

$$\text{Debt: } F_t = \frac{\gamma(1 - \phi\tau)}{(1 + \rho)}\left\{\rho - i(1 - \tau)\right\}. \tag{A2.4.3}$$

[45]For more details on methodology, underlying data sources, and parameter values used by the center, see http://www.sbs.ox.ac.uk/sites/default/files/Business_Taxation/Docs/Publications/Reports/cbt-tax-ranking-2012.pdf. Estimates do not include investment tax credits or individual-level taxes. They take into account the Italian allowance for corporate equity and the U.K. patent box, but not the U.K. annual investment allowance.

[46]To illustrate the exact formula for the user cost of capital, consider the case in which $m^i = z = 0$ and hence $\rho = i$, the nominal interest rate. The cost of capital for investment financed with retained earnings is therefore

$$\tilde{p}^{RE} = \frac{(1 - A)}{(1 - \tau)}\{r + \delta\} - \delta$$

in which r is defined as the real interest rate: $(1 + r)(1 + \pi) = 1 + i$.

The EMTR is therefore defined as the expected pretax rate of return ($\tilde{p}$) minus the expected after-tax rate of return (r), divided by the pretax rate of return. Thus, for new investment:

$$EMTR = \frac{\tilde{p} - r}{\tilde{p}}.$$

There are some limitations to the standard EMTR calculation. It is important to note that EMTRs are quite sensitive to the underlying assumptions, for example, those regarding the interest rate or inflation. They are usually computed under uniform and constant parameters, which might not reflect actual country data. The effective tax rate model may omit features of the corporate tax code that may influence incentives to save and invest. For example, EMTR calculations generally ignore special credits, deductions, rates, and other tax provisions intended to encourage investment in specific assets or industries, which are prevalent in developing countries. They assume that firms use all available deductions and credits when such deductions and credits are likely to be of little use to a firm in a loss position or with a stock of unused tax losses and credit carryforwards. Standard EMTR calculations also assume that all investors are subject to corporate tax, ignoring the fact that various tax avoidance opportunities may lead to a lower statutory tax rate on marginal investment. This means that lower federal corporate income tax rates and other tax measures intended to reduce marginal effective tax rates on new investment may have less influence in an economy that is open to international capital flows.

Annex 2.5. Taxation and Resource Allocation Efficiency within Industries

This annex summarizes the econometric approaches used to estimate the effect of tax distortions on resource allocation efficiency within industries, following a difference-in-differences (DID) approach, following Rajan and Zingales (1998). Because of data constraints, analyses are conducted separately for advanced and developing economies.

Emerging Market and Low-Income Developing Countries: Disparities in Effective Marginal Tax Rates Across Asset Types and Industry-Level Resource Allocation Efficiency

Disparities in effective marginal tax rates (EMTRs) across asset types can increase resource misallocation when they result in over- or underinvestment in particular types of assets. This section of the annex explores the effect that disparity in EMTRs across capital asset types can have on resource allocation efficiency within industries.

Empirical Strategy

Tax disparity in this analysis is defined as the difference between the EMTR on machinery and the EMTR on buildings. A DID approach is used, exploiting the fact that industries with a higher share of firms that are more capital intensive in machinery will be more affected than other industries by a higher tax disparity.

Denoting industry by j and country by k, the following equation is estimated:

$$\begin{aligned} RAE_{j,k} = {} & \alpha + \delta_j + \gamma_k \\ & + \beta_1 \left(tax\ disparity_k * machinery\ share_j \right) \\ & + B_x X_{j,k} + \varepsilon_{j,k}, \end{aligned} \tag{A2.5.1}$$

in which *RAE* denotes resource allocation efficiency and is a country-industry-specific variable, constructed from firm-level data as discussed in Annex 2.1 and 2.2; *tax disparity* denotes the country-level EMTR on machinery minus the EMTR on buildings (in absolute terms). Machinery share is the industry-specific capital intensity in machinery, as a share of total capital. To control for endogeneity, *machinery share* is measured using the asset share in industry capital income of the United States, under the assumption that the United States faces the least distortions.[47] The terms δ_j and γ_k are the industry and country fixed effects, respectively, included to isolate the impact of taxes from that of other unobserved policies or underlying structural characteristics that might be important in generating resource misallocation. The term $X_{j,k}$ is a vector of additional country-industry-specific control variables that includes the share of small firms in that industry, the share of young firms in that industry, the share of exporting firms in that industry, and the log of capital intensity in that industry. The regression also includes a proxy for the level of competition within each industry—measured as the share of firms with two or more competitors—to control for the possible effect of monopolistic power on the dispersion of revenue productivities. Moreover, the regression also controls for financing constraints using

[47]This is the approach followed by Rajan and Zingales (1998) to address potential endogeneity issues.

the self-reported perception of access to finance as an obstacle to business (average for the industry). The term α is a constant, and $\varepsilon_{j,k}$ denotes an error term disturbance satisfying standard assumptions.

The coefficient β_1 represents the DID estimate of the effect of tax disparity on resource allocation efficiency within industries that are more capital intensive in machinery. It is expected to be negative if a higher tax disparity reduces resource allocation efficiency in those industries.

Data

Country-industry-specific variables are constructed from firm-level data from the World Bank Enterprise Surveys. Country-level data on EMTRs are from the Oxford University Center for Business Taxation. Data on asset shares in industry capital income of the United States are from the Bureau of Labor Statistics.

The data set contains a maximum of 573 observations across 18 industries for 30 emerging market and 24 low-income developing countries.

Results

Annex Table 2.5.1 presents the main regression results. Column (1) presents those for equation (A2.5.1), including only the controls for the share of firms with more than two competitors and financing constraints; columns (2) and (3) add additional country-industry-specific controls. Columns (3) to (6) are based on similar specifications, with a term added for the interaction between the share of small firms in the industry and the perception of financing constraints in the industry.

The results in column (1) show that a 1 percentage point reduction in tax disparity is associated with a 1–1.5 percentage point increase in resource allocation efficiency in the industries that are more capital intensive in machinery. By reducing the tax disparity to the that observed at the 10th percentile of the distribution (zero tax disparity), the median emerging market economy would be able to increase its resource allocation efficiency by 7¼ percentage points in those industries that are more capital intensive in machinery and by 5½ percent in the case of the median low-income developing country.

Advanced Economies: Corporate Debt Bias and Industry-Level Resource Allocation Efficiency

Corporate debt bias can result in resource misallocation when it affects investment decisions that are more dependent on equity, as is the case for investment in research and development (R&D). Corporate debt bias occurs when firms are allowed to deduct interest expenses, but not returns to equity, in calculating corporate tax liability, raising the cost of equity financing compared to debt financing. Innovative firms, particularly startups, tend to rely on equity rather than debt for R&D investments (which have risky, long-horizon payoffs) because there are no collateral requirements and shareholders share in upside returns (Stiglitz 1985; Hall 2002; Brown, Fazzari, and Petersen 2009). Therefore, debt bias not only distorts the financing choice but can also create resource misallocation by imposing a higher marginal tax on R&D investment compared to other capital spending. This section of the annex explores the effect corporate debt bias can have on resource allocation efficiency within industries.

Empirical Strategy

The empirical approach estimates the relationship between corporate debt bias and resource allocation efficiency. It uses a DID approach exploiting the fact that industries with a higher R&D intensity will be more affected than other industries by a higher debt bias.

The following DID estimation is tested:

$$RAE_{j,k,t} = \alpha + \delta_j + \gamma_k + \chi_t + \beta_1 \left(debtbias_{kt} * R\&Dintensity_j \right) + \varepsilon_{j,k,t}, \quad \text{(A2.5.2)}$$

in which the subindices *j, k,* and *t* refer to the industry, country, and time, respectively; *RAE* denotes resource allocation efficiency and is a country-industry-specific variable, constructed from firm-level data as discussed in Annex 2.1 and 2.2; *debtbias* denotes the country-level EMTR on equity-financed investment minus the EMTR on debt-financed investment; And *R&D intensity* is the industry-specific R&D intensity (measured using the average of industrial R&D expenditures normalized by value added across member countries of the Organisation for Economic Co-operation and Development, to control for endogeneity). *External equity dependence* is also used as an alternative interaction variable with *debtbias*. The terms δ_j, γ_k, and χ_t are the industry, country, and time fixed effects, respectively (included to isolate the impact of taxes from that of other unobserved policies or underlying structural characteristics that may be important in generating resource

Annex Table 2.5.1. Developing Countries: Resource Allocation Efficiency and Disparity in Effective Marginal Tax Rates across Asset Types

Dependent Variable: Resource Allocation Efficiency at Industry Level in Manufacturing	(1)	(2)	(3)	(4)	(5)	(6)
Disparity in EMTRs$_k$ × Machinery as Share of Total Assets$_j$	−1.172*	−1.267*	−1.678***	−1.144*	−1.263*	−1.663***
	(−0.642)	(−0.617)	(−0.518)	(−0.631)	(−0.622)	(−0.526)
Firm Capital Intensity$_{j,k}$		0.039	0.035		0.037	0.033
		(−0.023)	(−0.024)		(−0.021)	(−0.022)
Share of Young Firms$_{j,k}$		−0.044	0.023		0.008	0.076
		(−0.103)	(−0.106)		(−0.119)	(−0.117)
Share of Small Firms$_{j,k}$		−0.027	0.025		−0.226	−0.138
		(−0.234)	(−0.245)		(−0.547)	(−0.534)
Share of Exporting Firms$_{j,k}$			0.004***			0.004***
			(−0.001)			(−0.001)
Share of Firms with 2+ Competitors$_{j,k}$	−0.017	−0.013	0.006	−0.021	−0.013	0.005
	(−0.085)	(−0.081)	(−0.08)	(−0.086)	(−0.083)	(−0.082)
Median Perception of Access to Finance as an Obstacle$_{j,k}$	0.025	0.028	0.031			
	(−0.024)	(−0.024)	(−0.023)			
Share of Small Firms$_{j,k}$ × Perception of Access to Finance as an Obstacle$_{j,k}$				0.029	0.155	0.127
				(−0.112)	(−0.287)	(−0.278)
Number of Observations	286	286	286	286	286	286
R^2	0.513	0.525	0.552	0.51	0.521	0.547
Country Fixed Effects	Y	Y	Y	Y	Y	Y
Industry Fixed Effects	Y	Y	Y	Y	Y	Y

Source: IMF staff calculations.
Note: The disparity in effective marginal tax rates (EMTRs) is the EMTR on machinery minus the EMTR on buildings. Standard errors are in parentheses and are clustered by industry.
*$p < 0.1$; **$p < 0.05$; ***$p < 0.01$.

misallocation); α is a constant; and $\varepsilon_{j,k,t}$ denotes an error term disturbance satisfying standard assumptions.

The coefficient β_1 represents the difference-in-differences estimate of the effect of debt bias on resource allocation efficiency within R&D-intensive industries. It is expected to be negative if a higher debt bias reduces resource allocation efficiency in those industries.

Data

Country-level data on EMTRs are from the Oxford University Center for Business Taxation. Data on R&D intensity (the average of industrial R&D expenditures normalized by value added across member countries of the Organisation for Economic Co-operation and Development) and external equity dependence (the ratio of net external equity issues to total assets for the median U.S. firm in each industry in the 1980s) are from Brown and Martinsson 2016.

The main estimation sample is an unbalanced panel of 3,784 observations, across nine advanced economies, over the period 2006–13.

Results

Annex Table 2.5.2 presents the main regression results. Column (1) shows the results for equation (A2.5.2), including country, industry, and time fixed effects; column (2) uses country-time and industry-time fixed effects; and column (3) uses country-industry and time fixed effects. Columns (4) to (6) employ similar specifications, using equity dependence as the interaction variable with debt bias.

The results in column (3) show that a 1 percentage point reduction in debt bias is associated with a 0.01 percentage point increase in resource allocation efficiency in those industries that are more intensive in R&D. By reducing the debt bias to that observed at the 10th percentile of the distribution (29 percentage points), the median advanced economy would be able to increase resource allocation efficiency in those industries that are more R&D intensive by 3 percentage points. The median debt bias reduction would be 13 percentage points.

Similar results are obtained when equity dependence is used as the interaction term instead of R&D intensity. The results in column (6) show that a 1 percent point reduction in debt bias is associated with a 0.02 percentage point increase in resource allocation efficiency in those industries that are more dependent on equity. By reducing the debt bias to that observed at the 10th percentile of the distribution, the median advanced economy would be able

Annex Table 2.5.2. Advanced Economies: Resource Allocation Efficiency and Corporate Debt Bias

Dependent Variable: Resource Allocation Efficiency at Industry Level in Manufacturing						
	(1)	(2)	(3)	(4)	(5)	(6)
Debt Bias$_k$ × R&D Intensity$_j$	–0.00781***	–0.00815***	–0.00900***			
	(0.00120)	(0.00126)	(0.00163)			
Debt Bias$_k$ × Equity Dependence$_j$				–0.0198***	–0.0204***	–0.0231***
				(0.00307)	(0.00322)	(0.00422)
Number of Observations	3,784	3,784	3,784	3,784	3,784	3,784
R^2	0.301	0.318	0.411	0.301	0.318	0.411
Country Fixed Effects	Y	N	N	Y	N	N
Industry Fixed Effects	Y	N	N	Y	N	N
Time Fixed Effects	Y	N	Y	Y	N	Y
Country × Time Fixed Effects	N	Y	N	N	Y	N
Industry × Time Fixed Effects	N	Y	N	N	Y	N
Country-Industry Fixed Effects	N	N	Y	N	N	Y

Source: IMF staff calculations
Note: Robust standard errors are in parentheses and are clustered by country and industry.
*$p < 0.1$; **$p < 0.05$; ***$p < 0.01$.

to increase resource allocation efficiency in those industries that are more equity dependent by 3 percentage points.

Emerging Markets and Low-Income Developing Economies: Preferential Tax Regime for Small Firms and Industry-Level Resource Allocation Efficiency

Preferential tax treatment based on size affects productivity by stunting firm growth. Tax differences across firm size can result in misallocation if more productive firms choose to stay small to remain below the eligibility threshold for preferential tax treatment, preventing them from taking advantage of economies of scale and scope (Pagés 2010; Bobbio 2016). This also implies that a larger share of output at the aggregate level ends up being produced by smaller, less efficient firms.

Empirical Strategy

The empirical approach explores the relationship between preferential tax regimes for small firms and resource allocation efficiency. It uses a DID approach, exploiting the fact that industries with a higher share of small firms will be more affected than other industries by a preferential treatment of small firms.

The following equation is estimated for country k and industry j:

$$RAE_{j,k} = \alpha + \delta_j + \gamma_k + \beta_1 \left(preferential\_treatment_k * share\_small_{j,k}\right) + \beta_x X_{j,k} + \varepsilon_{j,k}, \quad \text{(A2.5.3)}$$

in which RAE denotes resource allocation efficiency and is a country-industry-specific variable, constructed from firm-level data as discussed in Annex 2.1 and 2.2; *preferential_treatment* is a dummy variable equal to 1 if the country offers lower tax rates for small firms; $share\_small_{j,k}$ is the country-industry-specific share of small firms in each industry; and $X_{j,k}$ is a vector of additional country-industry-specific control variables that includes the share of small firms in that industry, the share of young firms in that industry, the share of exporting firms in that industry, and the log of capital intensity in that industry. The regression also includes a proxy for the level of competition within each industry—measured as the share of firms with two or more competitors—to control for the possible effect of monopolistic power on the dispersion of revenue productivities. Moreover, the regression controls for financing constraints using the self-reported perception of access to finance as an obstacle to business (average for the industry). These are included to isolate the impact of taxes from that of other unobserved policies or underlying structural characteristics that may be important in generating resource misallocation. The term α is a constant, and $\varepsilon_{j,k}$ denotes an error term disturbance satisfying standard assumptions.

The coefficient β_1 represents the DID estimate of the effect of having a preferential regime for small firms on resource allocation efficiency within industries that have a larger share of small firms. It is expected to be negative if the preferential regime for small firms reduces resource allocation efficiency in those industries.

Data

Country-industry-specific variables are constructed from firm-level data from the World Bank Enterprise

Annex Table 2.5.3. Developing Countries: Resource Allocation Efficiency and Preferential Taxes for Small Firms

Dependent Variable: Revenue Allocation Efficiency at Industry Level in Manufacturing	(1)	(2)
Lower Tax for Small Firms Dummy$_k$ × Share of Small Firms$_j$	−1.193** (−0.477)	−1.587** (−0.63)
Capital Intensity$_{jk}$		0.014*** (−0.004)
Share of Young Firms$_{jk}$		−0.051 (−0.066)
Share of Small Firms$_{jk}$		0.055 (−0.336)
Share of Exporting Firms$_{jk}$		0.001* (−0.001)
Share of Firms with 2+ Competitors$_{jk}$		−0.092*** (−0.018)
Median Perception of Access to Finance as an Obstacle$_{jk}$		0.011 (−0.013)
Number of Observations	501	484
R^2	0.079	0.127
Country Fixed Effects	Y	Y
Industry Fixed Effects	Y	Y

Source: IMF staff calculations.
Note: Standard errors are in parentheses and are clustered by industry.
*$p < 0.1$; **$p < 0.05$; ***$p < 0.01$.

Surveys. Data on countries that provide lower tax rates for small firms are drawn from the KPMG database.

The data set contains a maximum of 501 observations (determined by the KPMG variable) across 18 industries in 30 emerging market economies and 24 low-income developing countries.

Results

Annex Table 2.5.3 presents the main regression results. Column (1) estimates equation (A2.5.3) with country and industry fixed effects. Column (2) includes additional country-industry-specific control variables.

The results show that emerging market and low-income developing countries that provide lower tax rates for small firms face lower resource allocation efficiency. More specifically, for industries with a larger share of small firms, resource allocation efficiency is lower by between 1.2 and 1.6 percentage points, respectively, in countries that offer lower tax rates for small firms compared with countries that do not have such tax scheme.

Annex 2.6. Firm-Level Productivity, Informality, and the Tax System

A country's tax system can affect productivity when it contributes to the prevalence of informality in the country's economy. Informal firms are those that fail to pay the full amount of tax due. Weak tax enforcement reduces productivity when it gives informal firms a relative cost advantage over their tax-compliant competitors through tax evasion. This amounts to a potentially large subsidy that allows informal firms to stay in business despite their low productivity, increasing their weight in the economy at the expense of more productive firms (Fajnzylber 2007; Levy 2008; Pagés 2010; Busso, Fazio, and Levy 2012). As a result, informal businesses gain market share even if they are less productive, reducing the market share of more productive, tax-compliant businesses. This annex explores the link between productivity and informality, proxied by the prevalence of cheats, and the effect tax policy and tax administration can have on the prevalence of cheating among small firms.

Empirical Strategy

Two empirical specifications are implemented. The first explores whether firm-level total factor productivity (TFP) is lower for cheats—registered firms that underreport their sales to the tax authority (equation A2.6.1). The second empirical specification uses a difference-in-differences (DID) approach to analyze whether the corporate income tax (CIT) rate and features of the tax administration increase the prevalence of cheating among small firms (equation A2.6.2).

$$TFP_{i,j,k} = \gamma_k + \delta_j + \beta_1 salesreported_{i,j,k} + \beta_2 Z_{i,j,k} + \varepsilon_{i,j,k}, \quad \text{(A2.6.1)}$$

$$salesreported_{i,j,k} = \gamma_k + \delta_j + \beta_1 \left(small_{i,j,k} \times CIT_k\right) + \beta_2 \left(small_{i,j,k} \times CIT_k \times taxadmin_k\right) + \beta_3 Z_{i,j,k} + \varepsilon_{i,j,k}. \quad \text{(A2.6.2)}$$

The subindices *i, j,* and *k* in the two equations refer to the firm, industry, and country, respectively.

In equation (A2.6.1), *TFP* is the firm-level TFP, calculated following Levinsohn and Petrin (2003), and *sales reported* is the explanatory variable of interest, here defined as the share of sales reported to the tax authorities. The baseline specification controls for country (γ_k) and industry (δ_j) fixed effects that capture all other unobserved country- and industry-specific characteristics. The variable Z_i includes standard firm-level control variables, in particular, age, export share,

whether the firm is domestically owned, whether the firm is small (fewer than 20 workers), and whether the firm perceives access to financing as a major constraint for its business. The variable $\varepsilon_{i,j,k}$ is the error term. The coefficient of interest is β_1 and reflects the effect of underreporting sales to the tax authority (cheating) on firm-level productivity. It is expected to be negative if underreporting of sales reduces firm TFP.

In equation (A2.6.2), the dependent variable *sales reported* is the same as that used in equation (A2.6.1). For the DID approach, it is assumed that small firms tend to face higher tax compliance costs than larger firms and therefore have a greater incentive to cheat. *CIT* is the country-level statutory corporate income tax rate, and *tax admin* is a dummy variable equal to 1 when the country exhibits certain tax administration characteristics associated with a stronger tax enforcement capacity and lower compliance costs. Tax administration characteristics include whether the country has an integrated tax and customs agency, a functionally organized tax administration, a semi-autonomous revenue agency (SARA), and a large taxpayer office (LTO).[48] The coefficient β_1 represents the DID estimate of the effect of the CIT rate on reporting of sales for tax purposes. It is expected to be negative if a higher rate contributes to a reluctance of small firms to accurately report to the tax authorities. The coefficient β_2 represents the DID estimate of the effect of the tax administration characteristic in offsetting the negative effect of the CIT rate on reporting by small firms. This coefficient is expected to be positive if stronger tax enforcement deters firms from cheating.

To corroborate the findings from firm-level regressions, country-level regressions are also implemented, using as a proxy for informality the fraction of the labor force that does not contribute to a retirement pension scheme. The following equations are specified:

$$TFP_k = \alpha + \lambda Z_k + \beta_1 \, noncontributors_k + \varepsilon_k, \quad \text{(A2.6.3)}$$

$$noncontributors_k = \alpha + \lambda Z_k + \beta_1 \, CIT_k + \beta_2 (CIT_k \times taxadmin_k) + \varepsilon_{k.} \quad \text{(A2.6.4)}$$

In equation (A2.6.3), TFP_k is TFP at the country level, from the Penn World Tables. The main explanatory variable, $noncontributors_k$, is a proxy for informality, measured as the fraction of the labor force that does not contribute to a retirement pension scheme. Self-employment as a percentage of total employment is used as an alternative measure of informality. The coefficient β_1 is expected to be negative and statistically significant, showing that a high prevalence of informal activities is associated with lower TFP. Country-specific characteristics (Z_k) such the GDP level and population size are controlled for; α is a constant, and ε_k is the error term. To correct for potential reverse-causality bias, a two-stage least-squares instrumental-variables methodology is used. Following Loayza, Servén, and Sugawara (2009), three instrumental variables are used for the endogenous measures of informality: secondary enrollment rate, intellectual property protection, and the independence of the judiciary system. Diagnosis statistics (under- and weak identification tests and Hansen's overidentification test) show that the three instrumental variables used are valid instruments.

In equation (A2.6.4), the dependent variable is *noncontributors* as defined above. Among the explanatory variables, the focus is on the coefficients β_1 and β_2, which capture the effect on informality of tax policy (CIT_k) and tax administration ($CIT_k \times taxadmin_k$), respectively. While the coefficient β_1 is expected to be positive and statistically significant (showing that a higher tax policy burden increases informality through a higher share of noncontributors to pension schemes), the coefficient β_2 is expected to be negative. This indicates that an efficient tax administration with better tax enforcement and lower compliance costs can help mitigate the effect of the tax rate on informality. Country-specific characteristics (Z_k) such as GDP level and population size are controlled for; α is a constant, and ε_k is the error term.

Data

Firm-level data used in equations (A2.6.1) and (A2.6.2) are from the World Bank Enterprise Surveys and cover 130 countries.

Firm-level data on reporting of sales to the tax authority are based on firm responses to the question "What percentage of total annual sales would you esti-

[48]The characteristics used in the regression analysis are imperfect proxies. A more comprehensive measure of tax enforcement capacity is the tax gap for major taxes. However, the tax gap measure is currently available only for a limited set of countries and mainly for value-added taxes. The IMF Fiscal Affairs Department's Revenue Administration Gap Analysis Program (RA-GAP) aims to help countries identify and address compliance gaps. The program initially focused on value-added tax gap estimation but is being extended to other taxes. RA-GAP reports for 22 countries have been completed so far.

Annex Table 2.6.1. Firm-Level Productivity and Informality

Dependent Variable: Firm-Level Total Factor Productivity			
	All Countries		
	(1)	(2)	(3)
Age_i	0.0065***	0.0063***	0.0065***
	(0.001)	(0.001)	(0.001)
$Corruption_i$	–0.001	–0.004	0.001
	(0.008)	(0.008)	(0.009)
$Sales\ Reported_i$	0.0016***	0.0018***	0.0018***
	(0.000)	(0.000)	(0.000)
Number of Observations	11,499	11,499	10,604
R^2	0.421	0.432	0.446
Industry Fixed Effects	Y	Y	Y
Country Fixed Effects	Y	Y	Y

Source: IMF staff calculations.
Note: Standard errors are in parentheses and are clustered by country and industry.
*$p < 0.1$; **$p < 0.05$; ***$p < 0.01$.

mate the typical firm in your area of business reports for tax purposes?" from the World Bank Enterprise Surveys. Although firms may be reluctant to reveal the extent of their underreporting, survey respondents will presumably tend to answer questions based on their own experiences. Therefore, responses to this question are interpreted as indicating firms' own behavior. This proxy for informality has been previously used by La Porta and Shleifer (2008, 2014), Dabla-Norris and Inchauste (2008), and Fajnzylber (2007). It is found to be correlated with a number of other measures of informality, such as self-employment as a share of total employment and the fraction of the labor force that does not contribute to a retirement pension scheme. For the empirical analysis, it is assumed that survey respondents answer other questions in the survey accurately. Data on sales reported for tax purposes are available for the period 2002–10.

The data on characteristics of the tax administration are from the U.S. Agency for International Development Tax Database for 2007–12. These include (1) tax administration costs as a percentage of total revenue, suggesting that a higher number of tax staff per taxpayer can provide greater audit capacity; (2) whether a particular country has an integrated tax and customs agency, which can enable a more complete view of each taxpayer; (3) whether a particular country has a functionally organized tax administration that standardizes common work across taxes and tax-type organizations and simplifies the relationship between the tax administration and the taxpayer; (4) whether the country has a semiautonomous revenue agency (SARA), which helps protect against political interference and provides independence in operations and human resource management; and (5) whether the country has a large taxpayer office (LTO), which can enable a better allocation of administrative resources and facilitate risk-management approaches to compliance.

Data on the statutory CIT rate are from the IMF's Tax Policy Database.

For the country-level regression in equation (A2.5.3), TFP is from the Penn World Table 9.0 database. The fraction of the labor force that does not contribute to a retirement pension scheme is from the World Bank Human Development Network Social Protection pensions database. Data are available for 116 countries over the period 2000–15. Data on self-employment as a share of total employment are from the World Bank's *World Development Indicators*.

Estimation Results

Annex Table 2.6.1 provides the results linking firm-level TFP and the percentage of sales reported for tax purposes, based on equation (A2.6.1). Column (1) reports the baseline result and includes country and industry fixed effects. Column (2) includes year fixed effects, and column (3) retains only the latest available data for firms surveyed twice or more.

The firm-level regressions confirm that lower informality is associated with higher productivity. Results in column (1) show that a 1 percentage point increase in sales reported is associated with a 0.001 percentage point increase in firm-level TFP. The results suggest that cheats that report only 30 percent of their sales (equivalent to the firm at the 25th percentile of the distribution of cheats) have a 4 percent lower TFP than tax-compliant firms.

Annex Table 2.6.2 presents the country-level regression results, following equation (A2.6.3). Each column uses an alternative proxy for the prevalence of informality: noncontributors to the pension scheme (column 1) and the share of self-employment (column 2). The country-level results confirm firm-level results that lower informality is associated with higher productivity.

Annex Table 2.6.3 provides the results linking sales reported, the CIT tax rate, and characteristics of the tax administration, using the DID approach of equation (A2.6.2). Each column provides the results

for an alternative characteristic of the tax administration: tax administration costs as a percentage of total revenue (column 1); whether a particular country has a functionally organized tax administration (column 2); whether a particular country has an integrated tax and customs agency (column 3); whether the country has a SARA (column 4); and whether the country has an LTO (column 5). Overall, the firm-level DID regressions show that a stronger tax administration can help offset the effect of a higher tax rate on the percentage of sales reported by small firms.

Annex Table A2.6.4 provides the country-level results linking the tax system and informality—as proxied by the fraction of the labor force that does not contribute to a retirement pension (equation A2.6.4). As in Annex Table A2.6.3, each column provides the results for an alternative characteristics of the tax administration. The results reiterate the firm-level

Annex Table 2.6.2. Aggregate Total Factor Productivity and Informality

Dependent Variable: Log Total Factor Productivity at Country Level	(1)	(2)
GDP (log)	0.058	0.0419
	(–0.05)	(–0.048)
Population size (log)	–0.0443	–0.0141
	(–0.075)	(–0.07)
Noncontributors to pensions (log)	–0.540*	
	(–0.281)	
Self-employment (log)		–0.419**
		(–0.161)
Number of Countries	101	103
Underidentification (*p*-value)	0.001	0.002
Weak-identification (KP *F*-stat)	5.883	12.774
Weak-instrument (SW *S*-stat)	0.068	0.155
Hansen (*p*-value)	0.153	0.326

Source: IMF staff calculations.
Note: Standard errors are in parentheses. The underidentification and weak-identification hypotheses are rejected. The instruments employed also pass the Hansen overidentification test. KP *F*-stat = Kleibergen-Paap *F*-statistics; SW *S*-stat = Stock-Wright *S*-statistics.
*$p < 0.1$; **$p < 0.05$; ***$p < 0.01$.

Annex Table 2.6.3. Firm-Level Informality, Tax Rates, and Tax Administration

Dependent Variable: Percent of Total Sales Reported for Tax Purposes	(1)	(2)	(3)	(4)	(5)
Age_i	0.0338	0.0599***	0.0525**	0.0511**	0.0537**
	(0.023)	(0.022)	(0.021)	(0.021)	(0.021)
Export Share $(log)_i$	0.0263	–0.0069	–0.0082	–0.0083	–0.0024
	(0.027)	(0.021)	(0.021)	(0.021)	(0.020)
Domestic $Ownership_i$	1.379	–0.529	–1.084	–0.763	–1.177
	(1.431)	(1.259)	(1.220)	(1.205)	(1.249)
Licensing/Permit $Constraints_i$	–1.640***	–0.904**	–1.116**	–1.079**	–1.176**
	(0.543)	(0.454)	(0.453)	(0.449)	(0.473)
Perception of Access to Financing as a $Constraint_i$	–0.429	–0.481	–0.428	-0.440	–0.277
	(0.612)	(0.593)	(0.575)	(0.569)	(0.595)
Perception of Corruption as a $Constraint_i$	–0.292	–0.852**	–0.753**	–0.775**	–0.734**
	(0.409)	(0.363)	(0.349)	(0.349)	(0.354)
Informal $Competition_i$	0.355	–0.324	–0.212	–0.260	–0.182
	(0.307)	(0.288)	(0.280)	(0.281)	(0.286)
Small $Firm_i$	1.259	-0.880	2.824	–0.214	0.00677
	(3.631)	(3.290)	(3.573)	(3.224)	(3.356)
$CIT_k \times$ Small $Firm_i$	–0.172	–0.458***	–0.316**	–0.227*	–0.221
	(0.119)	(0.167)	(0.138)	(0.116)	(0.160)
$CIT_k \times$ Tax Administration $Cost_k \times$ Small $Firm_i$	0.0714***				
	(0.027)				
$CIT_k \times$ Functional $Organization_k \times$ Small $Firm_i$		0.333**			
		(0.135)			
$CIT_k \times$ Integrated Tax and Customs $Agency_k \times$ Small $Firm_i$			0.0913		
			(0.056)		
$CIT_k \times$ Semi-Autonomous Revenue $Agency_k \times$ Small $Firm_i$				0.102*	
				(0.053)	
$CIT_k \times$ Large Taxpayer $Office_k \times$ Small $Firm_i$					0.0574
					(0.126)
Number of Observations	4,695	8,993	9,573	9,675	9,278
R^2	0.099	0.167	0.174	0.175	0.159
Industry Fixed Effects	Y	Y	Y	Y	Y
Country Fixed Effects	Y	Y	Y	Y	Y

Source: IMF staff calculations.
Note: Standard errors are in parentheses and are clustered by country and industry. CIT = corporate income tax.
*$p < 0.1$; **$p < 0.05$; ***$p < 0.01$.

Annex Table 2.6.4. Country-Level Informality, Tax Rates, and Tax Administration

Dependent Variable: Noncontributors to Pensions at Country Level (log)

	(1)	(2)	(3)	(4)	(5)
GDP (log)	–0.120***	–0.114***	–0.0935***	–0.0958***	–0.103***
	(0.035)	(0.022)	(0.016)	(0.019)	(0.018)
Population Size (log)	0.225***	0.178***	0.149***	0.155***	0.159***
	(0.059)	(0.035)	(0.030)	(0.034)	(0.027)
Log_CIT	0.103	0.231	0.127	0.0195	0.266
	(0.212)	(0.167)	(0.124)	(0.111)	(0.415)
Tax Administration Cost	–0.821				
	(0.751)				
Log_CIT × Tax Administration Cost	0.257				
	(0.233)				
Functional Organization		0.393			
		(0.523)			
Log_CIT × Functional Organization		–0.101			
		(0.166)			
Integrated Tax and Customs Agency			–1.579**		
			(0.758)		
Log_CIT × Integrated Tax and Customs Agency			0.456**		
			(0.221)		
Semiautonomous Revenue Agency				–1.355**	
				(0.535)	
Log_CIT × Semiautonomous Revenue Agency				0.421***	
				(0.160)	
Large Taxpayer Office					0.569
					(1.410)
Log_CIT × Large Taxpayer Office					–0.111
					(0.421)
Number of Countries	47	89	100	102	93
R^2	0.486	0.442	0.46	0.453	0.545

Source: IMF staff calculations.
Note: Standard errors are in parentheses and are clustered by country and industry. CIT = corporate income tax.
*$p < 0.1$; **$p < 0.05$; ***$p < 0.01$.

results that a stronger tax administration can help reduce the incidence of informality.

Annex 2.7. Tax Compliance Costs and Firm Productivity

Tax compliance costs refer to the resources spent by firms to comply with taxation in addition to the tax liability, such as employee time dealing with tax issues and the cost of professional advice. Tax compliance costs are commonly found to be especially burdensome for small firms and young businesses (Slemrod and Venkatesh 2002; Coolidge 2012). However, the more resources small firms spend to file their taxes, the fewer resources are available for more productive activities.

This annex, based on Dabla-Norris and others, forthcoming, provides evidence that small and young firms have higher labor productivity in countries with lower tax compliance costs. Dabla-Norris and her colleagues construct a novel Tax Administration Quality Index (TAQI). This index is comprehensive in the sense that it reflects the quality of all aspects of tax administration that matter for tax compliance costs, comparable across countries, and abstracts from any effects of tax policy on compliance costs. The index is based on country-specific information from the Tax Administration Diagnostic Assessment Tool (TADAT), a comprehensive standardized framework for evaluating the performance of tax administration systems. The index uses TADAT data for 33 dimensions of tax administration grouped into four broad categories that matter for tax compliance costs: (1) supporting taxpayer information, (2) filing and payment, (3) postfiling processes, and (4) accountability and transparency on the part of the tax authorities. The TAQI is measured on a scale of 0 to 4, with a higher score implying lower compliance costs.

Empirical Strategy

To assess whether tax compliance costs take a toll on labor productivity of small and young firms, the analysis uses the TAQI to captures the strength of

those areas of tax administration that matter for firms' tax compliance costs.

To address potential endogeneity, the analysis focuses on the differential impact the TAQI can have on productivity of small and young firms using a difference-in-differences approach. Given the regressive nature of tax compliance costs, the identifying assumption is that small and young firms are likely to benefit more than large and more mature firms from improvements in tax administration that alleviate the tax compliance burden.

Two alternative specifications are estimated:

$$PROD_{i,j,k} = \alpha + \gamma_k + \delta_j + \beta_0 small_{i,j,k} + \beta_1 \left(small_{i,j,k} \times TAQI_k\right) + \beta_2 Z_{i,j,k} + \varepsilon_{i,j,k}, \quad \text{(A2.7.1)}$$

$$PROD_{i,j,k} = \alpha + \gamma_k + \delta_j + \beta_0 young_{i,j,k} + \beta_1 \left(young_{i,j,k} \times TAQI_k\right) + \beta_2 Z_{i,j,k} + \varepsilon_{i,j,k}. \quad \text{(A2.7.2)}$$

In the specifications, the subindices *i, j,* and *k* refer to firm, industry, and country, respectively. The analysis is based on cross-section data in the sense that there is only one observation for each country and firm. *PROD* is labor productivity (in logs) as a measure of firm performance. The variable *small* is a dummy that reflects firm size, equal to 1 if a particular firm has fewer than 20 employees; *young* is a dummy that reflects firm age, equal to 1 if a particular firm is younger than seven years old (which corresponds to the 25th percentile of the age distribution in the sample); Z_i includes standard firm-level control variables, in particular, whether a particular firm is partially government owned, an exporter, or partially foreign owned, and whether it perceives tax administration as a major constraint for its business; *TAQI* is the Tax Administration Quality Index (measured on a scale from 0 to 4); α is a constant; and $\varepsilon_{i,j,k,t}$ is the error term. The coefficient β_1 represents the difference-in-differences estimate of the effect of the electronic filing rate on labor productivity in small and young firms; it is expected to be positive if electronic filing is associated with higher productivity in these firms. The baseline specification controls for unobserved country (γ_k) and industry (δ_j) fixed effects. The results reported in the chapter text control for combined country-industry fixed effects. The results are unlikely to be affected by reverse causality, as the country-wide TAQI can be seen as exogenous to any individual firm. In addition, given that cross-section data are used, country fixed effects will capture all other aspects of tax policy and tax administration that are common across firms and other unobserved country-specific characteristics such as regulation that may be correlated with the quality of tax administration. In alternative specifications, the robustness of the definition of small and young firms is tested.

Data

Firm-level data are from the World Bank Enterprise Surveys. The tax administration index is constructed using data from TADAT, and there are 21 country-year combinations for which observations for both data sources are available. While World Bank Enterprise Surveys provide data for many countries, most countries covered are surveyed only once.

Results

Annex Table 2.7.1 summarizes the main estimation results. Column (1) reports the baseline result based on equation (A2.7.1) for small firms, which includes country and industry fixed effects. Column (2) includes country-industry effects instead of the country and industry fixed effects separately. Columns (4) and (5) provide results for similar specifications for young firms, following equation (A2.7.2). In specifications (3) and (6), the robustness to the exact definition of small and young firms is tested. In specification (3), the *small* dummy refers to firms with fewer than 100 employees. In specification (6), the *young2* dummy refers to firms that are younger than five years old. The results are also robust to including in the regressions terms capturing the interaction of the *small* dummy with indicators of governance and regulatory quality.

On average, a higher TAQI score is found to be associated with higher productivity in small and young firms. Based on specifications (2) and (5), for every one unit increase in the TAQI, labor productivity is 51 percent higher in the case of small firms and 16 percent higher in the case of young firms.

Specification (2) implies that in countries with a low TAQI score (at the 25th percentile of the sample distribution), the productivity of small firms is about 40 percent of the productivity of larger firms. In countries with a high TAQI score (at the 75th percentile of

Annex Table 2.7.1. Developing Countries: Tax Compliance Costs and Labor Productivity

Dependent Variable: Firm-Level Labor Productivity

	(1)	(2)	(3)	(4)	(5)	(6)
$Small_i$	–1.230***	–1.143***		–0.224***	–0.231***	–0.230***
	(0.163)	(0.174)		(0.048)	(0.050)	(0.048)
$Young_i$	–0.163***	–0.134***	–0.199***	–0.498***	–0.412***	
	(0.041)	(0.041)	(0.042)	(0.121)	(0.119)	
$Government\ Owned_i$	–0.104	–0.067	–0.061	–0.108	–0.071	–0.107
	(0.177)	(0.190)	(0.186)	(0.175)	(0.187)	(0.175)
$Exporter_i$	0.330***	0.307***	0.374***	0.323***	0.305***	0.324***
	(0.059)	(0.062)	(0.060)	(0.060)	(0.062)	(0.060)
$Foreign_i$	0.308***	0.326***	0.365***	0.310***	0.323***	0.312***
	(0.081)	(0.082)	(0.082)	(0.083)	(0.084)	(0.083)
Perception That Tax Administration Is a Major $Constraint_i$	–0.039	–0.036	–0.043	–0.029	–0.029	–0.030
	(0.030)	(0.029)	(0.030)	(0.030)	(0.029)	(0.029)
$Small_i \times TAQI_k$	0.563***	0.508***				
	(0.088)	(0.094)				
Small and Medium-Sized $Enterprises_i$			–1.271***			
			(0.224)			
Small and Medium-Sized $Enterprises_i \times TAQI_k$			0.690***			
			(0.118)			
$Young_i \times TAQI_k$				0.190***	0.158**	
				(0.065)	(0.064)	
$Young2_i$						–0.375**
						(0.156)
$Young2_i \times TAQI_k$						0.123
						(0.086)
Number of Observations	11,354	11,354	11,354	11,354	11,354	11,354
R^2	0.584	0.598	0.581	0.58	0.594	0.579
Number of Countries	21	21	21	21	21	21
Number of Industries	23	23	23	23	23	23
Country Fixed Effects	Yes	No	Yes	Yes	No	Yes
Industry Fixed Effects	Yes	No	Yes	Yes	No	Yes
Country × Industry	No	Yes	No	No	Yes	No

Source: IMF staff calculations.
Note: Standard errors are in parentheses and are clustered by country and industry. TAQI = Tax Administration Quality Index.
*$p < 0.1$; **$p < 0.05$; ***$p < 0.001$.

the sample distribution), the productivity differences between small and larger firms are much smaller. The results from specification (5) also show that productivity of young firms is only 75 percent of the productivity of mature firms in countries with a low TAQI score. The productivity differences are again only a few percentage points in the case of countries with a higher TAQI score.

Annex 2.8. Antiavoidance Legislation and Investment by Multinational Firms

Many countries are contemplating taking steps to level the playing field across multinational and domestic firms by narrowing the gap between their effective tax rates through antiavoidance legislation to restrict profit shifting. These policy initiatives would increase the effective tax rate on multinational companies. However, because such companies are more mobile than domestic firms, unilateral action by a domestic government to address profit shifting can create distortions in real activity by reducing company's investment and employment. In turn, this can reduce domestic tax revenue in the long term and have adverse effects on national welfare. This annex, based on De Mooij and Liu, forthcoming, tests whether the implementation of antiavoidance legislation, in particular, transfer-pricing regulations, has had an impact on investment by multinational firms.

Empirical Strategy

To assess whether policy restrictions on the ability to shift profits indeed has an impact on multinational companies' investment decisions, the analysis focuses on transfer-pricing regulations (TPRs) that

were recently introduced in 27 countries (Annex Figure 2.8.1).

The analysis uses a difference-in-differences (DID) method. It exploits plausibly exogenous time-series variation in the effective cost of capital following introduction of TPRs in many countries. If TPRs have increased the effective cost of capital on multinational investment, a reduction in multinational investment relative to investment by domestic company groups would be expected. To explicitly control for variation in the investment owing to nontax factors, a control group is used, consisting of domestic company groups in the same host country that are exposed to aggregate shocks similar to those experienced by multinational companies.

Formally, the investment response is tested in the standard DID specification:

$$Investment_{i,k,t} = \varphi_i + \chi_t + \beta_{tpr}(MNC_i * TPR_{k,t}) + \beta_X X_{i,k,t} + \beta_Z Z_{k,t} + \varepsilon_{i,k,t}, \quad \text{(A2.8.1)}$$

in which i indexes firms, k indexes host countries, and t indexes time. The dependent variable $Investment_{i,k,t}$ denotes gross investment scaled by book value of fixed capital assets in (at the end of) year $t-1$. Net investment (investment net of depreciation) is also used as an alternative dependent variable. The key variable of interest is an interaction term between two indicators: an indicator equal to 1 for multinational affiliates and 0 otherwise (MNC_i) and an indicator equal to 1 following the introduction of some TPR and 0 otherwise (TPR_{kt}).

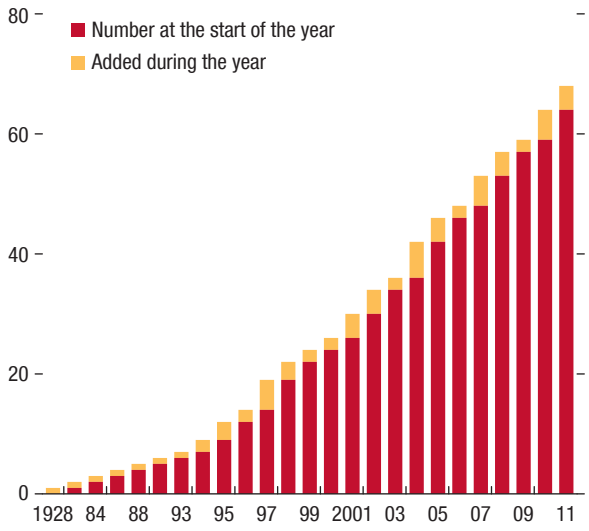
The coefficient β_{tpr} represents the DID estimate of the effect of TPR on investment by multinational affiliates; it is expected to be negative if introduction of the regulation is associated with a reduction in multinational companies.

Firm fixed effects (φ_i) are included to control for unobserved firm-specific productivity differences and the unobserved time-invariant characteristics of the parent company. Firm fixed effects further subsume host country fixed effects (given that affiliates do not change their location), which control for time-invariant differences across host countries that may affect the location choice of multinationals, for example, perceived average quality of governance during the sample period, common language or former colonial ties with the home country, and geographical distance between the home and host country. Time dummies (χ_t) are also included to capture the effect of aggregate macroeconomic shocks, including the effect of the global financial crisis, that are common to all multinational affiliates in the same host country. The term $X_{i,k,t}$ denotes a vector of firm-level controls—such as firm sales, cash flow per dollar of fixed assets, profitability, and sales growth (lagged one period), and $\varepsilon_{i,k,t}$ is the error term. Time-varying country characteristics ($Z_{k,t}$) for host countries (such as GDP per capita, population size, unemployment rate, and indices of governance quality and financial institution stability) are also included to capture the effect of time-varying local productivity, market size, and demand characteristics on investment.

Most specifications include the statutory corporate income tax (CIT) rate in the host country or country-year fixed effects to control for the confounding effects of concurrent tax reforms in the host countries. They also include a full set of industry-by-year interactions and country-by-year interactions to control for industry- and country-specific macroeconomic factors that might affect private investment and would otherwise be captured by the DID estimates. Sensitivity analysis is conducted to confirm the robustness of the findings (not reported here for the sake of brevity).

Alternative specifications are also implemented to test the effect of TPRs on complex multinational companies and whether the effect of TPRs is mitigated

Annex Figure 2.8.1. Countries with Transfer-Pricing Regulations



Sources: Mescall 2011; Saunders-Scott 2013; and IMF staff estimates.

Annex Table 2.8.1. Transfer-Pricing Regulations and Multinational Investments

Dependent Variable: Investment per Dollar of Fixed Assets

	(1)	(2)	(3)	(4)	(5)	(6)
$MNC_i \times TPR_{kt}$	–0.027***	–0.024***	–0.011***	–0.010***	–0.010***	
	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	
$MNC_i \times TPR_{kt} \times CIT_{kt}$						–0.021***
						(0.004)
$Log(Sales_{t-1})$	–0.094***	–0.096***	–0.088***	–0.088***	–0.088***	
	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	
Cash Flow per Dollar of Fixed Assets	0.018***	0.018***	0.018***	0.018***	0.018***	0.019***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
$Profitability_{t-1}$	0.076**	0.072**	0.065**	0.064**	0.064**	0.016**
	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.008)
$Sales\ Growth\ Rate_{t-1}$	0.031***	0.029***	0.027***	0.027***	0.027***	–0.013***
	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
Number of Observations	679,555	679,555	679,555	679,554	679,554	492,087
R^2	0.317	0.318	0.324	0.325	0.325	0.359
Firm Fixed Effects	Y	Y	Y	Y	Y	Y
Year Fixed Effects	Y	Y	Y	Y	Y	Y
Country-Year Fixed Effects	N	N	Y	Y	Y	Y
Industry-Year Fixed Effects	N	N	N	Y	Y	Y
Country-Industry Fixed Effects	N	N	N	N	Y	Y

Source: IMF staff calculations.
Note: Standard errors are in parentheses and are clustered by country and industry. CIT = corporate income tax; MNC = multinational company; TPR = transfer-pricing regulation.
*$p < 0.1$; **$p < 0.05$; ***$p < 0.01$.

when multinational companies have a high share of intangible assets. $MNC_{complex}$ is a dummy variable equal to 1 if the number of countries (or companies) in which a particular multinational company's group operates is above the median number of countries (companies) in the sample. The share of intangible assets is defined as the average share of intangible fixed assets relative to total fixed assets for each firm.

Data

The primary data set for empirical analysis is an unbalanced panel of 130,062 companies in 27 countries for the years 2006–14. It is constructed by using unconsolidated financial statements of affiliates of domestic and multinational company groups in the ORBIS database provided by Bureau van Dijk. A company is defined as a multinational affiliate if it has an ultimate parent company that owns at least 50 percent of its shares and is located in a foreign country. A company is defined as a domestic affiliate if it has an ultimate parent company that owns at least 50 percent of its shares and is located in the same country, and all the other affiliates of its parent company are located in the same country.

Results

Annex Table 2.8.1 summarizes the main estimation results. Column (1) reports the baseline result based on equation (A2.8.1), which includes firm-level non-tax determinants of investment and firm fixed effects and year fixed effects. Column (2) adds country-level macroeconomic characteristics. Columns (3) through (5) check the robustness of the results by subsequently adding country-year fixed effects (3), industry-year fixed effects (4), and country-industry fixed effects (5). Column (6) further interacts the variable of interest (*MNC* and *TPR*) with the statutory tax rate in the host country to capture the extent of the increase in the cost of capital following the introduction of TPRs.

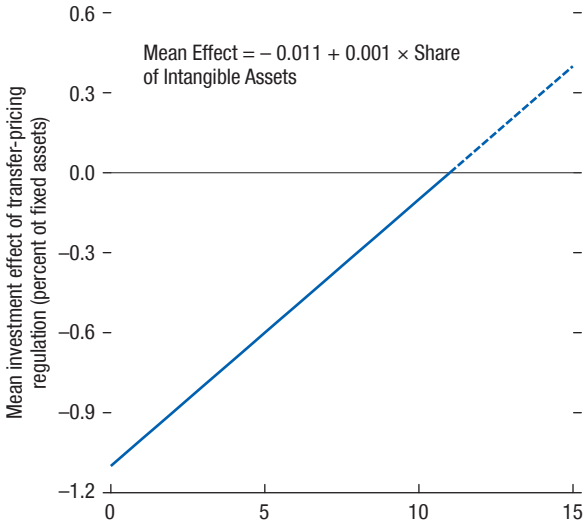
On average, introduction of transfer-pricing regulations would decrease investment as a percentage of fixed assets among multinational affiliates by 1–3 percentage points. Given that multinational affiliates invest about

Annex Table 2.8.2. Transfer-Pricing Regulations and Investments in the Case of Complex Multinational Companies

Dependent Variable: Investment per Dollar of Fixed Assets	Number of Companies (1)	Number of Countries (2)
$MNC_{it} \times TPR_{Kt}$	–0.005	–0.006
	(0.009)	(0.008)
$MNC_{it} \times TPR_{Kt} \times MNC_{Complex,it}$	–0.016*	–0.017**
	(0.008)	(0.008)
Number of Observations	605,908	605,908
R^2	0.273	0.273
Firm Fixed Effects	Y	Y
Year Fixed Effects	Y	Y
Country-Year Fixed Effects	Y	Y
Industry-Year Fixed Effects	Y	Y
Country-Industry Fixed Effects	Y	Y

Source: IMF staff calculations.
Note: Standard errors are in parentheses and are clustered by country and industry. MNC = multinational company; TPF = transfer-pricing regulation.
*$p < 0.1$; **$p < 0.05$; ***$p < 0.01$.

Annex Figure 2.8.2. Estimated Effect of Transfer-Pricing Regulations on Investment, Taking into Account Intangible Assets



Source: De Mooij and Liu, forthcoming.

30 cents per dollar of their fixed assets, this implies a reduction of 3–5 percent in multinational investment in response to the introduction of TPRs. The negative impact of TPRs on investment is mainly concentrated in large, more complex multinationals (Annex Table 2.8.2) and is smaller for multinationals with a higher share of intangible assets, which facilitates profit shifting via royalty payment (Annex Figure 2.8.2). Overall the findings suggest that TPRs have a moderate effect on multinational investment; this should be taken into account when evaluating the overall impact of antiavoidance provisions on tax revenues and national welfare.

References

Adalet McGowan, M., D. Andrews, C. Criscuolo, and G. Nicoletti. 2015. *The Future of Productivity*. Paris: Organisation for Economic Co-operation and Development.

Adler, G., R. Duval, D. Furceri, S. K. Çelik, K. Koloskova, and M. Poplawski-Ribeiro. 2017. "Gone with the Headwinds: Global Productivity." IMF Staff Discussion Note 17/04, International Monetary Fund, Washington, DC.

Aghion, P., S. Bond, A. Klemm, and I. Marinescu. 2004. "Technology and Financial Structure: Are Innovative Firms Different?" *Journal of the European Economic Association* 2 (2–3): 277–88.

Andrews, D., and F. Cingano. 2014. "Public Policy and Resource Allocation: Evidence from Firms in OECD Countries." *Economic Policy* 29 (78): 253–96.

Andrews, D., C. Criscuolo, and P. N. Gal. 2015. "Frontier Firms, Technology Diffusion and Public Policy: Micro Evidence from OECD Countries." The Future of Productivity: Main Background Papers, Organisation for Economic Co-operation and Development, Paris.

Andrews, D., and A. Saia. 2016. "Coping with Creative Destruction: Reducing the Costs of Firm Exit." OECD Economics Department Working Papers 1353, Organisation for Economic Co-operation and Development, Paris.

Antón, A. 2014. "The Effect of Payroll Taxes on Employment and Wages under High Labor Informality." *IZA Journal of Labor & Development* 3: 20.

Arias-Ortiz, E., G. Crespi, A. Rasteletti, and F. Vargas. 2014. "Productivity in Services in Latin America and the Caribbean." IDB Discussion Paper IDB-DP-346, Inter-American Development Bank, Washington, DC.

Arnold, J., B. Brys, C. Heady, A. Johansson, C. Schwellnus, and L. Vartia. 2011. "Tax Policy for Economic Recovery and Growth." *Economic Journal* 121 (550): 59–80.

Asatryan, Z., and A. Peichl. 2016. "Responses of Firms to Tax, Administrative and Accounting Rules: Evidence from Armenia." Discussion Paper 16-065, ZEW–Centre for European Economic Research, Mannheim, Germany.

Atkeson, A. G., and P. J. Kehoe. 2005. "Modeling and Measuring Organization Capital." *Journal of Political Economy* 113 (5): 1026–53.

Auerbach, A., M. P. Devereux, M. Keen, and J. Vella. 2017. "Destination-Based Cash Flow Taxation." Oxford University Centre for Business Taxation Working Paper 17/01, Oxford, U.K.

Auerbach, A., M. P. Devereux, and H. Simpson. 2010. "Taxing Corporate Income." In *Dimensions of Tax Design*, edited by J. Mirrlees, S. Adam, T. Besley, R. Blundell, S. Bond, R. Chote, M. Gammie, P. Johnson, G. Miles and J. Poterba, 837–93. Oxford, U.K.: Oxford University Press.

Baily, M. N., C. Hulten, and D. Campbell. 1992. "Productivity Dynamics in Manufacturing Plants." Brookings Papers on Economic Activity, Brookings Institution, Washington, DC.

Banerjee, A. V., and E. Duflo. 2005. "Growth Theory through the Lens of Development Economics." In *Handbook of Economic Growth*, Vol. 1, edited by P. Aghion and S. N. Durlauf. Amsterdam: Elsevier.

Banerji, A., V. Crispolti, E. Dabla-Norris, R. Duval, C. Ebeke, D. Furceri, T. Komatsuzaki, and T. Poghosyan. 2017. "Labor and Product Market Reforms in Advanced Economies: Fiscal Costs, Gains, and Support." IMF Staff Discussion Note 17/03, International Monetary Fund, Washington, DC.

Barnett, A., A. Chiu, J. Franklin, and M. Sebastiá-Barriel. 2014. "The Productivity Puzzle: A Firm-Level Investigation into Employment Behavior and Resource Allocation over the Crisis." Bank of England Working Paper 495.

Bartelsman, E., J. Haltiwanger, and S. Scarpetta. 2013. "Cross-Country Differences in Productivity: The Role of Allocation and Selection." *American Economic Review* 103 (1): 305–34.

Benedek, D., N. Budina, P. Deb, B. Gracia, S. Saksonovs, and A. Shabunina. Forthcoming. "Do Size-Related Tax Incentives Help or Hinder Firm Productivity?" IMF Working Paper, International Monetary Fund, Washington, DC.

Beņkovskis, K. 2015. "Misallocation of Resources in Latvia: Did Anything Change during the Crisis?" Latvijas Banka Working Paper 5, Riga.

Bento, P., and D. Restuccia. 2016. "Misallocation, Establishment Size, and Productivity." NBER Working Paper 22809, National Bureau of Economic Research, Cambridge, MA.

Bernal, R., M. Eslava, and M. Meléndez. 2015. "Taxing Where You Should: Formal Employment and Corporate Income vs Payroll Taxes in the Colombian 2012 Tax Reform." Unpublished, Inter-American Development Bank, Washington, DC.

Best, M. C., A. Brockmeyer, H. J. Kleven, J. Spinnewijn, and M. Waseem. 2015. "Production versus Revenue Efficiency with Limited Tax Capacity: Theory and Evidence from Pakistan." *Journal of Political Economy* 123 (6): 1311–55.

Bobbio, E. 2016. "Tax Evasion, Firm Dynamics and Growth." Bank of Italy, Rome. Unpublished.

Brockmeyer, A., and M. Hernandez. 2016. "Taxation, Information, and Withholding: Evidence from Costa Rica." Policy Research Working Paper 7600, World Bank, Washington, DC.

Brown, J. R., S. M. Fazzari, and B. C. Petersen. 2009. "Financing Innovation and Growth: Cash Flow, External Equity, and the 1990s R&D Boom." *Journal of Finance* 64 (1): 151–85.

Brown, J. R., and G. Martinsson. 2016. "Taxing Capital, Stunting Growth? Capital Income Taxes, Costly Equity Finance, and Investment in R&D." Research Paper 15-14 (revised July 28, 2016), Swedish House of Finance, Stockholm.

Busso, M., M. V. Fazio, and S. Levy. 2012. "(In)Formal and (Un)Productive: The Productivity Costs of Excessive Informality in Mexico." IDB Working Paper IDB-WP-341, Inter-American Development Bank, Washington, DC.

Busso, M., L. Madrigal, and C. Pagés-Serra. 2012. "Productivity and Resource Misallocation in Latin America." IDB Working

Paper IDB-WP-306, Inter-American Development Bank, Washington, DC.

Carpenter, R. E., and B. C. Petersen. 2002. "Capital Market Imperfections, High-Tech Investment, and New Equity Financing." *Economic Journal* 112 (477): 54–72.

Caselli, F. 2005. "Accounting for Cross Country Income Differences." In *Handbook of Economic Growth*, Vol. 1, edited by P. Aghion and S. N. Durlauf, 679–741. Amsterdam: North-Holland.

Cirera, X., R. N. Fattal Jaef, and H. B. Maemir. 2017. "Taxing the Good? Distortions, Misallocation, and Productivity in Sub-Saharan Africa." Policy Research Working Paper 7949, World Bank, Washington, DC.

Clements, B., R. De Mooij, S. Gupta, and M. Keen, eds. 2015. *Inequality and Fiscal Policy.* Washington, DC: International Monetary Fund.

Coolidge, J. 2012. "Findings of Tax Compliance Cost Surveys in Developing Countries." *eJournal of Tax Research* 10 (2): 250–87.

Crandall, W. 2010. "Revenue Administration: Autonomy in Tax Administration and the Revenue Authority Model." IMF Technical Notes and Manuals 10/12, International Monetary Fund, Washington, DC.

Crespo, A., and R. Segura-Cayuela. 2014. "Understanding Competitiveness." EUI Working Paper MWP 2014/20, European University Institute, Florence.

Dabla-Norris, E., S. Guo, V. Haksar, M. Kim, K. Kochhar, K. Wiseman, and A. Zdzienicka. 2015. "The New Normal: A Sector-Level Perspective on Productivity Trends in Advanced Economies." IMF Staff Discussion Note 15/03, International Monetary Fund, Washington, DC.

Dabla-Norris, E., and G. Inchauste. 2008. "Informality and Regulations: What Drives the Growth of Firms?" *IMF Staff Papers* 55 (1): 50–82.

Dabla-Norris, E., F. Misch, D. E. Cleary, and M. Khwaja. Forthcoming. "The Quality of Tax Administration and Firm Performance." IMF Working Paper, International Monetary Fund, Washington, DC.

De Mooij, R. 2012. "Tax Biases to Debt Finance: Assessing the Problem, Finding Solutions." *Fiscal Studies* 33 (4): 489–512.

———, and L. Liu. Forthcoming. "At a Cost: The Real Effect of Transfer Pricing Regulations on Multinational Investment." IMF Working Paper, International Monetary Fund, Washington, DC.

Decker, R., J. Haltiwanger, R. Jarmin, and J. Miranda. 2016. "Changing Business Dynamism: Volatility of Shocks vs. Responsiveness to Shocks." Unpublished.

Dessy, S., and S. Pallage. 2003. "Taxes, Inequality and the Size of the Informal Sector." *Journal of Development Economics* 70 (1): 225–33.

Devereux, M. P., and R. Griffith. 1998. "Taxes and the Location of Production: Evidence from a Panel of US Multinationals." *Journal of Public Economics* 68 (3): 335–67.

Devereux, M. P., G. Maffini, and J. Xing. 2015. "Corporate Tax Incentives and Capital Structure: Empirical Evidence from UK Tax Returns." Oxford University Centre for Business Taxation Working Paper 15/07, Oxford, U.K.

Diamond, P. A., and J. A. Mirrlees. 1971. "Optimal Taxation and Public Production. I: Production Efficiency." *American Economic Review* 61 (1): 8–27.

Dias, D., C. Robalo Marques, and C. Richmond. 2016. "A Tale of Two Sectors: Why Is Misallocation Higher in Services Than in Manufacturing?" IMF Working Paper 16/220, International Monetary Fund, Washington, DC.

Dwenger, N., and F. Walch. 2014. "Tax Losses and Firm Investment: Evidence from Tax Statistics." Unpublished.

Egger, P., S. Loretz, M. Pfaffermayr, and H. Winner. 2009. "Firm-Specific Forward-Looking Effective Tax Rates." *International Tax and Public Finance* 16: 850.

Emran, M. S., and J. E. Stiglitz. 2005. "On Selective Indirect Tax Reform in Developing Countries." *Journal of Public Economics* 89 (4): 599–623.

European Commission. 2015. "Experiences with Cash-Flow Taxation and Prospects." Taxation Papers 55–2015, Brussels.

Fajnzylber, P. 2007. "Informality, Productivity, and the Firm." In *Informality: Exit and Exclusion*, edited by G. E. Perry, W. F. Maloney, O. S. Arias, P. Fajnzylber, A. D. Mason, and J. Saavedra-Chanduvi. Washington, DC: World Bank.

———, W. F. Maloney, and G. V. Montes-Rojas. 2011. "Does Formality Improve Micro-Firm Performance? Evidence from the Brazilian SIMPLES Program." *Journal of Development Economics* 94 (2): 262–76.

Fatica, S. 2013. "Do Corporate Taxes Distort Capital Allocation? Cross-Country Evidence from Industry-Level Data." *European Economy Economic Papers* 503 (September).

Feenstra, R. C., R. Inklaar, and M. P. Timmer. 2015. "The Next Generation of the Penn World Table." *American Economic Review* 105 (10): 3150–82

Fernández, C., and L. Villar. 2016. "The Impact of Lowering the Payroll Tax on Informality in Colombia." Fedesarrollo Working Paper 72, Bogotá.

Finke, K. 2013. "Tax Avoidance of German Multinationals and Implications for Tax Revenue: Evidence from a Propensity Score Matching Approach." Unpublished.

Foster, L., J. C. Haltiwanger, and C. Syverson. 2013. "The Slow Growth of New Plants: Learning about Demand?" NBER Working Paper No. 17853, National Bureau of Economic Research, Cambridge, MA.

Fuest, C., C. Spengel, K. Finke, J. Heckemeyer, and H. Nusser. 2013. "Profit Shifting and 'Aggressive' Tax Planning by Multinational Firms: Issues and Options for Reform." Discussion Paper 13-044, ZEW–Centre for European Economic Research, Mannheim, Germany.

Gamberoni, E., C. Giordano, and P. Lopez-Garcia. 2016. "Capital and Labour (Mis)allocation in the Euro Area: Some

Stylized Facts and Determinants." ECB Working Paper 1981, European Central Bank, Frankfurt.

García-Santana, M., E. Moral-Benito, J. Pijoan-Mas, and R. Ramos. 2016. "Growing Like Spain: 1995–2007." CEPR Discussion Paper 11144, Centre for Economic Policy Research, London.

Gopinath, G., S. Kalemli-Ozcan, L. Karabarbounis, and C. Villegas-Sanchez. 2015. "Capital Allocation and Productivity in South Europe." NBER Working Paper 21453, National Bureau of Economic Research, Cambridge, MA.

Gordon, R., and W. Li. 2009. "Tax Structures in Developing Countries: Many Puzzles and a Possible Explanation." *Journal of Public Economics* 93 (7–8): 855–66.

Graham, J. R., M. L. Lemmon, and J. S. Schallheim. 1998. "Debt, Leases, Taxes, and the Endogeneity of Corporate Tax Status." *Journal of Finance* 53 (1): 131–62.

Hall, B. H. 2002. "The Financing of Research and Development." *Oxford Review of Economic Policy* 18 (1): 35–51.

Hall, R. E., and C. I. Jones. 1999. "Why Do Some Countries Produce So Much More Output per Worker Than Others?" *Quarterly Journal of Economics* 114 (1): 83–116.

Hall, R. E., and D. W. Jorgenson. 1967. "Tax Policy and Investment Behavior." *American Economic Review* 57 (3): 391–414.

Haltiwanger, J. 2011. "Globalization and Economic Volatility." In *Making Globalization Socially Sustainable*, edited by M. Bacchetta and M. Jansen. Geneva: International Labor Organization and World Trade Organization.

———. 2016. "Firm Dynamics and Productivity: TFPQ, TFPR and Demand-Side Factors." *Economía* 17 (1): 3–26.

Hernández, G. 2012. "Payroll Taxes and the Labor Market: A Computable General Equilibrium Analysis." *Latin American Journal of Economics* 49 (1): 99–123.

Hsieh, C.-T., and P. Klenow. 2009. "Misallocation and Manufacturing TFP in India and China." *Quarterly Journal of Economics* 124 (4): 1403–48.

———. 2014. "The Life Cycle of Plants in India and Mexico." *Quarterly Journal of Economics* 129 (3): 1035–84.

Inklaar, R., A. A. Lashitew, and M. P. Timmer. 2016. "The Role of Resource Misallocation in Cross-Country Differences in Manufacturing Productivity." *Macroeconomic Dynamics.* Published online January 8, 2016, 1–24. doi: 10.1017/S1365100515000668.

International Monetary Fund. 2011. "Revenue Mobilization in Developing Countries." IMF Policy Paper, Washington, DC.

———. 2012. "Fiscal Regimes for Extractive Industries—Design and Implementation." IMF Policy Paper, Washington, DC.

———. 2015a. "Current Challenges in Revenue Mobilization: Improving Tax Compliance." IMF Staff Report, Washington, DC.

———. 2015b. "Fiscal Policy and Long-Term Growth." IMF Policy Paper, Washington, DC.

———. 2015c. "The Role of Labor Frictions in Colombia's Recent Economic Performance." IMF Country Report 15/143, Washington, DC.

———. 2016a. "The Managing Director's Global Policy Agenda Fall 2016: Getting Growth Right." Washington, DC, October.

———. 2016b. "Tax Policy, Leverage and Macroeconomic Stability." IMF Policy Paper, Washington, DC.

Johnson, S., D. Kaufmann, and P. Zoido-Lobatón. 1998. "Corruption, Public Finances and the Unofficial Economy." Policy Research Working Paper 2169, World Bank, Washington, DC.

Kalemli-Ozcan, S., B. Sorensen, C. Villegas-Sanchez, V. Volosovych, and S. Yesiltas. 2015. "How to Construct Nationally Representative Firm Level Data from the ORBIS Global Database." NBER Working Paper 21558, National Bureau of Economic Research, Cambridge, MA.

Kanbur, R., and M. Keen. 2014. "Thresholds, Informality, and Partitions of Compliance." *International Tax and Public Finance* 21 (4): 536–59.

———. 2015. "Reducing Informality." *Finance & Development* (March).

Khwaja, M. S., R. Awasthi, and J. Loeprick. 2011. "Risk-Based Tax Audits Approaches and Country Experiences." World Bank, Washington, DC.

Klenow, P. J., and A. Rodríguez-Clare. 1997. "The Neoclassical Revival in Growth Economics: Has It Gone Too Far?" In *NBER Macroeconomics Annual*, edited by B. Bernanke and J. Rotemberg. Cambridge, MA: MIT Press.

Kugler, A., and M. Kugler. 2015. "Impactos de la Ley 1607 sobre el Empleo Formal en Colombia." Inter-American Development Bank, Washington, DC. Unpublished.

La Porta, R., and A. Shleifer. 2008. "The Unofficial Economy and Economic Development." *Brookings Papers on Economic Activity* (Fall): 275–352.

———. 2014. "Informality and Development." *Journal of Economic Perspectives* 28 (3): 109–26.

Lashitew, A. A. 2016. "Employment Protection and Misallocation of Resources Across Plants: International Evidence." *CESifo Economic Studies* 62 (3): 453–90.

Leal Ordóñez, J. C. 2014. "Tax Collection, the Informal Sector, and Productivity." *Review of Economic Dynamics* 17 (2): 262–86.

Levinsohn, J., and A. Petrin. 2003. "Estimating Production Functions Using Inputs to Control for Unobservables." *Review of Economic Studies* 70 (2): 317–41.

Levy, S. 2008. *Good Intentions, Bad Outcomes: Social Policy, Informality, and Economic Growth in Mexico.* Washington, DC: Brookings Institution Press.

Liu, L. 2011. "Do Taxes Distort Corporations' Investment Choices? Evidence from Industry-Level Data." Paper presented at the American Economic Association Annual Meeting.

Loayza, N. V. 1996. "The Economics of the Informal Sector: A Simple Model and Some Evidence from Latin America." *Carnegie-Rochester Conference Series on Public Policy* 45 (1): 129–62.

———. 2016. "Informality in the Process of Development and Growth." Policy Research Working Paper 7858, World Bank, Washington, DC.

———, L. Servén, and N. Sugawara. 2009. "Informality in Latin America and the Caribbean." Policy Research Working Paper 4888, World Bank, Washington, DC.

Lucas, Robert E., Jr. 1978. "On the Size Distribution of Business Firms." *Bell Journal of Economics* 9 (2): 508–23.

McCaherty, J. D. 2014. "The Cost of Tax Compliance." Tax Foundation Tax Policy Blog, September 11. http://taxfoundation.org/blog/cost-tax-compliance.

Mescall, D. 2011. "How Does Transfer Pricing Risk Affect Premia in Cross-Border Mergers and Acquisitions?" Unpublished.

Organisation for Economic Co-operation and Development (OECD). 2013. "Action Plan on Base Erosion and Profit Shifting." Paris.

———. 2015. "Taxation of SMEs in OECD and G20 Countries." OECD Tax Policy Studies 23, Paris.

Pagés, C., ed. 2010. *The Age of Productivity: Transforming Economies from the Bottom Up*. Development in the Americas. New York: Palgrave Macmillan for the Inter-American Development Bank.

Pindyck, R. S. 1979. "Interfuel Substitution and the Industrial Demand for Energy: An International Comparison." *Review of Economics and Statistics* 61 (2): 169–79.

Rajan, R., and L. Zingales. 1998. "Financial Dependence and Growth." *American Economic Review* 88 (3): 559–86.

Restuccia, D., and R. Rogerson. 2013. "Misallocation and Productivity." *Review of Economic Dynamics* 16 (1): 1–10.

———. 2016. "The Causes and Costs of Misallocation." Unpublished. Available at https://www.economics.utoronto.ca/diegor/research/JEP_RR_Aug2016.pdf.

Saunders-Scott, M. 2013. "How Does Transfer-Pricing Enforcement Affect Reported Profits?" Unpublished.

Savić, G., A. Dragojlović, M. Vujošević, M. Arsić, and M. Martić. 2015. "Impact of the Efficiency of the Tax Administration on Tax Evasion." *Economic Research-Ekonomska Istraživanja* 28 (1): 1138–48.

Schneider, F., and D. H. Enste. 2000. "Shadow Economies: Size, Causes, and Consequences." *Journal of Economic Literature* 38 (March): 77–114.

Slemrod, J., and V. Venkatesh. 2002. "The Income Tax Compliance Cost of Large and Mid-size Businesses: A Report to the IRS LMSB Division." Working Paper 914, University of Michigan Ross School of Business, Ann Arbor.

Steiner, R., and D. Forero. 2015. "Evaluación del Impacto de la Reforma Tributaria de 2012 a Través de Equilibrio General." Inter-American Development Bank, Washington, DC. Unpublished.

Stiglitz, J. E. 1985. "Credit Markets and the Control of Capital." *Journal of Money, Credit and Banking* 17 (2): 133–52.

Swistak, A., L. Liu, and R. Varsano. Forthcoming. "Towards More Efficient Non-Resource Taxation: A Strategy for Reform." IMF Fiscal Affairs Department Technical Assistance Report.

COUNTRY ABBREVIATIONS

Code	Country name
AFG	Afghanistan
AGO	Angola
ALB	Albania
ARE	United Arab Emirates
ARG	Argentina
ARM	Armenia
ATG	Antigua and Barbuda
AUS	Australia
AUT	Austria
AZE	Azerbaijan
BDI	Burundi
BEL	Belgium
BEN	Benin
BFA	Burkina Faso
BGD	Bangladesh
BGR	Bulgaria
BHR	Bahrain
BHS	Bahamas, The
BIH	Bosnia and Herzegovina
BLR	Belarus
BLZ	Belize
BOL	Bolivia
BRA	Brazil
BRB	Barbados
BRN	Brunei Darussalam
BTN	Bhutan
BWA	Botswana
CAF	Central African Republic
CAN	Canada
CHE	Switzerland
CHL	Chile
CHN	China
CIV	Côte d'Ivoire
CMR	Cameroon
COD	Congo, Democratic Republic of the
COG	Congo, Republic of
COL	Colombia
COM	Comoros
CPV	Cabo Verde
CRI	Costa Rica
CYP	Cyprus
CZE	Czech Republic
DEU	Germany
DJI	Djibouti
DMA	Dominica
DNK	Denmark

Code	Country name
DOM	Dominican Republic
DZA	Algeria
ECU	Ecuador
EGY	Egypt
ERI	Eritrea
ESP	Spain
EST	Estonia
ETH	Ethiopia
FIN	Finland
FJI	Fiji
FRA	France
FSM	Micronesia, Federated States of
GAB	Gabon
GBR	United Kingdom
GEO	Georgia
GHA	Ghana
GIN	Guinea
GMB	Gambia, The
GNB	Guinea-Bissau
GNQ	Equatorial Guinea
GRC	Greece
GRD	Grenada
GTM	Guatemala
GUY	Guyana
HKG	Hong Kong SAR
HND	Honduras
HRV	Croatia
HTI	Haiti
HUN	Hungary
IDN	Indonesia
IND	India
IRL	Ireland
IRN	Iran
IRQ	Iraq
ISL	Iceland
ISR	Israel
ITA	Italy
JAM	Jamaica
JOR	Jordan
JPN	Japan
KAZ	Kazakhstan
KEN	Kenya
KGZ	Kyrgyz Republic
KHM	Cambodia
KIR	Kiribati
KNA	St. Kitts and Nevis

Code	Country name
KOR	Korea
KWT	Kuwait
LAO	Lao P.D.R.
LBN	Lebanon
LBR	Liberia
LBY	Libya
LCA	Saint Lucia
LKA	Sri Lanka
LSO	Lesotho
LTU	Lithuania
LUX	Luxembourg
LVA	Latvia
MAR	Morocco
MDA	Moldova
MDG	Madagascar
MDV	Maldives
MEX	Mexico
MHL	Marshall Islands
MKD	Macedonia, former Yugoslav Republic of
MLI	Mali
MLT	Malta
MMR	Myanmar
MNE	Montenegro
MNG	Mongolia
MOZ	Mozambique
MRT	Mauritania
MUS	Mauritius
MWI	Malawi
MYS	Malaysia
NAM	Namibia
NER	Niger
NGA	Nigeria
NIC	Nicaragua
NLD	Netherlands
NOR	Norway
NPL	Nepal
NZL	New Zealand
OMN	Oman
PAK	Pakistan
PAN	Panama
PER	Peru
PHL	Philippines
PLW	Palau
PNG	Papua New Guinea
POL	Poland
PRT	Portugal
PRY	Paraguay
QAT	Qatar
ROU	Romania
RUS	Russia
RWA	Rwanda
SAU	Saudi Arabia
SDN	Sudan
SEN	Senegal
SGP	Singapore
SLB	Solomon Islands
SLE	Sierra Leone
SLV	El Salvador
SMR	San Marino
SOM	Somalia
SRB	Serbia
STP	São Tomé and Príncipe
SUR	Suriname
SVK	Slovak Republic
SVN	Slovenia
SWE	Sweden
SWZ	Swaziland
SYC	Seychelles
SYR	Syria
TCD	Chad
TGO	Togo
THA	Thailand
TJK	Tajikistan
TKM	Turkmenistan
TLS	Timor-Leste
TON	Tonga
TTO	Trinidad and Tobago
TUN	Tunisia
TUR	Turkey
TUV	Tuvalu
TWN	Taiwan Province of China
TZA	Tanzania
UGA	Uganda
UKR	Ukraine
URY	Uruguay
USA	United States
UZB	Uzbekistan
VCT	St. Vincent and the Grenadines
VEN	Venezuela
VNM	Vietnam
VUT	Vanuatu
WSM	Samoa
YEM	Yemen
ZAF	South Africa
ZMB	Zambia
ZWE	Zimbabwe

GLOSSARY

Active labor market policies Policies that help unemployed people get back to work; they include job placement services, benefit administration, and labor market programs such as training and job creation.

Automatic stabilizers Revenue and some expenditure items that adjust automatically to cyclical changes in the economy: for example, as output falls, revenue collections decline and unemployment benefits increase, which "automatically" provides demand support.

Budget-neutral policies Policies that keep a country's fiscal deficit unchanged.

Contingent liabilities Obligations that are not explicitly recorded on government balance sheets and that arise only in the event of a particular discrete situation, such as a crisis.

Countercyclical discretionary fiscal policy Active changes in expenditure and tax policies to smooth the economic cycle (in contrast to the operation of automatic stabilizers): for instance, tax cuts or expenditure increases during an economic downturn.

Cyclically adjusted balance (CAB) Difference between the overall balance and the automatic stabilizers; equivalently, an estimate of the fiscal balance that would apply under current policies if output were equal to potential.

Cyclically adjusted primary balance (CAPB) Cyclically adjusted balance excluding net interest payments (interest expenditure minus interest revenue).

Effective lower bound Level below which the monetary policy rate cannot be further lowered. The effective lower bound may differ from country to country, as it is affected by varying institutional arrangements, regulations in money markets, and the costs of holding large stocks of cash. Depending on the situation, the effective lower bound may be a negative or positive interest rate, but in all cases it is a number near zero.

Effective marginal tax rate Tax burden applied to before-tax capital income realized over an investment's lifetime, as implied by the major provisions of a country's corporate tax code.

Expansionary fiscal policy Discretionary fiscal policy that boosts domestic demand through tax cuts and/or higher government spending.

Fiscal buffer Fiscal space created by saving budgetary resources and reducing public debt in good times.

Fiscal consolidation (also fiscal adjustment) Policies to reduce debt and debt accumulation though reductions in government spending and/or revenue-enhancing measures.

Fiscal multiplier Measures the short-term impact of discretionary fiscal policy on output; usually defined as the ratio of a change in output to an exogenous change in the fiscal deficit with respect to their respective baselines.

Fiscal rule Long-lasting constraint on fiscal policy through numerical limits on budgetary aggregates.

Fiscal space See definition in Annex 1.1.

Fiscal stabilization Contribution of fiscal policy to output stability through its impact on aggregate demand.

General government All government units and all nonmarket, nonprofit institutions that are controlled and mainly financed by government units comprising the central, state, and local governments; includes social security funds, and does not include public corporations or quasi-corporations.

Gini index Measures the extent to which the distribution of income among individuals or households within an economy deviates from a perfectly equal distribution. A Gini index of 0 represents perfect equality, while an index of 1 implies perfect inequality.

Gross debt All liabilities that require future payment of interest and/or principal by the debtor to the creditor. This includes debt liabilities in the form of special drawing rights, currency, and deposits; debt securities; loans; insurance, pension, and standardized guarantee programs; and other accounts payable. (See the IMF's 2001 *Government Finance Statistics Manual* and

Public Sector Debt Statistics Manual.) The term "public debt" is used in the *Fiscal Monitor*, for simplicity, as synonymous with gross debt of the general government, unless specified otherwise. (Strictly speaking, public debt refers to the debt of the public sector as a whole, which includes financial and nonfinancial public enterprises and the central bank.)

Labor tax wedge The difference between the labor cost for an employer and the after-tax wage for an employee.

Net debt Gross debt minus financial assets corresponding to debt instruments. These financial assets are monetary gold and special drawing rights; currency and deposits; debt securities; loans; insurance, pension, and standardized guarantee programs; and other accounts receivable. In some countries, the reported net debt can deviate from this definition based on available information and national fiscal accounting practices.

Nonfinancial public sector General government plus nonfinancial public corporations.

Output gap Deviation of actual from potential GDP, in percent of potential GDP.

Overall fiscal balance (also "headline" fiscal balance) Net lending and borrowing, defined as the difference between revenue and total expenditure, using the IMF's 2001 *Government Finance Statistics Manual* (GFSM 2001). Does not include policy lending. For some countries, the overall balance is still based on the GFSM 1986, which defines it as total revenue and grants minus total expenditure and net lending.

Potential growth Growth in potential output.

Potential output Estimate of the level of GDP that can be reached if the economy's resources are fully employed.

Primary balance Overall balance excluding net interest payment (interest expenditure minus interest revenue).

Primary spending Government expenditure excluding interest payments.

Procyclical discretionary fiscal policy Fiscal policy is said to be procyclical when it amplifies the economic cycle, for instance, by raising taxes or cutting expenditures during an economic downturn.

Public debt See *gross debt*.

Public sector The general government sector plus government-controlled entities, known as public corporations, whose primary activity is to engage in commercial activities.

Resource misallocation Poor distribution of resources across firms, reducing the total output that can be obtained from existing capital and labor.

Structural fiscal balance Extension of the cyclically adjusted balance that also corrects for other nonrecurrent effects that go beyond the cycle, such as one-off operations and other factors whose cyclical fluctuations do not coincide with the output cycle (for instance, asset and commodity prices and output composition effects).

METHODOLOGICAL AND STATISTICAL APPENDIX

This appendix comprises four sections. "Data and Conventions" provides a general description of the data and conventions used to calculate economy group composites. "Fiscal Policy Assumptions" summarizes the country-specific assumptions underlying the estimates and projections for 2017–18 and the medium-term scenario for 2019–22. "Definition and Coverage of Fiscal Data" summarizes the classification of countries in the various groups presented in the *Fiscal Monitor* and provides details on the coverage and accounting practices underlying each country's *Fiscal Monitor* data. Statistical tables A1 to A27 on key fiscal variables complete the appendix. Data in these tables have been compiled on the basis of information available through April 6, 2017.

Data and Conventions

Country-specific data and projections for key fiscal variables are based on the April 2017 World Economic Outlook database, unless indicated otherwise, and compiled by the IMF staff. Historical data and projections are based on information gathered by IMF country desk officers in the context of their missions and through their ongoing analysis of the evolving situation in each country; they are updated on a continual basis as more information becomes available. Structural breaks in data may be adjusted to produce smooth series through splicing and other techniques. IMF staff estimates serve as proxies when complete information is unavailable. As a result, *Fiscal Monitor* data can differ from official data in other sources, including the IMF's *International Financial Statistics*.

Sources for fiscal data and projections not covered by the World Economic Outlook database are listed in the respective tables and figures.

The country classification in the *Fiscal Monitor* divides the world into three major groups: 35 advanced economies, 40 emerging market and middle-income economies, and 40 low-income developing countries. The seven largest advanced economies as measured by GDP (Canada, France, Germany, Italy, Japan, United Kingdom, United States) constitute the subgroup of major advanced economies, often referred to as the Group of Seven (G7). 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. Data for most European Union member countries have been revised following the adoption of the new European System of National and Regional Accounts (ESA 2010). The low-income developing countries are those designated eligible for the Poverty Reduction and Growth Trust (PRGT) in the 2013 PRGT eligibility review and whose per capita gross national income was less than the PRGT income graduation threshold for "non-small" states—that is, twice the operational threshold of the International Development Association, or $2,390 in 2011, as measured by the World Bank's Atlas method. Zimbabwe is included in the group. Emerging market and middle-income economies include those not classified as advanced economies or low-income developing countries. See Table A, "Economy Groupings," for more details.

Most fiscal data refer to the general government for advanced economies, while for emerging market and developing economies, data often refer to the central government or budgetary central government only (for specific details, see Tables B–D). All fiscal data refer to calendar years, except in the cases of Bangladesh, Egypt, Ethiopia, Haiti, Hong Kong Special Administrative Region, India, the Islamic Republic of Iran, the Lao People's Democratic Republic, Myanmar, Nepal, Pakistan, Singapore, and Thailand, for which they refer to the fiscal year.

Composite data for country groups are weighted averages of individual-country data, unless specified otherwise. Data are weighted by annual nominal GDP converted to U.S. dollars at average market exchange rates as a share of the group GDP.

For the purpose of data reporting in the *Fiscal Monitor*, the Group of 20 (G20) member aggregate refers to the 19 country members and does not include the European Union.

In many countries, fiscal data follow the IMF's 2001 *Government Finance Statistics Manual* (GFSM 2001). The overall fiscal balance refers to net lending (+) and borrowing (–) of the general government. In some cases,

however, the overall balance refers to total revenue and grants minus total expenditure and net lending.

As used in the *Fiscal Monitor*, the term "country" does 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 whose statistical data are maintained on a separate and independent basis.

Argentina: Total expenditure and the overall balance account for cash interest only. The primary balance excludes profit transfers from the central bank of Argentina. Before 2016, interest expenditure is net of interest income from the social security fund. For consumer price index (CPI) data, see the "Country Notes" section in the Statistical Appendix of the April 2017 *World Economic Outlook*.

Australia: For cross-country comparability, gross and net debt levels reported by national statistical agencies for countries that have adopted the 2008 System of National Accounts (2008 SNA) (Canada, Hong Kong Special Administrative Region, United States) are adjusted to exclude unfunded pension liabilities of government employees' defined-benefit pension plans.

Bangladesh: Data are on a fiscal year basis.

Brazil: General government data refer to the nonfinancial public sector—which includes the federal, state, and local governments, as well as public enterprises (excluding Petrobras and Eletrobras)—and are consolidated with those for the sovereign wealth fund. Revenue and expenditures of federal public enterprises are added in full to the respective aggregates. Transfers and withdrawals from the sovereign wealth fund do not affect the primary balance. Disaggregated data on gross interest payments and interest receipts are available from 2003 only. Before 2003, total revenue of the general government excludes interest receipts; total expenditure of the general government includes net interest payments. Gross public debt includes the Treasury bills on the central bank's balance sheet, including those not used under repurchase agreements. Net public debt consolidates general government and central bank debt. The national definition of nonfinancial public sector gross debt excludes government securities held by the central bank, except the stock of Treasury securities used for monetary policy purposes by the central bank (those pledged as security reverse repurchase agreement operations). According to this national definition, gross debt amounted to 69.9 percent of GDP at the end of 2016.

Canada: For cross-country comparability, gross and net debt levels reported by national statistical agencies for countries that have adopted the 2008 SNA (Australia, Hong Kong Special Administrative Region, United States) are adjusted to exclude unfunded pension liabilities of government employees' defined-benefit pension plans.

Chile: Cyclically adjusted balances include adjustments for commodity price developments.

China: Public debt data include central government debt as reported by the Ministry of Finance, explicit local government debt, and shares—less than 19 percent, according to the National Audit Office estimate—of contingent liabilities the government may incur. IMF staff estimates exclude central government debt issued for the China Railway Corporation. Relative to the authorities' definition, consolidated general government net borrowing includes (1) transfers to and from stabilization funds, (2) state-administered state-owned enterprise funds and social security contributions and expenses, and (3) off-budget spending by local governments. Deficit numbers do not include some expenditure items, mostly infrastructure investment financed off budget through land sales and local government financing vehicles. Fiscal balances are not consistent with reported debt because no time series of data in line with the National Audit Office debt definition is published officially.

Colombia: Gross public debt refers to the combined public sector, including Ecopetrol and excluding Banco de la República's outstanding external debt.

Egypt: Data are on a fiscal year basis.

Greece: General government gross debt includes short-term debt and debt of state-owned enterprises.

Haiti: Data are on a fiscal year basis.

Hong Kong Special Administrative Region: Data are on a fiscal year basis. Cyclically adjusted balances include adjustments for land revenue and investment income. For cross-country comparability, gross and net debt levels reported by national statistical agencies for countries that have adopted the 2008 SNA (Australia, Canada, United States) are adjusted to exclude unfunded pension liabilities of government employees' defined-benefit pension plans.

India: Data are on a fiscal year basis.

Ireland: General government balances between 2010 and 2015 reflect the impact of banking sector support and other one-off measures. Fiscal balance estimates excluding these measures are –10.9 percent of GDP

for 2010, –8.5 percent of GDP for 2011, –7.8 percent of GDP for 2012, –5.7 percent of GDP for 2013, –3.7 percent of GDP for 2014, and –1.0 percent of GDP for 2015. Cyclically adjusted balances reported in Tables A3 and A4 exclude financial sector support and other one-off measures. Ireland's 2015 national accounts were recently revised as a result of restructuring and relocation of multinational companies, which resulted in a level shift of nominal and real GDP. For more information, see "National Income and Expenditure Annual Results 2015," at http://www.cso.ie/en/releasesandpublications/er/nie/nationalincomeandexpenditureannualresults2015/.

Japan: Gross debt is equal to total unconsolidated financial liabilities for the general government. Net debt is calculated by subtracting financial assets from financial liabilities for the general government.

Lao People's Democratic Republic: Data are on a fiscal year basis.

Latvia: The fiscal deficit includes bank restructuring costs and thus is higher than the deficit in official statistics.

Libya: Against the background of a civil war and weak capacities, the reliability of Libya's data, especially medium-term projections, is low.

Madagascar: Using the latest available data on budget and project grants has led to a sizable upward revision of total central government revenue. From 2016, total revenue plus grants exceeds 14.5 percent of GDP over the forecast horizon.

Mexico: "General government" refers to the central government, social security, public enterprises, development banks, the national insurance corporation, and the National Infrastructure Fund, but excludes subnational governments.

Nigeria: Using the latest available data on interest payments, the general government overall balance would increase to 4.7 percent of GDP in 2016. This is consistent with the data published in the IMF Staff Report for the 2017 Article IV Consultation.

Norway: Cyclically adjusted balances correspond to the cyclically adjusted non-oil overall or primary balance. These variables are in percent of non-oil potential GDP.

Pakistan: Data are on a fiscal year basis.

Peru: Cyclically adjusted balances include adjustments for commodity price developments.

Singapore: Data are on a fiscal year basis. Historical fiscal data have been revised to reflect the migration to GFSM 2001, which entailed some classification changes.

Spain: Overall and primary balances include financial sector support measures estimated to be –0.1 percent of GDP for 2010, 0.3 percent of GDP for 2011, 3.7 percent of GDP for 2012, 0.3 percent of GDP for 2013, 0.1 percent of GDP for 2014, 0.0 percent of GDP for 2015, and 0.2 percent of GDP for 2016.

Sweden: Cyclically adjusted balances take into account output and employment gaps.

Switzerland: Data submissions at the cantonal and commune level are received with a long and variable lag and are subject to sizable revisions. Cyclically adjusted balances include adjustments for extraordinary operations related to the banking sector.

Thailand: Data are on a fiscal year basis.

Turkey: Information on the general government balance, primary balance, and cyclically adjusted primary balance differs from that in the authorities' official statistics or country reports, which include net lending and privatization receipts.

United States: Cyclically adjusted balances exclude financial sector support estimated at 2.4 percent of potential GDP for 2009, 0.3 percent of potential GDP for 2010, 0.2 percent of potential GDP for 2011, 0.1 percent of potential GDP for 2012, and 0.0 percent of potential GDP for 2013. For cross-country comparability, expenditure and fiscal balances of the United States are adjusted to exclude the imputed interest on unfunded pension liabilities and the imputed compensation of employees, which are counted as expenditure under the 2008 SNA adopted by the United States, but this is not true for countries that have not yet adopted the 2008 SNA. Data for the United States may thus differ from data published by the U.S. Bureau of Economic Analysis (BEA). In addition, gross and net debt levels reported by the BEA and national statistical agencies for other countries that have adopted the 2008 SNA (Australia, Canada, Hong Kong Special Administrative Region) are adjusted to exclude unfunded pension liabilities of government employees' defined-benefit pension plans.

Uruguay: Data are for the consolidated public sector, which includes the nonfinancial public sector (as presented in the authorities' budget documentation), local governments, Banco Central del Uruguay, and Banco de Seguros del Estado. In particular, Uruguay is one of the few countries in the sample for which public debt includes the debt of the

central bank, which increases recorded public sector gross debt.

Venezuela: Fiscal accounts for 2010–22 correspond to the budgetary central government and Petróleos de Venezuela S.A. (PDVSA). Fiscal accounts before 2010 correspond to the budgetary central government, public enterprises (including PDVSA), Instituto Venezolano de los Seguros Sociales (IVSS—social security), and Fondo de Garantía de Depósitos y Protección Bancaria (FOGADE—deposit insurance).

Fiscal Policy Assumptions

Historical data and projections of key fiscal aggregates are in line with those of the April 2017 *World Economic Outlook*, unless noted otherwise. For underlying assumptions other than on fiscal policy, see the April 2017 *World Economic Outlook*.

Short-term fiscal policy assumptions are based on officially announced budgets, adjusted for differences between the national authorities and the IMF staff regarding macroeconomic assumptions and projected fiscal outturns. Medium-term fiscal projections incorporate policy measures that are judged likely to be implemented. When 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.

Argentina: Fiscal projections are based on the available information regarding budget outturn and budget plans for the federal and provincial governments, fiscal measures announced by the authorities, and IMF staff macroeconomic projections.

Australia: Fiscal projections are based on Australian Bureau of Statistics data, the Fiscal Year 2016–17 budget, the 2016–17 Mid-year Economic and Fiscal Outlook, and IMF staff estimates.

Austria: Fiscal projections are based on data from Statistics Austria, the authorities' projections, and IMF staff estimates and projections.

Belgium: Projections reflect the IMF staff's assessment of policies and measures laid out in the 2017 budget and 2016–19 Stability Programme, incorporated into the IMF staff's macroeconomic framework.

Brazil: Fiscal projections for the end of 2017 take into account budget performance through December 31, 2016, and the deficit target approved in the budget law.

Cambodia: Historical fiscal and monetary data are from the Cambodian authorities. Projections are based on the IMF staff's assumptions following discussions with the authorities.

Canada: Projections use the baseline forecasts in the Fall Economic Statement 2016, and 2016 provincial budget updates as available. The IMF staff makes some adjustments to the Fall Economic Statement forecast for differences in macroeconomic projections. The IMF staff forecast also incorporates the most recent data releases from Statistics Canada's Canadian System of National Economic Accounts, including federal, provincial, and territorial budgetary outturns through the third quarter of 2016.

Chile: Projections are based on the authorities' budget projections, adjusted to reflect the IMF staff's projections for GDP and copper prices.

China: Projections assume that the pace of fiscal consolidation is likely to be gradual, reflecting reforms to strengthen social safety nets and the social security system announced as part of the Third Plenum reform agenda.

Croatia: Projections are based on the macroeconomic framework and the authorities' medium-term fiscal guidelines.

Cyprus: Projections are on a cash basis based on the latest information on the budget, fiscal measures, and the IMF staff's macroeconomic assumptions.

Czech Republic: Projections are based on the authorities' budget forecast for 2017 with adjustments for the IMF staff's macroeconomic projections. Projections for 2018 onward are based on the country's Convergence Programme.

Denmark: Estimates for 2016 are aligned with the latest official budget estimates and the underlying economic projections, adjusted where appropriate for the IMF staff's macroeconomic assumptions. For 2017–18, the projections incorporate key features of the medium-term fiscal plan as embodied in the authorities' 2016 Convergence Programme submitted to the European Union.

Egypt: Fiscal projections are mainly based on budget sector operations (with trends of main variables discussed with the Ministry of Finance during the November 2014 Article IV consultation).

Estonia: Fiscal projections are on an accrual basis and are based on the authorities' 2017 budget.

Finland: Projections are based on the authorities' announced policies, adjusted for the IMF staff's macroeconomic scenario.

France: Projections for 2017 reflect the budget law. For 2017–19, they are based on the multiyear budget and the April 2016 Stability Programme adjusted for differences in assumptions on macro and financial variables, and revenue projections. Historical fiscal data reflect the September 2016 revision and update of the fiscal accounts and national accounts.

Germany: The IMF staff's projections for 2017 and beyond reflect the authorities 2017–20 financial plan, adjusted for the differences in the IMF staff's macroeconomic framework. 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 fiscal projections reflect the IMF staff's assessment assuming full implementation of the authorities' fiscal policy package under the European Stability Mechanism–supported program. Primary balance estimates for 2016 are based on preliminary data provided by the Ministry of Finance as of February 15 and are subject to change once data on an accrual basis (ESA 2010) become available on April 21. Medium-term fiscal projections reflect the IMF staff's assessment based on currently legislated fiscal policies.

Hong Kong Special Administrative Region: Projections are based on the authorities' medium-term fiscal projections on expenditure.

Hungary: Fiscal projections include IMF staff projections of the macroeconomic framework and of the impact of recent legislative measures, as well as fiscal policy plans announced in the 2017 budget.

India: Historical data are based on budgetary execution data. Projections are based on available information on the authorities' fiscal plans, with adjustments for IMF staff assumptions. Subnational data are incorporated with a lag of up to two years; general government data are thus finalized well after central government data. IMF and Indian presentations differ, particularly regarding divestment 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, fuel subsidy pricing reforms introduced in January 2015, 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 2017.

Israel: Historical data are based on Government Finance Statistics data submitted by the Central Bureau of Statistics. Projections for 2017 and 2018 are based on the 2017–18 budget, with some allowance for revenue overperformance. In the absence of measures to reduce the fiscal deficit, the central government deficit is assumed to be constant at the current ceiling level of 2.9 percent of GDP in subsequent years.

Italy: IMF staff estimates and projections are based on the fiscal plans included in the government's 2017 budget and September 2016 Economic and Financial Document.

Japan: The projections include fiscal measures already announced by the government, including the fiscal stimulus package for 2017 and the consumption tax hike in October 2019.

Kazakhstan: Fiscal projections are based on the Budget Code and IMF staff projections.

Korea: The medium-term forecast incorporates the government's announced medium-term consolidation path.

Libya: Against the background of a civil war and weak capacities, the reliability of Libya's data, especially medium-term projections, is low.

Malaysia: Projections are based on the Fiscal Budget Economic Report, October 2016.

Malta: Projections are based on the authorities' latest Stability Programme Update and budget documents, adjusted for the IMF staff's macroeconomic and other assumptions.

Mexico: Fiscal projections for 2017 are broadly in line with the approved budget; projections for 2018 onward assume compliance with rules established in the Fiscal Responsibility Law.

Moldova: Fiscal projections are based on various bases and growth rates for GDP, consumption, imports, wages, and energy prices and on demographic changes.

Myanmar: Fiscal projections are based on budget numbers, discussions with the authorities, and IMF staff adjustments.

Netherlands: Fiscal projections for 2016–22 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 authorities' 2016–17 budget and on IMF staff estimates.

Norway: Fiscal projections are based on the authorities' 2017 budget.

Philippines: Fiscal projections assume that the authorities' fiscal deficit target will be achieved in 2016 and beyond. Revenue projections reflect the IMF staff's macroeconomic assumptions and incorporate anticipated improvements in tax administration. Expenditure projections are based on budgeted figures, institutional arrangements, current data, and fiscal space in each year.

Poland: Data are on an ESA 2010 basis beginning in 2010. Data before 2010 are on the basis of ESA 95. Projections are based on the 2016 budget and take into account the effects of the 2014 pension changes.

Portugal: Estimates for 2016 reflect the cash outturn and January–September execution data on a national accounts basis; projections for 2017 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.

Romania: Fiscal projections for 2017 reflect the legislated budget as of February 2017 and the 2015 tax code measures that entered into effect in 2017. Projections for 2018 reflect the full effect of the 2017 budget measures. No additional policy changes are assumed beyond 2018.

Russia: Projections for 2016–19 are IMF staff estimates, based on the authorities' budget. Projections for 2020–22 are based on a proposed oil price rule assumed to be introduced in 2017, with adjustments by the IMF staff.

Saudi Arabia: IMF staff projections of oil revenues are based on *World Economic Outlook* baseline oil prices. On the expenditure side, starting in 2017 following recent reforms, the wage bill estimates incorporate 13th-month pay that used to be awarded every three years in accordance with the lunar calendar. Expenditure projections take the 2017 budget as a starting point and adjust for the budget surplus fund payment and the IMF staff's estimates of arrears payments.

Singapore: For fiscal year 2016/17 and 2017/18, projections are based on budget numbers. For the remainder of the projection period, the IMF staff assumes unchanged policies.

Slovak Republic: Projections for 2015 take into account developments in the first three quarters of the year and the authorities' new projections presented in the budget for 2016. Projections for 2016 consider the authorities' 2016 budget. Projections for 2017 and beyond reflect a no-policy-change scenario.

Spain: For 2016, fiscal data are IMF staff projections, reflecting the cash outturn through November. For 2017 and beyond, fiscal projections are based on the measures specified in the updated Draft Budgetary Plan from December 2016 and in the Stability Programme Update 2016–19, and on the IMF staff's macroeconomic projections.

Sri Lanka: Projections are based on the authorities' medium-term fiscal framework and the revenue measures proposed.

Sweden: Fiscal projections take into account the authorities' projections based on the 2016 Spring Budget. The impact of cyclical developments on the fiscal accounts is calculated using the Organisation for Economic Co-operation and Development's 2005 elasticity to take into account output and employment gaps.

Switzerland: The projections assume that fiscal policy is adjusted as necessary to keep fiscal balances in line with the requirements of the country's fiscal rules.

Thailand: For the projection period, the IMF staff assumes an implementation rate of 50 percent for the planned infrastructure investment programs.

Turkey: Fiscal projections assume that both current and capital spending will be in line with the authorities' 2017–19 Medium-Term Programme based on current trends and policies.

United Kingdom: Fiscal projections are based on the country's Budget 2017, published in March 2017, with expenditure projections based on the budgeted nominal values and with revenue projections adjusted for differences between IMF staff forecasts of macroeconomic variables (such as GDP growth and inflation) and the forecasts of these variables assumed in the authorities' fiscal projections. IMF staff 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 U.K. Office for Budget Responsibility.

United States: Fiscal projections are based on the January 2017 Congressional Budget Office

baseline adjusted for the IMF staff's policy and macroeconomic assumptions. The baseline incorporates the key provisions of the Bipartisan Budget Act of 2015, including a partial rollback of the sequester spending cuts in fiscal year 2016. In fiscal years 2017 through 2022, the IMF staff assumes that the sequester cuts will continue to be partially replaced in proportions similar to those already implemented in fiscal years 2014 and 2015, with back-loaded measures generating savings in mandatory programs and additional revenues. Projections also incorporate the Protecting Americans From Tax Hikes Act of 2015, which extended some existing tax cuts for the short term and some permanently. Also, projections assume there will be corporate and personal income tax cuts during 2017–19, cumulatively worth about 1.8 percent of 2017's GDP. 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. Historical data start at 2001 for most series because data compiled according to GFSM 2001 may not be available for earlier years.

Venezuela: Projecting the economic outlook in Venezuela, including assessing past and current economic developments as the basis for projections, is complicated by the lack of discussions with the authorities (the last Article IV consultation took place in 2004), long intervals in receiving data with information gaps, incomplete provision of information, and difficulties in interpreting certain reported economic indicators in line with economic developments. The fiscal accounts include the budgetary central government and Petróleos de Venezuela, S.A. (PDVSA), and the fiscal accounts data for 2016–22 are IMF staff estimates. Revenue includes the IMF staff's estimated foreign exchange profits transferred from the central bank to the government (buying U.S. dollars at the most appreciated rate and selling at more depreciated rates in a multitier exchange rate system) and excludes the IMF staff's estimated revenue from PDVSA's sale of Petrocaribe assets to the central bank.

Vietnam: Fiscal data for 2015 are the authorities' estimate. From 2016 onward, fiscal data are based on IMF staff projections.

Yemen: Hydrocarbon revenue projections are based on *World Economic Outlook* assumptions for oil and gas prices (the authorities use $55 a barrel) and authorities' projections of production of oil and gas. Nonhydrocarbon revenues largely reflect authorities' projections, as do most of the expenditure categories, with the exception of fuel subsidies, which are projected based on the *World Economic Outlook* price consistent with revenues. Monetary projections are based on key macroeconomic assumptions about the growth rate of broad money, credit to the private sector, and deposit growth.

Definition and Coverage of Fiscal Data

Table A. Economy Groupings

The following groupings of countries are used in the *Fiscal Monitor*.

Advanced Economies	Emerging Market and Middle-Income Economies	Low-Income Developing Countries	G7	G20[1]	Advanced G20[1]	Emerging G20
Australia	Algeria	Bangladesh	Canada	Argentina	Australia	Argentina
Austria	Angola	Benin	France	Australia	Canada	Brazil
Belgium	Argentina	Bolivia	Germany	Brazil	France	China
Canada	Azerbaijan	Burkina Faso	Italy	Canada	Germany	India
Cyprus	Belarus	Cambodia	Japan	China	Italy	Indonesia
Czech Republic	Brazil	Cameroon	United Kingdom	France	Japan	Mexico
Denmark	Chile	Chad	United States	Germany	Korea	Russia
Estonia	China	Democratic Republic of the Congo		India	United Kingdom	Saudi Arabia
Finland	Colombia	Republic of Congo		Indonesia	United States	South Africa
France	Croatia	Côte d'Ivoire		Italy		Turkey
Germany	Dominican Republic	Ethiopia		Japan		
Greece	Ecuador	Ghana		Korea		
Hong Kong SAR	Egypt	Guinea		Mexico		
Iceland	Hungary	Haiti		Russia		
Ireland	India	Honduras		Saudi Arabia		
Israel	Indonesia	Kenya		South Africa		
Italy	Iran	Kyrgyz Republic		Turkey		
Japan	Kazakhstan	Lao P.D.R.		United Kingdom		
Korea	Kuwait	Madagascar		United States		
Latvia	Libya	Mali				
Lithuania	Malaysia	Moldova				
Luxembourg	Mexico	Mongolia				
Malta	Morocco	Mozambique				
Netherlands	Oman	Myanmar				
New Zealand	Pakistan	Nepal				
Norway	Peru	Nicaragua				
Portugal	Philippines	Niger				
Singapore	Poland	Nigeria				
Slovak Republic	Qatar	Papua New Guinea				
Slovenia	Romania	Rwanda				
Spain	Russia	Senegal				
Sweden	Saudi Arabia	Sudan				
Switzerland	South Africa	Tajikistan				
United Kingdom	Sri Lanka	Tanzania				
United States	Thailand	Uganda				
	Turkey	Uzbekistan				
	Ukraine	Vietnam				
	United Arab Emirates	Yemen				
	Uruguay	Zambia				
	Venezuela	Zimbabwe				

Note: "Emerging market and developing economies" includes emerging market and middle-income economies as well as low-income developing countries.
[1] Does not include European Union aggregate.

Table A. Economy Groupings *(continued)*

Euro Area	Emerging Market and Middle-Income Asia	Emerging Market and Middle-Income Europe	Emerging Market and Middle-Income Latin America	Emerging Market and Middle-Income Middle East and North Africa and Pakistan	Emerging Market and Middle-Income Africa
Austria	China	Azerbaijan	Argentina	Algeria	Angola
Belgium	India	Belarus	Brazil	Egypt	South Africa
Cyprus	Indonesia	Croatia	Chile	Iran	
Estonia	Malaysia	Hungary	Colombia	Kuwait	
Finland	Philippines	Kazakhstan	Dominican Republic	Libya	
France	Sri Lanka	Poland	Ecuador	Morocco	
Germany	Thailand	Romania	Mexico	Oman	
Greece		Russia	Peru	Pakistan	
Ireland		Turkey	Uruguay	Qatar	
Italy		Ukraine	Venezuela	Saudi Arabia	
Latvia				United Arab Emirates	
Lithuania					
Luxembourg					
Malta					
Netherlands					
Portugal					
Slovak Republic					
Slovenia					
Spain					

Low-Income Developing Asia	Low-Income Developing Latin America	Low-Income Developing Sub-Saharan Africa	Low-Income Developing Others	Low-Income Oil Producers	Oil Producers
Bangladesh	Bolivia	Benin	Kyrgyz Republic	Cameroon	Algeria
Cambodia	Haiti	Burkina Faso	Moldova	Republic of Congo	Angola
Lao P.D.R.	Honduras	Cameroon	Sudan	Côte d'Ivoire	Azerbaijan
Mongolia	Nicaragua	Chad	Tajikistan	Nigeria	Bahrain
Myanmar		Democratic Republic of the Congo	Uzbekistan	Papua New Guinea	Brunei Darussalam
Nepal		Republic of Congo	Yemen	Yemen	Cameroon
Papua New Guinea		Côte d'Ivoire			Canada
Vietnam		Ethiopia			Colombia
		Ghana			Republic of Congo
		Guinea			Côte d'Ivoire
		Kenya			Ecuador
		Madagascar			Equatorial Guinea
		Mali			Gabon
		Mozambique			Indonesia
		Niger			Iran
		Nigeria			Iraq
		Rwanda			Kazakhstan
		Senegal			Kuwait
		Tanzania			Libya
		Uganda			Mexico
		Zambia			Nigeria
		Zimbabwe			Norway
					Oman
					Papua New Guinea
					Qatar
					Russia
					Saudi Arabia
					Syria
					Timor-Leste
					Trinidad and Tobago
					United Arab Emirates
					Venezuela
					Yemen

Table B. Advanced Economies: Definition and Coverage of *Fiscal Monitor* Data

	Overall Fiscal Balance[1]			Cyclically Adjusted Balance			Gross Debt		
	Coverage		Accounting Practice	Coverage		Accounting Practice	Coverage		Valuation of Debt[2]
	Aggregate	Subsectors		Aggregate	Subsectors		Aggregate	Subsectors	
Australia	GG	CG, SG, LG, TG	NC	GG	CG, SG, LG, TG	NC	GG	CG, SG, LG, TG	Nominal
Austria	GG	CG, SG, LG, SS	NC	GG	CG, SG, LG, SS	NC	GG	CG, SG, LG, SS	Face
Belgium	GG	CG, SG, LG, SS	NC	GG	CG, SG, LG, SS	NC	GG	CG, SG, LG, SS	Face
Canada	GG	CG, SG, LG, SS	NC	GG	CG, SG, LG, SS	NC	GG	CG, SG, LG, SS	Face
Cyprus[3]	GG	CG, LG, SS	C/NC	. . .	. . .	. . .	GG	CG, LG, SS	Face
Czech Republic	GG	CG, LG, SS	NC	GG	CG, LG, SS	NC	GG	CG, LG, SS	Nominal
Denmark	GG	CG, LG, SS	NC	GG	CG, LG, SS	NC	GG	CG, LG, SS	Nominal
Estonia	GG	CG, LG, SS	C	. . .	. . .	. . .	GG	CG, LG, SS	Nominal
Finland	GG	CG, LG, SS	NC	GG	CG, LG, SS	NC	GG	CG, LG, SS	Nominal
France	GG	CG, LG, SS	NC	GG	CG, LG, SS	NC	GG	CG, LG, SS	Face
Germany	GG	CG, SG, LG, SS	NC	GG	CG, SG, LG, SS	NC	GG	CG, SG, LG, SS	Face
Greece	GG	CG, LG, SS	NC	GG	CG, LG, SS	NC	GG	CG, LG, SS	Nominal
Hong Kong SAR	GG	CG	C	GG	CG	C	GG	CG	Face
Iceland	GG	CG, LG, SS	NC	GG	CG, LG, SS	NC	GG	CG, LG, SS	Face
Ireland	GG	CG, LG, SS	NC	GG	CG, LG, SS	NC	GG	CG, LG, SS	Nominal
Israel	GG	CG, LG, SS	Other	GG	CG, SS, LG	Other	GG	CG, SS, LG	Nominal
Italy	GG	CG, LG, SS	NC	GG	CG, LG, SS	NC	GG	CG, LG, SS	Face
Japan	GG	CG, LG, SS	NC	GG	CG, LG, SS	NC	GG	CG, LG, SS	Nominal
Korea	CG	CG	C	CG	CG	C	GG	CG, LG	Nominal
Latvia	GG	CG, LG, SS, NFPC	C	GG	CG, LG, SS, NFPC	C	GG	CG, LG, SS, NFPC	Nominal
Lithuania	GG	CG, LG, SS	NC	GG	CG, LG, SS	NC	GG	CG, LG, SS	Nominal
Luxembourg	GG	CG, LG, SS	NC	GG	CG, LG, SS	NC	GG	CG, LG, SS	Face
Malta	GG	CG, SS	NC	GG	CG, SS	NC	GG	CG, SS	Nominal
Netherlands	GG	CG, LG, SS	NC	GG	CG, LG, SS	NC	GG	CG, LG, SS	Nominal
New Zealand	CG	CG	NC	CG	CG	NC	CG	CG	Current market
Norway	GG	CG, LG, SS	NC	GG	CG, LG, SS	NC	GG	CG, LG, SS	Current market
Portugal	GG	CG, LG, SS	NC	GG	CG, LG, SS	NC	GG	CG, LG, SS	Nominal
Singapore	GG	CG	C	GG	CG	C	GG	CG	Nominal
Slovak Republic	GG	CG, LG, SS	NC	GG	CG, LG, SS	NC	GG	CG, LG, SS	Face
Slovenia	GG	CG, SG, LG, SS	C	GG	CG, SG, LG, SS	C	GG	CG, SG, LG, SS	Face
Spain	GG	CG, SG, LG, SS	NC	GG	CG, SG, LG, SS	NC	GG	CG, SG, LG, SS	Nominal
Sweden	GG	CG, LG, SS	NC	GG	CG, LG, SS	NC	GG	CG, LG, SS	Nominal
Switzerland	GG	CG, SG, LG, SS	NC	GG	CG, SG, LG, SS	NC	GG	CG, SG, LG, SS	Nominal
United Kingdom	GG	CG, LG	NC	GG	CG, LG	NC	GG	CG, LG	Nominal
United States	GG	CG, SG, LG	NC	GG	CG, SG, LG	NC	GG	CG, SG, LG	Nominal

Note: Coverage: CG = central government; GG = general government; LG = local governments; NFPC = nonfinancial public corporations; PS = public sector; SG = state governments; SS = social security funds; TG = territorial governments. Accounting practice: C = cash; NC = noncash.

[1] In many countries, fiscal data follow the IMF's *Government Finance Statistics Manual 2001*. The concept of overall fiscal balance refers to net lending (+) and borrowing (–) of the general government. In some cases, however, the overall balance refers to total revenue and grants minus total expenditure and net lending.

[2] Nominal = debt securities are valued at their nominal values, that is, the nominal value of a debt instrument at any moment in time is the amount that the debtor owes to the creditor. Face = undiscounted amount of principal to be repaid at (or before) maturity. The use of face value as a proxy for nominal value in measuring the gross debt position can result in an inconsistent approach across all instruments and is not recommended, unless nominal and market values are not available. Current market = debt securities are valued at market prices; insurance, pension, and standardized guarantee schemes are valued according to principles that are equivalent to market valuation; and all other debt instruments are valued at nominal prices, which are considered to be the best generally available proxies of their market prices.

[3] Historical data until 2012 are reported on an accrual basis as general government cash data are not available for years that preceded the IMF program.

Table C. Emerging Market and Middle-Income Economies: Definition and Coverage of *Fiscal Monitor* Data

	Overall Fiscal Balance[1]			Cyclically Adjusted Balance			Gross Debt		
	Coverage		Accounting Practice	Coverage		Accounting Practice	Coverage		Valuation of Debt[2]
	Aggregate	Subsectors		Aggregate	Subsectors		Aggregate	Subsectors	
Algeria	CG	CG	C	. . .	. . .	. . .	CG	CG	Nominal
Angola	GG	CG, LG	Other	. . .	. . .	. . .	GG	CG, LG	Nominal
Argentina	GG	CG, SG, LG, SS	C	CG	CG	C	CG	CG	Nominal
Azerbaijan	CG	CG	C	. . .	. . .	. . .	CG	CG	Face
Belarus[3]	GG	CG, LG, SS	C	. . .	. . .	. . .	GG	CG, LG, SS	Nominal
Brazil[4]	NFPS	CG, SG, LG, SS, MPC, NFPC	C	NFPS	CG, SG, LG, SS, MPC, NFPC	C	NFPS	CG, SG, LG, SS, MPC, NFPC	Nominal
Chile	GG	CG, LG	NC	CG	CG, LG	NC	GG	CG, LG	Face
China	GG	CG, LG	C	GG	CG, LG	C	GG	CG, LG	Face
Colombia[5]	GG	CG, SG, LG, SS	C/NC	GG	CG, SG, LG, SS	C/NC	GG	CG, SG, LG, SS	Face
Croatia	GG	CG, LG	NC	GG	CG, LG	NC	GG	CG, LG	Nominal
Dominican Republic	GG	CG, SG, LG, SS, NMPC	C/NC	GG	CG, SG, LG, SS, NMPC	C/NC	GG	CG, SG, LG, SS, NMPC	Face
Ecuador	NFPS	CG, SG, LG, SS, NFPC	C	NFPS	CG, SG, LG, SS, NFPC	C	NFPS	CG, SG, LG, SS, NFPC	Face
Egypt	CG	CG, LG, SS, MPC	C	GG	CG, LG, SS, MPC	C	GG	CG, LG, SS, MPC	Nominal
Hungary	GG	CG, LG, SS, NMPC	NC	GG	CG, LG, SS, NMPC	NC	GG	CG, LG, SS, NMPC	Face
India	GG	CG, SG	NC	GG	CG, SG	NC	GG	CG, SG	Nominal
Indonesia	GG	CG, LG	C	GG	CG, LG	C	GG	CG, LG	Face
Iran	CG	CG	C	. . .	. . .	. . .	CG	CG	Nominal
Kazakhstan	GG	CG, LG	NC	. . .	. . .	. . .	GG	CG, LG	Nominal
Kuwait	CG	CG	C/NC	. . .	. . .	. . .	CG	CG	Nominal
Libya	GG	CG, SG, LG	C	. . .	. . .	. . .	GG	CG, SG, LG	Face
Malaysia	GG	CG, SG, LG	C	GG	CG	C	GG	CG, SG, LG	Nominal
Mexico	PS	CG, SS, NFPC, NMPC	C	GG	GG	C	PS	CG, SS, NFPC, NMPC	Face
Morocco	CG	CG	NC	. . .	. . .	. . .	CG	CG	Face
Oman	CG	CG	C	. . .	. . .	. . .	CG	CG	Nominal
Pakistan	GG	CG, LG, SG	C	. . .	. . .	. . .	GG	CG, LG, SG	Nominal
Peru	GG	CG, SG, LG, SS	C	GG	CG, SG, LG, SS	C	GG	CG, SG, LG, SS	Face
Philippines	GG	CG, LG, SS	C	CG	CG	C	GG	CG, LG, SS	Nominal
Poland	GG	CG, LG, SS	NC	GG	CG, LG, SS	NC	GG	CG, LG, SS	Face
Qatar	CG	CG	C	. . .	. . .	. . .	CG	CG	Nominal
Romania	GG	CG, LG, SS	C	GG	CG, LG, SS	C	GG	CG, LG, SS	Face
Russia	GG	CG, SG, SS	C/NC	GG	CG, SG, SS	C/NC	GG	CG, SG, SS	Current market
Saudi Arabia	GG	CG	C	. . .	. . .	. . .	GG	CG	Nominal
South Africa[6]	GG	CG, SG, SS	C	GG	CG, SG, SS	C	GG	CG, SG, SS	Nominal
Sri Lanka	GG	CG, SG, LG, SS	C	. . .	. . .	. . .	GG	CG, SG, LG, SS	Nominal
Thailand[7]	PS	CG, BCG, LG, SS	NC	PS	CG, BCG, LG, SS	NC	PS	CG, BCG, LG, SS	Nominal
Turkey	GG	CG, LG, SS	NC	GG	CG, LG, SS	NC	GG	CG, LG, SS	Nominal
Ukraine	GG	CG, SG, LG, SS	C	GG	CG, SG, LG, SS	C	GG	CG, SG, LG, SS	Nominal
United Arab Emirates[8]	GG	CG, BCG, SG, SS	C	. . .	. . .	. . .	GG	CG, BCG, SG, SS	Nominal
Uruguay	PS	CG, LG, SS, MPC, NFPC	NC	. . .	. . .	. . .	PS	CG, LG, SS, MPC, NFPC	Face
Venezuela[9]	GG	BCG, NFPC	C	GG	BCG, NFPC	C	GG	BCG, NFPC	Nominal

Note: Coverage: BCG = budgetary central government; CG = central government; GG = general government; LG = local governments; MPC = monetary public corporations, including central bank; NFPC = nonfinancial public corporations; NFPS = nonfinancial public sector; NMPC = nonmonetary financial public corporations; PS = public sector; SG = state governments; SS = social security funds. Accounting practice: C = cash; NC = noncash.

[1] In many countries, fiscal data follow the IMF's *Government Finance Statistics Manual 2001*. The concept of overall fiscal balance refers to net lending (+) and borrowing (–) of the general government. In some cases, however, the overall balance refers to total revenue and grants minus total expenditure and net lending.

[2] Nominal = debt securities are valued at their nominal values, that is, the nominal value of a debt instrument at any moment in time is the amount that the debtor owes to the creditor. Face = undiscounted amount of principal to be repaid at (or before) maturity. The use of face value as a proxy for nominal value in measuring the gross debt position can result in an inconsistent approach across all instruments and is not recommended, unless nominal and market values are not available. Current market = debt securities are valued at market prices; insurance, pension, and standardized guarantee schemes are valued according to principles that are equivalent to market valuation; and all other debt instruments are valued at nominal prices, which are considered to be the best generally available proxies of their market prices.

[3] Gross debt refers to general government public debt, including publicly guaranteed debt.

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

[5] Revenue is recorded on a cash basis and expenditure on an accrual basis.

[6] Coverage for South Africa is a proxy for general government. It includes the national and provincial governments and certain public entities, while local governments are only partially covered, through the transfers to them.

[7] Data for Thailand do not include the debt of specialized financial institutions (SFIs/NMPC) without government guarantee.

[8] Gross debt covers banking system claims only.

[9] The fiscal accounts for 2010–22 correspond to the budgetary central government and Petróleos de Venezuela S.A. (PDVSA), whereas the fiscal accounts for years before 2010 correspond to the budgetary central government, public enterprises (including PDVSA), Instituto Venezolano de los Seguros Sociales (IVSS—social security), and Fondo de Garantía de Depósitos y Protección Bancaria (FOGADE—deposit insurance).

Table D. Low-Income Developing Countries: Definition and Coverage of *Fiscal Monitor* Data

	Overall Fiscal Balance[1]			Cyclically Adjusted Balance			Gross Debt		
	Coverage		Accounting Practice	Coverage		Accounting Practice	Coverage		Valuation of Debt[2]
	Aggregate	Subsectors		Aggregate	Subsectors		Aggregate	Subsectors	
Bangladesh	CG	CG	C	CG	CG	C	CG	CG	Nominal
Benin	CG	CG	C	. . .	. . .	. . .	CG	CG	Nominal
Bolivia	NFPS	CG, LG, SS, MPC, NMPC, NFPC	C	NFPS	CG, LG, SS, MPC, NMPC, NFPC	C	NFPS	CG, LG, SS, MPC, NMPC, NFPC	Nominal
Burkina Faso	CG	CG	Other	. . .	. . .	. . .	CG	CG	Face
Cambodia	GG	CG, LG	NC	GG	CG, LG	NC	GG	CG, LG	Face
Cameroon	NFPS	CG, NFPC	C	. . .	. . .	. . .	NFPS	CG, NFPC	Current market
Chad	NFPS	CG, NFPC	C	. . .	. . .	. . .	NFPS	CG, NFPC	Face
Democratic Republic of the Congo	GG	CG, LG	NC	. . .	. . .	. . .	GG	CG, LG	Nominal
Republic of Congo	CG	CG	NC	. . .	. . .	. . .	CG	CG	Nominal
Côte d'Ivoire	CG	CG	NC	. . .	. . .	. . .	CG	CG	Nominal
Ethiopia	CG	CG, SG, LG, NFPC	C	. . .	. . .	. . .	CG	CG, SG, LG, NFPC	Nominal
Ghana	CG	CG	C	. . .	. . .	. . .	CG	CG	Face
Guinea	CG	CG	Other	. . .	. . .	. . .	CG	CG	Nominal
Haiti	CG	CG	C	CG	CG	C	CG	CG	Nominal
Honduras	CPS	CG, LG, SS, NFPC	NC	CPS	CG, LG, SS, NFPC	NC	CPS	CG, LG, SS, NFPC	Nominal
Kenya	CG	CG	NC	. . .	. . .	. . .	CG	CG	Current market
Kyrgyz Republic	GG	CG, LG, SS	C	. . .	. . .	. . .	GG	CG, LG, SS	Face
Lao P.D.R.[3]	CG	CG	C	CG	CG	C	CG	CG	. . .
Madagascar	CG	CG, LG	C	. . .	. . .	. . .	CG	CG	Nominal
Mali	CG	CG	C/NC	. . .	. . .	. . .	CG	CG	Nominal
Moldova	GG	CG, LG, SS	C	GG	CG, LG, SS	C	GG	CG, LG, SS	Nominal
Mongolia[4]	GG	CG, SG, LG, SS	C	. . .	. . .	. . .	GG	CG, SG, LG, SS	Face
Mozambique	CG	CG, SG	C/NC	CG	CG, SG	C/NC	CG	CG, SG	Nominal
Myanmar[5]	NFPS	CG, NFPC	C	. . .	. . .	. . .	NFPS	CG, NFPC	Face
Nepal	CG	CG	C	CG	CG	C	CG	CG	Face
Nicaragua	GG	CG, LG, SS	C	GG	CG, LG, SS	C	GG	CG, LG, SS	Nominal
Niger	CG	CG	NC	. . .	. . .	. . .	CG	CG	Nominal
Nigeria	GG	CG, SG, LG, NFPC	C	. . .	. . .	. . .	GG	CG, SG, LG, NFPC	Current market
Papua New Guinea	CG	CG	C	. . .	. . .	. . .	CG	CG	Nominal
Rwanda	GG	CG, LG	C/NC	. . .	. . .	. . .	GG	CG, LG	Nominal
Senegal	CG	CG	C	CG	CG	C	CG	CG	Nominal
Sudan	CG	CG	C/NC	. . .	. . .	. . .	CG	CG	Nominal
Tajikistan	GG	CG, LG, SS	C	. . .	. . .	. . .	GG	CG, LG, SS	Nominal
Tanzania	CG	CG, LG	C	. . .	. . .	. . .	CG	CG, LG	Nominal
Uganda	CG	CG	C	. . .	. . .	. . .	CG	CG	Nominal
Uzbekistan[6]	GG	CG, SG, LG, SS	C	. . .	. . .	. . .	GG	CG, SG, LG, SS	Nominal
Vietnam	GG	CG, SG, LG	C	GG	CG, SG, LG	C	GG	CG, SG, LG	Nominal
Yemen	GG	CG, LG	C	. . .	. . .	. . .	GG	CG, LG	Nominal
Zambia	CG	CG	C	. . .	. . .	. . .	CG	CG	Current market
Zimbabwe	CG	CG	C	. . .	. . .	. . .	CG	CG	Current market

Note: Coverage: CG = central government; CPS = combined public sector; GG = general government; LG = local governments; MPC = monetary public corporations, including central bank; NFPC = nonfinancial public corporations; NFPS = nonfinancial public sector; NMPC = nonmonetary financial public corporations; SG = state governments; SS = social security funds. Accounting practice: C = cash; NC = noncash.

[1] In many countries, fiscal data follow the IMF's *Government Finance Statistics Manual 2001*. The concept of overall fiscal balance refers to net lending (+) and borrowing (–) of the general government. In some cases, however, the overall balance refers to total revenue and grants minus total expenditure and net lending.

[2] Nominal = debt securities are valued at their nominal values, that is, the nominal value of a debt instrument at any moment in time is the amount that the debtor owes to the creditor. Face = undiscounted amount of principal to be repaid at (or before) maturity. The use of face value as a proxy for nominal value in measuring the gross debt position can result in an inconsistent approach across all instruments and is not recommended, unless nominal and market values are not available. Current market = debt securities are valued at market prices; insurance, pension, and standardized guarantee schemes are valued according to principles that are equivalent to market valuation; and all other debt instruments are valued at nominal prices, which are considered to be the best generally available proxies of their market prices.

[3] Lao P.D.R.'s fiscal spending includes capital spending by local governments financed by loans provided by the central bank.

[4] Mongolia's listing includes the Human Development Fund.

[5] Overall and primary balances in 2012 are based on the monetary statistics and are different from the balances calculated from expenditure and revenue data.

[6] Uzbekistan's listing includes the Fund for Reconstruction and Development.

Table A1. Advanced Economies: General Government Overall Balance, 2008–22

(Percent of GDP)

	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Australia	–1.1	–4.6	–5.1	–4.5	–3.5	–2.8	–2.9	–2.7	–2.7	–2.2	–1.3	–0.4	0.1	0.1	0.2
Austria	–1.5	–5.4	–4.5	–2.6	–2.2	–1.4	–2.7	–1.0	–1.4	–1.0	–0.7	–0.4	–0.2	–0.4	–0.5
Belgium	–1.1	–5.4	–4.0	–4.1	–4.2	–3.0	–3.1	–2.5	–2.7	–2.1	–2.2	–2.3	–2.4	–2.4	–2.5
Canada	0.2	–3.9	–4.7	–3.3	–2.5	–1.5	0.0	–1.1	–1.9	–2.4	–2.2	–1.9	–1.8	–1.5	–1.2
Cyprus[1]	0.9	–5.4	–4.7	–5.7	–5.8	–4.4	–0.2	–1.5	–0.3	–0.3	–0.5	–0.1	0.1	0.1	0.1
Czech Republic	–2.1	–5.5	–4.4	–2.7	–3.9	–1.2	–1.9	–0.6	0.2	–0.2	0.0	0.0	0.0	–0.1	–0.1
Denmark	3.2	–2.8	–2.7	–2.1	–3.5	–1.0	1.4	–1.3	–1.0	–1.1	–0.5	–0.1	0.3	0.3	0.4
Estonia	–2.9	–1.9	0.1	1.1	–0.3	–0.2	0.7	0.1	0.3	0.3	–0.2	–0.3	–0.3	–0.4	–0.4
Finland	4.2	–2.5	–2.6	–1.0	–2.2	–2.6	–3.2	–2.7	–1.9	–2.1	–1.5	–0.9	–0.5	–0.4	–0.3
France	–3.2	–7.2	–6.8	–5.1	–4.8	–4.0	–4.0	–3.5	–3.3	–3.2	–2.8	–2.2	–1.6	–1.1	–0.6
Germany	–0.2	–3.2	–4.2	–1.0	0.0	–0.2	0.3	0.7	0.8	0.6	0.6	0.8	1.0	1.1	1.1
Greece	–10.2	–15.1	–11.2	–10.3	–6.5	–3.7	–4.0	–3.4	0.0	–1.5	–1.0	–1.5	–1.7	–2.0	–2.5
Hong Kong SAR	0.1	1.5	4.1	3.8	3.1	1.0	3.2	0.6	4.8	1.6	1.4	1.4	1.0	1.0	1.0
Iceland	–13.0	–9.7	–9.8	–5.6	–3.7	–1.8	–0.1	–0.8	11.3	0.6	1.1	1.5	1.0	0.9	0.8
Ireland[1]	–7.0	–13.8	–32.1	–12.6	–8.0	–5.7	–3.7	–1.9	–0.9	–0.5	–0.3	0.0	0.3	0.6	1.0
Israel	–2.7	–5.6	–4.1	–3.4	–5.0	–4.2	–3.4	–2.7	–2.5	–3.3	–3.5	–3.7	–3.7	–3.7	–3.7
Italy	–2.7	–5.3	–4.2	–3.7	–2.9	–2.9	–3.0	–2.7	–2.4	–2.4	–1.4	–0.7	–0.2	–0.1	0.0
Japan	–4.1	–9.8	–9.1	–9.1	–8.3	–7.6	–5.4	–3.5	–4.2	–4.0	–3.3	–2.8	–2.2	–2.0	–2.0
Korea	1.5	0.0	1.5	1.7	1.6	0.6	0.4	0.3	0.3	0.7	1.1	1.5	1.7	1.8	1.9
Latvia	–3.2	–7.0	–6.5	–3.1	0.1	–0.6	–1.7	–1.5	–0.4	–1.2	–0.3	–0.4	–0.5	–0.4	–0.3
Lithuania	–3.3	–9.3	–6.9	–8.9	–3.1	–2.6	–0.7	–0.2	0.0	–0.6	–0.7	–0.5	–0.4	–0.4	–0.4
Luxembourg	3.4	–0.7	–0.7	0.5	0.3	1.0	1.5	1.6	1.7	0.3	0.1	0.0	0.0	0.0	0.0
Malta	–4.2	–3.3	–3.2	–2.5	–3.7	–2.6	–2.0	–1.4	–0.7	–0.6	–0.6	–0.6	–0.6	–0.6	–0.6
Netherlands	0.2	–5.4	–5.0	–4.3	–3.9	–2.4	–2.3	–1.9	–0.5	0.0	0.1	0.2	0.3	0.4	0.4
New Zealand	1.3	–1.7	–5.9	–5.4	–1.9	–1.0	–0.3	0.6	0.6	0.6	1.5	2.1	2.6	2.8	2.8
Norway	18.5	10.3	10.9	13.2	13.5	10.5	8.5	5.7	2.9	3.6	3.8	3.8	3.9	3.9	3.9
Portugal	–3.8	–9.8	–11.2	–7.4	–5.7	–4.8	–7.2	–4.4	–2.3	–1.9	–2.2	–2.2	–2.3	–2.4	–2.6
Singapore	6.1	0.0	6.0	8.7	7.9	6.6	5.5	3.7	3.3	1.7	1.5	1.8	1.5	1.8	1.8
Slovak Republic	–2.1	–7.7	–7.2	–3.9	–4.1	–2.5	–2.7	–2.7	–2.0	–1.8	–1.1	–0.7	–0.6	–0.6	–0.5
Slovenia	–0.3	–5.4	–5.2	–5.5	–3.1	–13.9	–5.8	–3.3	–1.8	–1.5	–1.6	–1.8	–2.0	–2.1	–2.2
Spain[1]	–4.4	–11.0	–9.4	–9.6	–10.5	–7.0	–6.0	–5.1	–4.6	–3.3	–2.7	–2.4	–2.3	–2.2	–2.3
Sweden	1.9	–0.7	–0.1	–0.2	–1.0	–1.4	–1.6	0.2	–0.2	–0.3	–0.2	0.0	0.3	0.3	0.3
Switzerland	1.7	0.6	0.3	0.5	0.0	–0.2	–0.2	0.0	–0.1	–0.1	0.0	0.0	0.1	0.2	0.2
United Kingdom	–5.2	–10.2	–9.5	–7.5	–7.7	–5.6	–5.7	–4.4	–3.1	–2.8	–2.1	–1.2	–0.9	–0.8	–0.8
United States[2]	–6.7	–13.1	–10.9	–9.6	–7.9	–4.4	–4.0	–3.5	–4.4	–4.0	–4.5	–5.3	–5.4	–5.7	–5.8
Average	–3.5	–8.7	–7.6	–6.2	–5.4	–3.6	–3.1	–2.6	–2.9	–2.7	–2.7	–2.8	–2.7	–2.7	–2.7
Euro Area	–2.2	–6.3	–6.2	–4.2	–3.6	–3.0	–2.6	–2.1	–1.7	–1.5	–1.2	–0.8	–0.5	–0.4	–0.3
G7	–4.5	–9.8	–8.7	–7.3	–6.3	–4.3	–3.6	–3.0	–3.5	–3.3	–3.3	–3.5	–3.4	–3.5	–3.5
G20 Advanced	–4.2	–9.4	–8.3	–6.9	–6.0	–4.0	–3.4	–2.9	–3.3	–3.1	–3.1	–3.2	–3.1	–3.2	–3.2

Source: IMF staff estimates and projections. Projections are based on staff assessment of current policies (see "Fiscal Policy Assumptions" in text).

Note: For country-specific details, see "Data and Conventions" in text, and Table B.

[1] Data include financial sector support. For Cyprus, 2014 and 2015 balances exclude financial sector support.

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

Table A2. Advanced Economies: General Government Primary Balance, 2008–22

(Percent of GDP)

	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Australia	–1.1	–4.5	–4.8	–4.0	–2.8	–2.0	–2.0	–1.7	–1.7	–1.2	–0.3	0.6	1.1	1.1	1.1
Austria	0.7	–3.2	–2.3	–0.4	0.0	0.8	–0.7	0.9	0.3	0.6	0.8	1.0	1.0	0.9	0.7
Belgium	2.4	–2.0	–0.7	–0.9	–1.0	–0.1	–0.2	0.1	–0.3	0.0	–0.3	–0.4	–0.4	–0.4	–0.4
Canada	0.5	–2.8	–3.9	–2.7	–1.8	–1.0	0.2	–0.5	–1.2	–1.7	–1.6	–1.3	–1.1	–0.7	–0.2
Cyprus[1]	3.1	–3.4	–3.2	–3.9	–3.2	–1.8	2.6	1.1	2.3	2.2	2.2	2.5	2.6	2.6	2.6
Czech Republic	–1.4	–4.5	–3.3	–1.7	–2.8	–0.2	–0.8	0.3	0.9	0.5	0.6	0.6	0.5	0.4	0.4
Denmark	3.4	–2.4	–2.1	–1.4	–3.0	–0.6	1.9	–0.6	–0.4	–0.8	–0.2	–0.1	0.3	0.3	0.4
Estonia	–3.3	–2.2	0.0	0.9	–0.4	–0.3	0.6	0.0	0.2	0.2	–0.3	–0.3	–0.4	–0.4	–0.5
Finland	3.7	–2.9	–2.5	–1.0	–2.0	–2.5	–2.9	–2.5	–1.6	–2.0	–1.5	–1.0	–0.6	–0.2	0.0
France	–0.5	–4.9	–4.5	–2.6	–2.4	–1.9	–1.9	–1.6	–1.5	–1.6	–1.2	–0.6	0.0	0.7	1.3
Germany	2.2	–0.8	–2.1	1.1	1.8	1.4	1.7	1.9	1.9	1.5	1.4	1.5	1.6	1.6	1.6
Greece	–5.4	–10.1	–5.3	–3.0	–1.4	0.4	0.0	0.2	3.3	1.8	2.0	1.5	1.5	1.5	1.5
Hong Kong SAR	–2.6	–0.4	2.3	1.9	1.3	–0.7	3.2	0.6	4.0	0.8	0.5	0.8	0.4	0.4	0.4
Iceland	–13.2	–6.6	–7.0	–2.9	–0.4	1.6	3.6	2.9	13.8	3.2	3.3	3.2	2.6	2.3	2.1
Ireland[1]	–6.3	–12.4	–29.8	–10.1	–4.8	–2.2	–0.4	0.5	1.3	1.6	1.7	1.9	2.1	2.4	2.7
Israel	1.4	–1.6	–0.3	0.2	–1.3	–0.9	–0.5	–0.1	–0.2	–0.9	–1.0	–1.1	–1.0	–1.0	–1.0
Italy	2.0	–1.0	–0.1	0.8	2.1	1.8	1.4	1.3	1.4	1.1	2.1	2.9	3.3	3.6	3.7
Japan	–3.8	–9.3	–8.6	–8.3	–7.5	–7.0	–4.9	–3.1	–4.0	–3.9	–3.3	–2.8	–2.2	–2.1	–2.0
Korea	1.2	–0.7	0.8	0.9	0.8	–0.2	–0.3	–0.4	–0.5	0.0	0.8	1.4	1.6	1.6	1.7
Latvia	–3.1	–6.4	–5.4	–2.2	1.3	0.7	–0.4	0.1	0.7	–0.2	0.6	0.5	0.3	0.4	0.5
Lithuania	–2.8	–8.2	–5.2	–7.2	–1.2	–0.9	1.0	1.3	1.4	1.0	1.0	1.2	1.2	1.2	1.2
Luxembourg	2.1	–1.2	–0.9	0.3	0.1	0.8	1.2	1.4	1.7	0.4	0.1	–0.2	–0.2	–0.3	–0.6
Malta	–0.8	0.0	–0.1	0.6	–0.6	0.3	0.8	1.0	1.4	1.5	1.4	1.4	1.4	1.4	1.4
Netherlands	1.6	–4.2	–3.8	–3.0	–2.8	–1.3	–1.2	–0.9	0.4	0.8	0.9	1.0	1.1	1.2	1.2
New Zealand	1.6	–1.4	–5.4	–4.8	–1.1	–0.4	0.1	1.1	1.2	1.2	2.2	2.7	3.2	3.4	3.4
Norway	15.5	8.0	8.8	11.1	11.7	8.6	6.3	3.2	0.8	1.5	1.9	2.0	2.0	2.0	2.1
Portugal	–1.1	–7.1	–8.5	–3.6	–1.4	–0.6	–2.8	–0.1	1.6	2.1	1.8	1.8	1.7	1.6	1.6
Singapore	3.7	–1.1	5.4	8.2	7.4	6.1	4.8	2.9	2.3	0.7	0.6	0.8	0.5	0.8	0.9
Slovak Republic	–1.3	–6.6	–6.1	–2.5	–2.6	–0.9	–1.0	–1.2	–0.5	–0.5	0.1	0.6	0.8	0.8	1.0
Slovenia	0.5	–4.6	–4.0	–4.2	–1.4	–11.6	–2.9	–0.6	1.0	0.7	0.6	0.5	0.5	0.5	0.4
Spain[1]	–3.4	–9.6	–7.8	–7.6	–8.0	–4.1	–3.0	–2.4	–2.2	–0.9	–0.4	–0.1	0.1	0.2	0.3
Sweden	2.5	–0.4	0.3	0.2	–0.8	–1.2	–1.6	0.0	–0.5	–0.6	–0.4	–0.1	0.3	0.4	0.5
Switzerland	2.3	1.1	0.8	0.8	0.4	0.1	0.1	0.3	0.1	0.1	0.2	0.2	0.2	0.3	0.3
United Kingdom	–3.7	–8.8	–7.0	–4.8	–5.4	–4.2	–3.8	–2.9	–1.4	–1.0	–0.4	0.5	0.7	0.8	0.9
United States	–4.6	–11.2	–8.9	–7.3	–5.7	–2.4	–2.0	–1.6	–2.3	–1.9	–2.2	–2.8	–2.7	–2.7	–2.6
Average	–1.9	–7.1	–5.9	–4.4	–3.6	–2.0	–1.5	–1.1	–1.4	–1.3	–1.2	–1.2	–1.0	–0.9	–0.7
Euro Area	0.4	–3.8	–3.7	–1.6	–1.0	–0.5	–0.2	0.1	0.3	0.3	0.5	0.9	1.2	1.3	1.5
G7	–2.6	–8.0	–6.8	–5.2	–4.3	–2.5	–1.8	–1.4	–1.8	–1.6	–1.6	–1.7	–1.5	–1.4	–1.2
G20 Advanced	–2.4	–7.7	–6.5	–5.0	–4.1	–2.4	–1.8	–1.3	–1.7	–1.5	–1.5	–1.5	–1.2	–1.2	–1.0

Source: IMF staff estimates and projections. Projections are based on staff assessment of current policies (see "Fiscal Policy Assumptions" in text).

Note: Primary balance is defined as the overall balance excluding net interest payments. For country-specific details, see "Data and Conventions" in text, and Table B.

[1] Data include financial sector support. For Cyprus, 2014 and 2015 balances exclude financial sector support.

Table A3. Advanced Economies: General Government Cyclically Adjusted Balance, 2008–22

(Percent of potential GDP)

	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Australia	–1.4	–4.5	–4.9	–4.2	–3.1	–2.4	–2.3	–2.1	–2.1	–1.7	–0.9	–0.2	0.2	0.1	0.2
Austria	–3.5	–3.7	–3.4	–2.7	–2.1	–0.8	–1.8	–0.4	–1.1	–1.0	–0.9	–0.7	–0.5	–0.7	–0.8
Belgium	–1.8	–4.5	–3.8	–4.3	–4.0	–2.2	–2.6	–2.2	–2.4	–1.9	–2.2	–2.3	–2.4	–2.5	–2.5
Canada	–0.2	–2.4	–3.8	–2.9	–2.0	–1.2	0.0	–0.8	–1.6	–2.2	–2.2	–2.0	–1.9	–1.6	–1.2
Cyprus	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Czech Republic	–4.9	–5.3	–4.2	–2.9	–3.2	0.1	–1.1	–0.7	0.1	–0.3	0.0	0.0	–0.1	–0.1	–0.1
Denmark	1.6	–0.5	–1.5	–1.5	–2.7	–0.3	1.7	–1.2	–0.7	–1.0	–0.6	–0.2	0.2	0.2	0.3
Estonia	–4.7	2.0	3.7	2.5	0.4	0.6	0.9	0.4	0.6	0.4	–0.2	–0.3	–0.3	–0.4	–0.4
Finland	1.7	0.0	–1.3	–1.0	–1.2	–1.0	–1.0	–0.6	–0.5	–0.9	–0.6	–0.2	0.0	–0.1	–0.2
France	–3.7	–5.6	–5.7	–4.6	–3.9	–2.9	–2.7	–2.4	–2.3	–2.4	–2.2	–1.8	–1.4	–1.1	–0.7
Germany	–1.3	–1.1	–3.5	–1.5	–0.3	0.0	0.3	0.7	0.6	0.3	0.2	0.4	0.6	0.8	0.8
Greece	–13.9	–18.7	–12.2	–8.7	–2.5	0.3	–1.1	–0.8	2.3	0.1	0.2	–0.7	–1.3	–2.0	–2.5
Hong Kong SAR[1]	–0.5	–0.9	0.9	0.4	0.4	–1.7	2.3	0.0	1.9	0.4	0.3	0.4	0.3	0.2	0.1
Iceland	–4.5	–10.0	–7.5	–4.6	–3.0	–1.6	–0.1	–1.1	10.3	–0.5	0.5	1.1	0.8	0.9	0.8
Ireland[1]	–8.0	–10.1	–9.0	–6.8	–5.1	–2.8	–2.9	–0.9	–1.1	–0.7	–0.5	–0.1	0.2	0.6	0.9
Israel	–2.9	–4.9	–4.1	–3.9	–5.0	–4.5	–3.6	–2.5	–2.5	–3.3	–3.5	–3.7	–3.7	–3.7	–3.7
Italy	–3.6	–3.6	–3.6	–3.5	–1.4	–0.8	–0.9	–1.0	–1.2	–1.6	–0.9	–0.3	–0.1	0.0	0.0
Japan	–3.6	–6.3	–7.5	–7.5	–7.1	–7.1	–5.1	–3.9	–3.9	–3.7	–3.1	–2.6	–2.0	–1.9	–1.8
Korea	1.3	0.4	1.5	1.6	1.7	0.9	0.6	0.6	0.6	1.1	1.4	1.7	1.8	1.9	1.9
Latvia	–8.4	–3.2	–3.3	–1.3	0.8	–1.0	–1.5	–1.4	–0.3	–1.2	–0.3	–0.4	–0.5	–0.4	–0.3
Lithuania	–8.8	–6.7	–4.2	–7.5	–2.4	–2.2	–0.7	0.0	0.3	–0.2	–0.5	–0.4	–0.4	–0.4	–0.4
Luxembourg	2.3	1.2	–0.7	0.4	1.2	1.3	1.3	1.5	1.6	0.2	0.0	–0.2	0.0	0.0	0.0
Malta	–5.6	–2.5	–2.3	–0.5	–1.2	–0.2	–0.7	–1.4	–1.1	–0.9	–0.9	–0.8	–0.7	–0.7	–0.7
Netherlands	–1.5	–5.0	–4.5	–4.3	–3.1	–1.2	–1.2	–1.3	–0.1	0.2	0.2	0.2	0.2	0.3	0.3
New Zealand	1.2	–1.6	–5.4	–5.0	–1.6	–0.9	–0.3	0.7	0.8	0.7	1.5	2.0	2.6	2.9	2.9
Norway[1]	–2.8	–5.0	–5.0	–4.3	–4.7	–5.0	–5.8	–6.7	–8.1	–8.2	–8.4	–8.4	–8.4	–8.4	–8.4
Portugal	–4.2	–8.8	–10.8	–6.2	–3.0	–1.7	–4.5	–2.5	–1.1	–1.3	–1.9	–2.2	–2.4	–2.5	–2.7
Singapore	6.7	0.2	6.5	8.5	7.8	6.5	5.5	3.8	3.4	1.5	1.6	1.5	1.5	1.5	1.5
Slovak Republic	–0.3	–9.1	–7.4	–3.8	–4.2	–2.9	–3.0	–2.7	–1.9	–1.8	–1.1	–0.6	–0.5	–0.5	–0.4
Slovenia	–3.2	–4.4	–4.7	–4.2	–2.0	–1.6	–2.7	–1.8	–1.4	–1.4	–1.6	–2.0	–2.1	–2.2	–2.3
Spain[1]	–7.3	–10.6	–8.5	–7.4	–3.3	–2.3	–1.9	–2.3	–3.1	–2.5	–2.5	–2.5	–2.6	–2.7	–2.8
Sweden[1]	1.1	1.5	0.6	0.1	–0.2	–0.5	–0.6	–0.1	–0.3	–0.7	–0.6	–0.2	0.2	0.3	0.4
Switzerland[1]	0.8	1.0	0.4	0.6	0.3	0.1	–0.1	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2
United Kingdom[1]	–6.1	–8.5	–7.4	–5.9	–6.0	–4.2	–4.9	–4.1	–3.0	–2.8	–2.0	–1.0	–0.7	–0.8	–0.8
United States[1,2]	–6.0	–7.7	–9.6	–8.2	–6.4	–4.3	–3.8	–3.4	–3.9	–4.0	–4.6	–5.4	–5.5	–5.8	–5.8
Average	–4.0	–5.8	–6.6	–5.6	–4.4	–3.2	–2.7	–2.4	–2.6	–2.7	–2.8	–2.9	–2.8	–2.9	–2.9
Euro Area	–3.4	–4.8	–5.0	–3.9	–2.6	–1.4	–1.3	–1.0	–1.0	–1.1	–1.0	–0.8	–0.6	–0.5	–0.4
G7	–4.5	–6.1	–7.5	–6.3	–5.2	–3.8	–3.2	–2.8	–3.0	–3.2	–3.3	–3.6	–3.5	–3.6	–3.5
G20 Advanced	–4.2	–5.9	–7.1	–6.0	–4.9	–3.6	–3.0	–2.6	–2.9	–2.9	–3.0	–3.3	–3.1	–3.2	–3.2

Source: IMF staff estimates and projections. Projections are based on staff assessment of current policies (see "Fiscal Policy Assumptions" in text).

Note: For country-specific details, see "Data and Conventions" in text, and Table B.

[1] The data for these countries include adjustments beyond the output cycle.

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

Table A4. Advanced Economies: General Government Cyclically Adjusted Primary Balance, 2008–22

(Percent of potential GDP)

	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Australia	–1.4	–4.4	–4.6	–3.7	–2.4	–1.6	–1.5	–1.1	–1.1	–0.7	0.1	0.8	1.2	1.1	1.1
Austria	–1.2	–1.6	–1.3	–0.6	0.0	1.4	0.1	1.5	0.6	0.6	0.6	0.7	0.8	0.6	0.4
Belgium	1.8	–1.1	–0.6	–1.1	–0.8	0.6	0.3	0.4	–0.1	0.1	–0.3	–0.4	–0.5	–0.4	–0.4
Canada	0.1	–1.3	–3.0	–2.3	–1.3	–0.7	0.3	–0.2	–0.8	–1.5	–1.5	–1.3	–1.2	–0.8	–0.3
Cyprus	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Czech Republic	–4.1	–4.3	–3.2	–1.9	–2.1	1.1	0.0	0.2	0.8	0.3	0.6	0.5	0.5	0.4	0.4
Denmark	1.7	–0.1	–0.9	–0.9	–2.2	0.1	2.2	–0.5	–0.1	–0.7	–0.3	–0.2	0.2	0.2	0.3
Estonia	–5.2	1.8	3.5	2.4	0.3	0.5	0.9	0.3	0.6	0.4	–0.3	–0.3	–0.4	–0.4	–0.5
Finland	1.2	–0.4	–1.3	–0.9	–1.0	–0.9	–0.8	–0.4	–0.2	–0.8	–0.5	–0.2	0.0	0.2	0.1
France	–1.0	–3.4	–3.5	–2.1	–1.5	–0.8	–0.6	–0.5	–0.5	–0.8	–0.6	–0.2	0.2	0.7	1.2
Germany	1.1	1.2	–1.4	0.6	1.6	1.6	1.7	1.9	1.7	1.2	1.0	1.1	1.2	1.3	1.3
Greece	–8.5	–13.2	–6.1	–1.6	2.2	3.9	2.6	2.6	5.5	3.3	3.1	2.2	1.8	1.5	1.5
Hong Kong SAR[1]	–3.3	–2.8	–0.9	–1.5	–1.4	–3.4	2.3	0.0	1.1	–0.3	–0.5	–0.2	–0.2	–0.4	–0.5
Iceland	–4.6	–7.0	–4.8	–2.0	0.3	1.8	3.6	2.7	12.8	2.2	2.7	2.9	2.4	2.3	2.1
Ireland[1]	–7.3	–8.7	–6.8	–4.4	–2.1	0.5	0.3	1.4	1.0	1.4	1.5	1.8	2.0	2.4	2.6
Israel	1.2	–1.0	–0.3	–0.2	–1.3	–1.1	–0.6	0.1	–0.2	–0.9	–1.0	–1.1	–1.0	–1.0	–1.0
Italy	1.2	0.5	0.5	1.0	3.4	3.7	3.4	2.9	2.5	1.9	2.6	3.2	3.5	3.7	3.7
Japan	–3.3	–5.8	–6.9	–6.8	–6.3	–6.4	–4.6	–3.5	–3.6	–3.7	–3.1	–2.7	–2.0	–1.9	–1.9
Korea	0.9	–0.2	0.8	0.9	0.9	0.0	–0.1	–0.1	–0.2	0.4	1.1	1.6	1.7	1.7	1.7
Latvia	–8.3	–2.6	–2.4	–0.5	2.0	0.2	–0.2	0.2	0.8	–0.2	0.6	0.5	0.3	0.4	0.5
Lithuania	–8.3	–5.6	–2.6	–5.8	–0.5	–0.5	1.0	1.5	1.8	1.3	1.2	1.3	1.2	1.2	1.2
Luxembourg	1.0	0.7	–0.9	0.1	1.0	1.2	1.1	1.3	1.6	0.2	0.0	–0.3	–0.3	–0.4	–0.6
Malta	–2.0	0.9	0.9	2.7	1.8	2.7	2.1	1.1	1.1	1.2	1.2	1.3	1.3	1.4	1.4
Netherlands	–0.1	–3.8	–3.4	–3.0	–2.0	–0.1	–0.2	–0.3	0.8	1.0	1.0	1.0	1.0	1.1	1.1
New Zealand	1.5	–1.3	–4.9	–4.3	–0.9	–0.3	0.1	1.2	1.4	1.3	2.1	2.7	3.1	3.4	3.4
Norway[1]	–6.7	–8.0	–7.6	–6.9	–7.0	–7.3	–8.5	–9.8	–10.6	–10.8	–10.7	–10.6	–10.6	–10.6	–10.5
Portugal	–1.4	–6.2	–8.1	–2.5	1.0	2.2	–0.3	1.5	2.7	2.7	2.1	1.8	1.6	1.5	1.5
Singapore	4.4	–0.9	5.9	8.0	7.3	6.0	4.8	3.0	2.5	0.5	0.6	0.5	0.5	0.5	0.5
Slovak Republic	0.5	–8.0	–6.3	–2.4	–2.6	–1.2	–1.4	–1.2	–0.4	–0.5	0.1	0.7	0.9	0.9	1.0
Slovenia	–2.4	–3.5	–3.5	–2.9	–0.4	0.5	0.1	0.9	1.3	0.7	0.6	0.3	0.4	0.4	0.3
Spain[1]	–6.2	–9.2	–6.9	–5.5	–0.9	0.4	0.9	0.2	–0.7	–0.2	–0.2	–0.2	–0.2	–0.2	–0.2
Sweden[1]	1.6	1.9	0.9	0.4	0.0	–0.3	–0.6	–0.3	–0.6	–1.1	–0.8	–0.4	0.2	0.4	0.6
Switzerland[1]	1.3	1.5	0.9	0.9	0.7	0.3	0.2	0.5	0.4	0.4	0.4	0.4	0.3	0.3	0.3
United Kingdom[1]	–4.6	–7.1	–5.0	–3.2	–3.7	–2.8	–3.1	–2.6	–1.3	–1.0	–0.3	0.6	0.8	0.9	0.9
United States[1]	–4.0	–5.9	–7.6	–6.0	–4.2	–2.4	–1.8	–1.5	–1.9	–1.9	–2.3	–2.9	–2.8	–2.7	–2.6
Average	–2.4	–4.3	–5.0	–3.8	–2.6	–1.6	–1.1	–0.9	–1.1	–1.2	–1.2	–1.3	–1.1	–1.0	–0.9
Euro Area	–0.8	–2.4	–2.6	–1.3	0.0	1.1	1.0	1.0	0.9	0.7	0.7	0.9	1.1	1.3	1.4
G7	–2.5	–4.4	–5.6	–4.3	–3.2	–2.0	–1.4	–1.2	–1.3	–1.5	–1.6	–1.7	–1.5	–1.4	–1.3
G20 Advanced	–2.4	–4.3	–5.4	–4.1	–3.0	–1.9	–1.3	–1.1	–1.3	–1.4	–1.4	–1.5	–1.3	–1.2	–1.0

Source: IMF staff estimates and projections. Projections are based on staff assessment of current policies (see "Fiscal Policy Assumptions" in text).

Note: Cyclically adjusted primary balance is defined as the cyclically adjusted balance plus net interest payable/paid (interest expense minus interest revenue) following the *World Economic Outlook* convention. For country-specific details, see "Data and Conventions" in text, and Table B.

[1] The data for these countries include adjustments beyond the output cycle.

Table A5. Advanced Economies: General Government Revenue, 2008–22

(Percent of GDP)

	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Australia	34.0	33.4	32.0	32.1	33.3	33.9	34.1	34.6	34.6	34.6	34.9	35.3	35.6	35.6	35.7
Austria	48.7	49.1	48.6	48.5	49.2	49.9	50.0	50.6	49.6	49.7	49.7	49.7	49.7	49.7	49.7
Belgium	49.2	48.8	49.3	50.3	51.6	52.7	52.0	51.3	51.0	51.0	50.7	50.4	50.2	50.2	50.2
Canada	39.1	39.6	38.4	38.4	38.5	38.6	38.6	39.1	38.8	38.9	38.8	38.8	38.8	38.9	38.9
Cyprus	39.1	36.5	37.1	36.4	36.1	37.5	39.3	38.9	38.7	37.9	37.7	37.9	37.8	37.7	37.6
Czech Republic	38.1	38.1	38.6	40.3	40.5	41.4	40.3	41.3	40.9	40.8	41.1	41.0	40.9	40.8	40.7
Denmark	53.6	53.7	54.0	54.4	54.5	54.8	56.7	53.5	51.1	50.0	50.1	49.8	49.8	49.7	49.7
Estonia	36.1	42.3	40.7	38.5	39.0	38.4	39.1	40.5	40.7	41.6	41.3	41.7	41.3	40.9	40.5
Finland	52.4	52.2	52.1	53.3	54.0	54.9	54.9	54.2	54.2	53.7	53.6	53.6	53.7	54.0	54.0
France	49.8	49.6	49.6	50.8	52.0	52.9	53.4	53.5	53.2	53.3	53.1	53.1	53.1	53.1	53.1
Germany	43.4	44.3	43.0	43.8	44.3	44.5	44.7	44.7	45.1	45.1	45.1	45.1	45.3	45.3	45.3
Greece	40.7	38.9	41.3	44.1	45.9	48.0	46.8	47.8	50.3	48.9	47.3	46.4	45.7	45.0	44.7
Hong Kong SAR	18.9	18.8	20.7	22.4	21.4	21.0	20.9	18.6	23.2	20.2	20.9	21.0	20.9	20.9	20.9
Iceland	42.3	38.7	39.6	40.1	41.7	42.1	45.2	42.0	58.3	41.8	42.0	42.0	41.8	41.7	41.6
Ireland	34.8	33.3	33.2	33.4	33.9	34.2	34.1	27.6	27.2	27.3	26.9	26.8	26.6	26.4	26.3
Israel	39.1	36.2	37.0	37.0	36.1	36.5	36.7	37.0	37.5	37.5	37.6	37.4	37.4	37.4	37.4
Italy	45.1	45.9	45.6	45.7	47.8	48.1	47.9	47.8	47.2	46.6	47.4	47.6	47.6	47.7	47.7
Japan	30.1	29.1	28.8	29.8	30.4	31.2	32.7	33.1	32.6	32.6	32.4	32.4	33.1	33.1	33.1
Korea	22.3	21.3	21.0	21.6	22.1	21.5	21.2	21.3	22.1	21.7	21.9	22.1	22.1	22.1	22.1
Latvia	33.5	35.8	36.5	35.6	37.3	36.8	36.1	36.2	36.3	37.1	38.3	37.3	36.6	36.1	35.7
Lithuania	33.8	34.3	34.3	32.6	32.1	32.1	33.3	34.2	34.3	35.6	35.7	35.5	35.5	35.5	35.3
Luxembourg	43.6	45.3	43.7	43.2	44.6	44.4	43.8	43.7	43.1	41.8	41.4	41.0	41.0	40.9	40.8
Malta	38.4	38.6	37.9	38.7	39.2	39.4	39.5	39.7	38.1	37.7	37.8	37.8	37.8	37.8	37.8
Netherlands	43.8	42.7	43.2	42.7	43.2	43.9	43.9	43.2	43.8	44.0	44.0	44.0	44.0	44.0	44.0
New Zealand	36.1	34.8	34.0	33.9	34.0	33.9	33.9	34.9	34.8	34.2	34.0	34.0	34.1	34.1	34.0
Norway	57.4	55.4	55.0	56.2	55.8	53.8	53.6	53.7	53.1	52.8	53.3	53.6	53.9	54.1	54.3
Portugal	41.6	40.4	40.6	42.6	42.9	45.1	44.6	44.0	43.5	43.8	43.3	43.0	42.8	42.6	42.5
Singapore	24.0	17.4	21.1	23.2	22.3	21.6	21.5	22.0	22.1	20.9	21.1	21.3	21.5	21.7	21.9
Slovak Republic	34.5	36.1	34.6	36.5	36.3	38.6	39.0	42.6	39.7	39.7	39.9	39.0	39.1	39.0	38.9
Slovenia	40.4	39.8	40.8	40.6	41.7	41.0	41.5	40.7	39.8	40.1	39.9	40.0	39.9	40.1	40.1
Spain	36.7	34.8	36.2	36.2	37.6	38.6	38.9	38.6	38.1	38.3	38.2	38.1	38.1	38.1	38.0
Sweden	51.3	51.4	50.1	49.4	49.7	50.0	49.2	49.1	48.9	48.9	49.0	48.9	48.8	48.9	48.9
Switzerland	32.4	33.0	32.5	33.0	32.6	32.7	32.7	32.7	32.7	32.7	32.7	32.7	32.7	32.7	32.7
United Kingdom	35.7	34.4	35.4	36.1	36.0	36.4	35.4	35.8	36.3	36.4	36.7	36.8	36.7	36.5	36.5
United States	30.6	28.4	29.1	29.4	29.4	31.6	31.5	31.8	30.9	31.0	30.4	29.9	30.2	30.3	30.5
Average	36.4	35.0	34.9	35.5	35.6	36.9	36.9	36.5	36.1	35.9	35.6	35.4	35.6	35.6	35.7
Euro Area	44.4	44.4	44.3	44.9	46.0	46.7	46.8	46.4	46.3	46.3	46.3	46.2	46.2	46.2	46.2
G7	35.6	34.2	34.1	34.8	34.9	36.4	36.5	36.2	35.6	35.6	35.2	34.9	35.1	35.2	35.3
G20 Advanced	35.1	33.8	33.7	34.2	34.4	35.8	35.8	35.6	35.1	35.0	34.7	34.4	34.6	34.7	34.8

Source: IMF staff estimates and projections. Projections are based on staff assessment of current policies (see "Fiscal Policy Assumptions" in text).

Note: For country-specific details, see "Data and Conventions" in text, and Table B.

Table A6. Advanced Economies: General Government Expenditure, 2008–22

(Percent of GDP)

	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Australia	35.1	37.9	37.1	36.5	36.7	36.7	37.0	37.3	37.3	36.9	36.2	35.7	35.4	35.5	35.5
Austria	50.2	54.5	53.1	51.1	51.5	51.2	52.8	51.6	51.0	50.7	50.4	50.1	50.0	50.1	50.3
Belgium	50.3	54.1	53.3	54.4	55.8	55.7	55.1	53.9	53.7	53.1	53.0	52.6	52.6	52.6	52.7
Canada	38.9	43.5	43.2	41.7	41.0	40.1	38.6	40.3	40.8	41.3	41.0	40.7	40.6	40.4	40.0
Cyprus	38.2	41.9	41.8	42.1	41.9	41.9	39.5	40.4	39.0	38.2	38.2	38.1	37.7	37.6	37.5
Czech Republic	40.2	43.6	43.0	43.0	44.5	42.6	42.2	42.0	40.7	41.0	41.1	41.0	40.9	40.9	40.8
Denmark	50.4	56.5	56.7	56.4	58.0	55.8	55.3	54.8	52.1	51.2	50.6	49.9	49.6	49.4	49.2
Estonia	39.0	44.2	40.5	37.4	39.3	38.5	38.5	40.4	40.4	41.3	41.5	42.0	41.7	41.3	40.9
Finland	48.3	54.8	54.8	54.4	56.2	57.5	58.1	57.0	56.1	55.9	55.1	54.5	54.2	54.4	54.3
France	53.0	56.8	56.4	55.9	56.8	57.0	57.3	57.0	56.5	56.5	56.0	55.3	54.8	54.2	53.7
Germany	43.6	47.6	47.3	44.7	44.3	44.7	44.4	44.0	44.3	44.5	44.5	44.4	44.3	44.2	44.1
Greece	50.8	54.1	52.5	54.4	52.4	51.6	50.8	51.2	50.3	50.5	48.3	47.8	47.4	47.0	47.2
Hong Kong SAR	18.8	17.3	16.6	18.6	18.3	20.0	17.7	18.0	18.4	18.7	19.5	19.6	19.9	19.9	19.9
Iceland	55.3	48.4	49.3	45.7	45.4	43.9	45.3	42.9	47.0	41.2	40.9	40.5	40.9	40.8	40.8
Ireland	41.8	47.1	65.3	46.0	41.9	39.8	37.8	29.5	28.1	27.8	27.2	26.8	26.2	25.8	25.3
Israel	41.7	41.8	41.0	40.4	41.1	40.7	40.1	39.6	40.1	40.8	41.1	41.1	41.1	41.1	41.1
Italy	47.8	51.2	49.9	49.4	50.8	51.0	50.9	50.4	49.6	49.1	48.8	48.2	47.9	47.8	47.7
Japan	34.2	38.9	38.0	38.9	38.7	38.9	38.0	36.6	36.8	36.5	35.7	35.2	35.3	35.2	35.1
Korea	20.8	21.3	19.5	19.9	20.6	20.9	20.8	20.9	21.8	21.0	20.8	20.7	20.4	20.3	20.2
Latvia	36.6	42.8	43.0	38.7	37.3	37.3	37.8	37.7	36.7	38.3	38.6	37.7	37.0	36.5	36.0
Lithuania	37.0	43.6	41.2	41.5	35.2	34.7	34.0	34.4	34.3	36.2	36.4	35.9	35.9	35.9	35.8
Luxembourg	40.2	46.0	44.4	42.7	44.3	43.4	42.3	42.1	41.4	41.5	41.3	41.1	41.0	40.9	40.8
Malta	42.6	41.9	41.1	41.2	42.8	42.0	41.5	41.1	38.7	38.3	38.3	38.4	38.4	38.4	38.4
Netherlands	43.6	48.2	48.1	47.0	47.1	46.3	46.2	45.2	44.3	44.0	43.9	43.8	43.7	43.6	43.6
New Zealand	34.7	36.5	39.9	39.3	35.9	34.9	34.2	34.2	34.2	33.7	32.6	32.0	31.5	31.2	31.2
Norway	38.9	45.0	44.1	43.0	42.2	43.3	45.1	48.0	50.2	49.2	49.4	49.8	50.1	50.2	50.3
Portugal	45.3	50.2	51.8	50.0	48.5	49.9	51.8	48.4	45.8	45.7	45.4	45.2	45.1	45.0	45.1
Singapore	17.9	17.3	15.0	14.5	14.5	14.9	16.0	18.3	18.8	19.2	19.6	19.5	20.0	19.9	20.0
Slovak Republic	36.6	43.8	41.9	40.4	40.4	41.1	41.7	45.3	41.6	41.5	41.1	39.7	39.7	39.5	39.4
Slovenia	40.7	45.3	46.0	46.1	44.8	54.9	47.3	44.1	41.6	41.6	41.6	41.8	41.9	42.2	42.3
Spain	41.1	45.8	45.6	45.8	48.1	45.6	44.9	43.8	42.7	41.5	40.9	40.5	40.4	40.3	40.3
Sweden	49.4	52.1	50.2	49.6	50.6	51.4	50.8	48.9	49.1	49.2	49.2	48.9	48.5	48.6	48.6
Switzerland	30.7	32.4	32.2	32.6	32.6	32.9	32.9	32.7	32.8	32.8	32.7	32.7	32.6	32.5	32.5
United Kingdom	40.9	44.6	44.9	43.6	43.7	42.0	41.1	40.1	39.4	39.2	38.8	38.0	37.6	37.3	37.3
United States	37.3	41.6	40.0	38.9	37.3	36.0	35.6	35.3	35.2	35.1	34.9	35.2	35.6	36.0	36.3
Average	39.9	43.7	42.6	41.7	41.0	40.5	40.1	39.1	39.0	38.6	38.3	38.2	38.3	38.3	38.4
Euro Area	46.6	50.7	50.5	49.1	49.7	49.7	49.3	48.5	48.0	47.8	47.4	47.0	46.8	46.6	46.4
G7	40.1	44.0	42.9	42.1	41.2	40.6	40.1	39.3	39.1	38.9	38.5	38.5	38.6	38.7	38.8
G20 Advanced	39.4	43.2	42.0	41.2	40.4	39.8	39.3	38.5	38.4	38.1	37.8	37.7	37.8	37.9	37.9

Source: IMF staff estimates and projections. Projections are based on staff assessment of current policies (see "Fiscal Policy Assumptions" in text).

Note: For country-specific details, see "Data and Conventions" in text, and Table B.

Table A7. Advanced Economies: General Government Gross Debt, 2008–22

(Percent of GDP)

	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Australia[1]	11.7	16.7	20.5	24.2	27.8	30.7	34.2	37.6	41.1	42.9	42.7	41.6	39.9	38.3	36.6
Austria	68.8	80.1	82.8	82.6	82.0	81.3	84.4	85.5	83.9	81.2	78.3	75.6	73.3	71.4	69.8
Belgium	92.5	99.5	99.7	102.3	104.1	105.4	106.5	105.8	105.5	104.3	103.3	102.3	101.4	100.3	99.4
Canada[1]	67.8	79.3	81.1	81.5	84.8	85.8	85.4	91.6	92.3	91.2	89.8	88.2	86.7	85.0	82.7
Cyprus	44.1	52.8	55.8	65.2	79.3	102.2	107.1	107.5	108.0	109.3	107.4	100.5	95.0	91.6	86.7
Czech Republic	28.7	34.1	38.2	39.8	44.5	44.9	42.2	40.3	37.7	36.0	34.6	33.2	31.9	30.7	29.6
Denmark	33.3	40.2	42.6	46.1	44.9	44.0	44.0	39.6	39.9	39.8	39.0	37.7	35.9	34.1	32.3
Estonia	4.5	7.0	6.6	6.1	9.7	10.2	10.7	10.1	9.5	9.0	8.7	8.5	8.4	8.3	8.2
Finland	32.7	41.7	47.1	48.5	53.9	56.5	60.2	63.7	63.6	64.4	64.4	63.8	62.7	61.2	59.9
France	68.0	78.9	81.6	85.2	89.5	92.3	95.2	96.2	96.6	97.4	97.4	96.6	95.1	93.0	90.4
Germany	65.1	72.6	81.0	78.7	79.9	77.5	74.9	71.2	67.6	64.7	62.0	59.1	56.4	53.6	50.9
Greece	109.4	126.7	146.2	172.1	159.6	177.9	180.9	179.4	181.3	180.7	181.5	174.3	169.2	165.0	162.8
Hong Kong SAR[1]	0.9	0.7	0.6	0.6	0.5	0.5	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0
Iceland	67.1	82.7	88.1	95.1	92.5	84.7	82.4	68.0	53.2	45.9	40.6	38.1	34.2	32.6	29.7
Ireland	42.4	61.7	86.3	109.7	119.6	119.6	105.4	78.7	76.4	74.8	73.4	71.4	67.2	64.8	61.2
Israel	71.9	74.6	70.7	68.8	68.3	67.0	66.0	64.1	62.2	62.5	62.9	63.1	63.2	63.4	63.6
Italy	102.4	112.5	115.4	116.5	123.3	129.0	131.8	132.0	132.6	132.8	131.6	129.4	126.8	124.1	121.3
Japan	191.3	208.6	215.9	230.6	236.6	240.5	242.1	238.0	239.2	239.2	239.4	237.7	236.1	234.4	232.4
Korea	28.2	31.4	30.8	31.5	32.1	33.8	35.9	37.8	38.6	38.6	38.6	38.2	37.4	36.7	36.0
Latvia	16.2	32.5	40.3	37.5	36.7	35.8	38.5	34.8	34.3	33.7	32.1	30.7	29.4	28.0	26.6
Lithuania	15.4	29.0	36.3	37.3	39.8	38.7	40.5	42.5	40.0	38.9	37.7	36.3	34.7	33.3	32.0
Luxembourg	15.1	16.0	19.9	18.8	21.8	23.5	22.7	22.1	22.6	23.2	23.5	23.2	23.0	22.8	22.9
Malta	62.7	67.8	67.6	70.4	68.1	68.7	64.3	60.6	59.4	58.0	55.3	53.8	52.4	51.0	49.1
Netherlands	54.5	56.5	59.3	61.6	66.4	67.7	67.9	65.1	62.6	59.7	57.8	55.9	54.0	52.0	50.1
New Zealand	16.5	21.1	26.0	30.8	31.3	30.0	29.5	29.6	29.5	27.4	23.7	21.2	18.7	15.5	12.4
Norway	47.3	42.0	42.4	28.9	30.1	30.6	28.2	33.2	33.2	33.2	33.2	33.2	33.2	33.2	33.2
Portugal	71.7	83.6	96.2	111.4	126.2	129.0	130.6	129.0	130.3	128.6	127.1	125.7	124.6	123.7	122.9
Singapore	95.3	99.7	97.0	101.0	105.7	102.2	97.9	103.2	112.0	112.0	109.8	108.1	106.2	104.3	102.4
Slovak Republic	28.1	35.9	40.7	43.2	52.2	54.7	53.6	52.5	52.3	51.9	50.9	49.2	47.7	46.3	44.9
Slovenia	21.6	34.5	38.2	46.4	53.9	71.0	80.9	83.1	78.9	77.7	77.4	77.2	77.4	77.7	77.9
Spain	39.4	52.7	60.1	69.5	85.7	95.4	100.4	99.8	99.3	98.5	97.9	96.8	95.7	94.7	93.9
Sweden	36.7	40.2	37.6	36.9	37.2	39.8	44.6	42.9	41.7	40.4	39.3	38.9	37.8	36.7	35.5
Switzerland	49.5	47.3	46.1	46.0	46.7	45.7	45.7	45.8	45.4	44.5	43.5	42.5	41.3	40.0	38.7
United Kingdom	50.2	64.5	76.0	81.6	85.1	86.2	88.1	89.0	89.2	89.0	88.7	87.7	85.9	84.5	83.2
United States[1]	73.6	86.9	95.7	99.9	103.4	105.4	105.2	105.6	107.4	108.3	108.9	110.6	112.7	115.1	117.4
Average	79.2	92.6	99.3	103.5	107.7	106.3	105.6	105.4	107.6	107.1	106.7	106.4	106.0	105.8	105.6
Euro Area	68.6	78.4	84.0	86.8	91.4	93.7	94.4	92.6	91.3	90.1	88.6	86.6	84.5	82.2	79.9
G7	89.7	104.5	112.9	118.2	122.3	120.1	118.8	117.8	120.4	120.2	119.9	119.9	119.9	120.1	120.3
G20 Advanced	85.6	100.0	107.1	111.7	115.5	113.6	112.6	112.2	114.8	114.3	114.1	114.0	113.8	113.9	113.8

Source: IMF staff estimates and projections. Projections are based on staff assessment of current policies (see "Fiscal Policy Assumptions" in text).

Note: For country-specific details, see "Data and Conventions" in text, and Table B.

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

Table A8. Advanced Economies: General Government Net Debt, 2008–22

(Percent of GDP)

	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Australia[1]	–5.3	–0.6	3.9	8.1	11.2	13.2	15.5	17.8	19.9	20.9	20.8	20.0	18.6	17.3	15.9
Austria	. . .	. . .	. . .	60.8	60.8	60.7	59.8	58.6	57.7	55.8	53.8	51.9	50.3	49.2	48.2
Belgium	55.1	61.1	59.6	60.8	62.4	63.8	62.7	61.1	62.1	62.2	62.5	62.8	63.1	63.4	63.7
Canada[1]	18.4	24.4	26.8	27.1	28.2	29.0	27.2	25.2	27.6	26.4	25.1	23.5	22.0	20.3	18.1
Cyprus	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Czech Republic	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Denmark	–6.7	–5.9	–3.3	1.1	6.6	4.0	4.8	5.6	6.5	7.5	7.8	7.6	7.0	6.4	5.7
Estonia	–7.9	–9.5	–7.9	–6.0	–1.5	–0.5	–0.4	1.0	0.4	0.3	0.5	0.8	1.1	1.4	1.7
Finland	–50.0	–59.6	–61.8	–48.8	–50.2	–53.7	–54.3	–54.4	–51.4	–47.6	–44.7	–42.3	–40.3	–38.5	–36.9
France	60.4	70.2	74.0	76.9	80.6	83.5	86.4	87.4	88.3	89.1	89.1	88.3	86.8	84.7	82.1
Germany	48.0	54.5	57.0	55.5	54.8	53.8	50.6	47.8	45.0	42.7	40.6	38.3	36.2	34.0	31.9
Greece	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Hong Kong SAR[1]	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Iceland	53.0	66.1	65.6	61.7	63.8	62.2	55.8	49.1	41.0	38.4	31.7	28.4	20.0	18.0	16.3
Ireland	26.6	43.6	74.6	98.5	105.2	106.3	96.2	71.8	69.9	67.8	65.9	63.5	61.1	58.6	55.0
Israel	64.1	66.2	64.1	63.2	62.6	62.2	62.6	60.9	59.2	59.6	60.1	60.4	60.7	61.0	61.3
Italy	87.8	96.3	98.4	100.4	105.0	109.9	111.9	112.5	113.3	113.8	113.0	111.2	109.0	106.7	104.4
Japan	84.9	96.2	106.2	117.9	120.5	117.4	119.0	118.4	119.8	119.9	120.1	118.4	116.8	115.1	113.1
Korea	26.9	29.6	28.9	29.4	30.0	31.6	33.9	35.6	36.5	36.6	36.7	36.4	35.7	35.0	34.5
Latvia	11.1	21.4	27.6	27.2	28.8	32.1	34.8	31.3	30.9	30.4	29.0	27.6	26.5	25.3	24.0
Lithuania	13.5	24.5	31.8	33.5	34.1	35.7	37.6	39.7	37.3	36.3	35.2	33.9	32.5	31.2	30.0
Luxembourg	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Malta	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Netherlands	16.6	20.5	23.7	26.8	28.3	31.3	33.1	34.4	33.9	32.9	31.8	30.6	29.5	28.2	27.0
New Zealand	–2.2	–0.6	2.5	6.3	7.9	7.9	7.2	6.4	6.1	5.2	3.5	2.1	0.2	–2.6	–5.3
Norway	–131.1	–160.5	–170.1	–165.0	–174.0	–207.7	–247.5	–282.8	–284.5	–277.7	–272.8	–267.7	–264.8	–262.3	–259.8
Portugal	67.2	79.3	91.6	100.8	115.7	118.4	120.5	121.6	121.0	121.1	120.1	119.4	118.6	117.8	117.2
Singapore	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Slovak Republic	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Slovenia	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Spain	22.3	32.8	42.3	51.6	66.0	74.0	78.6	80.2	80.4	80.4	80.4	79.9	79.4	79.0	78.7
Sweden	–8.5	–15.2	–17.1	–19.2	–21.3	–21.1	–20.4	–19.4	–18.3	–17.3	–16.4	–15.8	–15.6	–15.4	–15.1
Switzerland	29.4	27.5	26.4	26.2	25.6	24.6	24.6	24.7	24.3	23.4	22.5	21.4	20.2	18.9	17.7
United Kingdom	44.3	57.7	68.7	73.2	76.4	77.8	79.7	80.4	80.7	80.4	80.2	79.1	77.4	75.9	74.6
United States[1]	51.2	62.8	70.4	76.8	80.2	81.5	81.0	80.5	81.5	82.4	83.1	85.0	87.3	90.0	92.6
Average	47.7	57.6	63.1	67.6	70.5	69.8	69.6	70.1	71.4	71.4	71.4	71.5	71.7	72.0	72.3
Euro Area	46.7	54.1	58.0	62.6	65.9	68.1	68.4	67.5	67.0	66.3	65.3	63.9	62.4	60.7	58.9
G7	57.3	68.3	75.0	80.5	83.2	82.7	82.3	81.8	83.0	83.1	83.1	83.4	83.8	84.4	84.9
G20 Advanced	54.5	65.2	71.1	75.9	78.5	78.1	78.0	78.0	79.2	79.1	79.1	79.3	79.5	80.0	80.3

Source: IMF staff estimates and projections. Projections are based on staff assessment of current policies (see "Fiscal Policy Assumptions" in text).

Note: For country-specific details, see "Data and Conventions" in text, and Table B.

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

Table A9. Emerging Market and Middle-Income Economies: General Government Overall Balance, 2008–22
(Percent of GDP)

	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Algeria	9.6	–5.8	0.0	–0.1	–4.4	–0.4	–7.3	–15.4	–11.6	–2.2	–2.0	–0.9	0.0	0.4	0.8
Angola	–4.5	–7.4	3.4	8.7	4.6	–0.3	–6.6	–3.3	–4.1	–5.8	–3.9	–3.5	–3.0	–2.6	–2.1
Argentina	0.2	–2.4	–1.3	–2.6	–2.8	–3.0	–4.0	–5.6	–5.8	–6.1	–5.1	–3.9	–3.5	–3.2	–3.2
Azerbaijan	21.6	8.3	14.2	11.7	4.3	1.0	3.2	–4.8	–1.4	–10.4	2.9	3.6	3.2	2.3	0.9
Belarus	–9.4	–9.0	–2.3	2.5	–0.1	–2.8	–1.7	–4.1	–4.6	–8.2	–7.7	–7.5	–5.5	–4.5	–4.1
Brazil	–1.5	–3.2	–2.7	–2.5	–2.5	–3.0	–6.0	–10.3	–9.0	–9.1	–7.5	–6.5	–5.5	–5.0	–4.4
Chile	3.9	–4.2	–0.4	1.4	0.7	–0.5	–1.5	–2.1	–2.9	–3.2	–2.6	–2.0	–1.4	–1.3	–1.1
China	0.0	–1.8	–0.4	–0.1	–0.3	–0.8	–0.9	–2.8	–3.7	–3.7	–3.4	–3.4	–3.4	–3.3	–3.2
Colombia	–0.3	–2.8	–3.3	–2.0	0.1	–0.9	–1.8	–3.5	–3.4	–2.8	–2.2	–1.8	–1.2	–0.8	–0.5
Croatia	–2.8	–6.0	–6.2	–7.8	–5.3	–5.3	–5.4	–3.3	–1.5	–1.9	–1.8	–1.7	–1.7	–1.7	–1.7
Dominican Republic	–3.2	–3.0	–2.7	–3.1	–6.6	–3.5	–3.0	–0.2	–3.2	–3.9	–3.8	–3.7	–3.8	–4.0	–4.2
Ecuador	0.6	–3.6	–1.4	–0.1	–0.9	–4.6	–5.2	–5.2	–6.6	–2.1	–0.8	–0.2	0.3	0.3	0.3
Egypt[1]	–7.4	–6.6	–7.9	–9.3	–9.9	–13.3	–12.8	–11.4	–12.0	–10.9	–9.8	–7.5	–5.9	–3.9	–3.9
Hungary	–3.6	–4.6	–4.5	–5.5	–2.3	–2.5	–2.3	–2.0	–1.8	–2.6	–2.5	–2.3	–2.3	–2.6	–2.6
India	–9.0	–9.5	–8.6	–8.3	–7.5	–7.0	–7.2	–7.1	–6.6	–6.4	–6.3	–6.0	–5.8	–5.6	–5.4
Indonesia	0.1	–1.6	–1.2	–0.7	–1.6	–2.2	–2.1	–2.5	–2.5	–2.4	–2.5	–2.5	–2.5	–2.5	–2.5
Iran	0.6	0.8	2.8	0.6	–0.3	–0.9	–1.2	–1.8	–2.8	0.7	–0.5	–0.4	0.0	0.0	0.1
Kazakhstan	1.2	–1.3	1.5	5.8	4.4	4.9	2.5	–6.3	–4.4	–6.3	–2.1	–1.9	–1.0	–1.2	–0.3
Kuwait	20.2	27.2	26.0	33.1	33.3	34.4	27.1	1.2	–3.6	3.6	2.4	0.6	–1.1	–2.4	–2.6
Libya	28.7	–5.9	11.8	–14.2	25.5	–4.2	–52.9	–75.7	–53.4	–16.4	–17.6	–21.5	–24.2	–26.2	–26.3
Malaysia	–3.5	–6.5	–4.5	–3.6	–3.8	–4.1	–2.7	–2.9	–3.0	–3.0	–2.7	–2.3	–2.0	–1.7	–1.3
Mexico	–0.8	–5.0	–3.9	–3.4	–3.8	–3.7	–4.6	–4.0	–2.9	–2.9	–2.5	–2.5	–2.5	–2.5	–2.5
Morocco	0.7	–1.8	–4.3	–6.6	–7.2	–5.1	–4.9	–4.2	–4.2	–3.5	–2.7	–2.1	–2.0	–2.0	–2.0
Oman	16.8	–0.3	5.5	9.4	4.6	4.7	–1.1	–15.1	–20.6	–10.0	–8.4	–7.1	–6.2	–6.0	–5.8
Pakistan	–7.5	–5.0	–6.0	–6.7	–8.6	–8.4	–4.9	–5.2	–4.3	–4.3	–3.8	–3.9	–3.9	–4.0	–4.0
Peru	2.7	–1.4	0.1	2.0	2.1	0.7	–0.3	–2.2	–2.3	–2.4	–2.2	–1.9	–1.5	–1.0	–0.9
Philippines	0.0	–2.7	–2.4	–0.3	–0.3	0.2	0.9	0.6	–0.4	–1.0	–1.2	–1.4	–1.5	–1.6	–1.7
Poland	–3.6	–7.3	–7.3	–4.8	–3.7	–4.1	–3.4	–2.6	–2.4	–2.9	–2.6	–2.6	–2.3	–2.2	–2.1
Qatar	10.0	15.0	6.7	7.4	11.2	22.6	15.3	5.6	–4.1	–3.1	–0.6	0.6	0.5	0.6	1.9
Romania	–4.7	–7.1	–6.3	–4.2	–2.5	–2.5	–1.9	–1.5	–2.4	–3.7	–3.9	–3.8	–3.5	–3.1	–2.9
Russia	4.5	–5.9	–3.2	1.4	0.4	–1.2	–1.1	–3.4	–3.7	–2.6	–1.9	–0.5	0.0	0.4	0.6
Saudi Arabia	29.8	–5.4	3.6	11.1	12.0	5.8	–3.4	–15.8	–16.9	–9.8	–6.4	–4.6	–1.4	–1.3	–1.1
South Africa	–0.6	–5.0	–4.7	–3.7	–4.0	–3.9	–3.6	–3.6	–3.5	–3.5	–3.4	–3.3	–3.2	–2.9	–2.6
Sri Lanka	–6.1	–8.6	–7.0	–6.2	–5.6	–5.2	–6.2	–7.0	–5.7	–5.2	–4.6	–4.1	–3.5	–3.5	–3.5
Thailand	0.8	–2.2	–1.3	0.0	–0.9	0.5	–0.8	0.1	0.5	–1.6	–1.8	–1.9	–1.9	–1.9	–1.9
Turkey	–2.6	–5.7	–2.8	–0.6	–1.5	–1.1	–1.7	–1.2	–2.3	–3.0	–2.0	–1.4	–1.6	–1.8	–2.0
Ukraine	–3.0	–6.0	–5.8	–2.8	–4.3	–4.8	–4.5	–1.2	–2.2	–3.0	–2.5	–2.3	–2.1	–2.0	–2.0
United Arab Emirates	20.1	–4.3	2.0	6.3	10.9	10.4	5.0	–2.1	–3.9	–2.6	–0.6	–0.1	0.1	0.1	0.2
Uruguay	–1.6	–1.6	–1.4	–0.9	–2.7	–2.3	–3.5	–3.6	–3.9	–3.4	–2.8	–2.5	–2.6	–2.6	–2.6
Venezuela	–3.5	–8.7	–10.4	–11.6	–15.6	–14.3	–16.8	–17.6	–14.6	–14.2	–15.7	–16.8	–17.2	–17.4	–17.4
Average	0.8	–3.7	–2.1	–1.0	–0.9	–1.4	–2.4	–4.4	–4.8	–4.4	–3.9	–3.5	–3.3	–3.2	–3.1
Asia	–1.7	–3.3	–2.2	–1.6	–1.6	–1.8	–1.9	–3.2	–3.9	–3.9	–3.7	–3.6	–3.6	–3.5	–3.4
Europe	0.6	–5.7	–3.5	–0.1	–0.7	–1.5	–1.5	–2.7	–2.9	–3.1	–2.2	–1.4	–1.1	–1.0	–0.9
Latin America	–0.9	–3.8	–3.1	–2.8	–3.1	–3.2	–5.1	–7.2	–6.4	–6.5	–5.6	–4.8	–4.2	–3.8	–3.5
MENAP	12.9	–1.1	2.4	4.3	6.0	4.3	–0.9	–8.4	–9.5	–5.2	–3.9	–3.2	–2.4	–2.5	–2.5
G20 Emerging	0.5	–3.9	–2.3	–1.1	–1.2	–1.8	–2.6	–4.4	–4.8	–4.6	–4.0	–3.7	–3.4	–3.3	–3.2

Source: IMF staff estimates and projections. Projections are based on staff assessment of current policies (see "Fiscal Policy Assumptions" in text).

Note: For country-specific details, see "Data and Conventions" in text, and Table C. MENAP = Middle East, North Africa, and Pakistan.

[1] Based on nominal GDP series prior to the recent revision; therefore, the numbers in the *Fiscal Monitor*'s statistical tables are not comparable to the authorities' numbers because they employ different denominators.

Table A10. Emerging Market and Middle-Income Economies: General Government Primary Balance, 2008–22

(Percent of GDP)

	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Algeria	9.4	–6.3	–0.5	–1.3	–5.3	–0.5	–7.4	–16.0	–11.7	–2.5	–2.5	–1.4	–0.4	0.0	0.4
Angola	–2.5	–5.6	4.6	9.6	5.5	0.5	–5.4	–1.3	–1.2	–2.2	–0.9	–0.2	0.5	1.0	1.2
Argentina	1.8	–1.1	–0.4	–1.4	–1.5	–2.4	–3.2	–4.4	–5.0	–4.8	–3.6	–2.5	–2.2	–2.0	–1.9
Azerbaijan	21.7	8.5	14.4	12.0	4.5	1.2	3.3	–4.4	–0.5	–9.7	3.8	4.7	4.3	3.4	2.0
Belarus	–8.9	–8.2	–1.6	3.5	1.2	–1.8	–0.7	–2.4	–2.6	–5.6	–4.7	–3.9	–1.5	–0.1	0.2
Brazil	3.8	1.9	2.3	2.9	1.9	1.7	–0.6	–1.9	–2.5	–2.3	–1.1	–0.2	0.7	1.1	1.6
Chile	3.6	–4.4	–0.3	1.5	0.8	–0.4	–1.3	–1.9	–2.6	–2.8	–2.0	–1.4	–0.7	–0.5	–0.2
China	0.4	–1.3	0.1	0.4	0.2	–0.3	–0.4	–2.2	–3.0	–2.7	–2.3	–2.2	–2.2	–2.1	–2.1
Colombia	1.9	–1.1	–1.6	–0.1	1.6	1.2	0.3	–0.7	–0.3	0.2	0.5	0.9	1.5	1.7	1.9
Croatia	–1.1	–4.1	–4.1	–5.1	–2.3	–2.2	–2.4	–0.2	1.5	1.0	1.1	1.1	1.1	1.1	1.1
Dominican Republic	–1.7	–1.2	–0.9	–1.0	–4.2	–1.2	–0.5	2.4	–0.2	–0.7	–0.4	–0.2	–0.2	–0.2	–0.3
Ecuador	1.7	–3.0	–0.8	0.5	–0.2	–3.5	–4.2	–3.9	–5.0	–0.4	1.6	2.6	3.2	3.1	3.2
Egypt[1]	–3.7	–3.6	–3.6	–4.5	–4.8	–6.3	–5.7	–4.7	–4.2	–2.8	–0.2	1.2	1.3	1.2	1.2
Hungary	0.0	–0.6	–0.7	–1.7	1.9	1.8	1.5	1.4	1.3	0.0	–0.2	–0.1	0.0	–0.2	0.0
India	–4.3	–5.0	–4.4	–4.0	–3.2	–2.4	–2.7	–2.5	–1.8	–1.6	–1.7	–1.5	–1.5	–1.4	–1.3
Indonesia	1.7	–0.1	0.0	0.5	–0.4	–1.0	–0.9	–1.1	–1.0	–0.8	–0.8	–0.8	–0.8	–0.8	–0.8
Iran	0.7	0.8	2.7	0.7	–0.2	–0.9	–1.1	–1.7	–2.1	1.9	0.8	1.4	2.0	2.0	2.1
Kazakhstan	1.5	–1.4	1.8	5.7	3.8	4.4	2.0	–5.9	–4.1	–6.6	–2.3	–2.0	–1.0	–1.1	–0.1
Kuwait	11.1	18.1	16.9	26.5	26.6	26.0	17.5	–12.1	–17.5	–8.7	–9.2	–10.5	–11.6	–12.2	–11.7
Libya	28.7	–5.9	11.8	–14.2	25.5	–4.2	–52.9	–75.7	–53.4	–16.4	–17.6	–21.5	–24.2	–26.2	–26.3
Malaysia	–2.1	–5.0	–2.9	–2.0	–2.0	–2.2	–0.8	–1.2	–1.3	–1.1	–0.6	–0.2	0.2	0.5	0.9
Mexico	1.7	–2.3	–1.4	–1.0	–1.2	–1.2	–2.0	–1.1	0.2	0.3	1.1	1.3	1.3	1.2	1.2
Morocco	3.2	0.6	–2.0	–4.4	–4.7	–2.5	–2.1	–1.4	–1.5	–1.0	–0.2	0.2	0.2	0.0	0.0
Oman	15.6	–1.3	4.6	8.9	3.3	2.6	–2.1	–15.4	–21.5	–10.3	–8.8	–7.4	–6.2	–5.7	–4.9
Pakistan	–2.9	–0.2	–1.7	–2.9	–4.2	–3.9	–0.3	–0.5	–0.1	–0.2	0.6	0.4	0.5	0.5	0.6
Peru	4.1	–0.3	1.2	3.1	3.0	1.7	0.7	–1.3	–1.4	–1.2	–0.9	–0.7	–0.2	0.2	0.3
Philippines	3.4	0.6	0.7	2.3	2.3	2.7	3.1	2.7	1.6	0.8	0.6	0.3	0.1	–0.1	–0.4
Poland	–1.5	–4.8	–4.9	–2.3	–1.0	–1.5	–1.5	–0.8	–0.7	–1.2	–0.9	–0.9	–0.7	–0.6	–0.5
Qatar	10.4	16.0	7.9	8.8	12.7	23.7	16.5	7.1	–3.4	–2.1	0.5	1.9	1.9	2.0	3.4
Romania	–4.1	–6.1	–5.0	–2.8	–0.7	–0.8	–0.4	–0.2	–1.1	–2.3	–2.5	–2.4	–2.1	–1.7	–1.5
Russia	4.7	–6.2	–3.1	1.7	0.7	–0.8	–0.7	–3.1	–3.1	–2.1	–1.3	0.2	0.7	1.1	1.3
Saudi Arabia	29.2	–5.2	4.0	11.2	11.8	5.4	–4.0	–17.8	–20.5	–11.3	–7.7	–5.7	–2.3	–2.1	–1.8
South Africa	1.8	–2.6	–2.1	–1.0	–1.2	–0.9	–0.5	–0.3	–0.1	0.1	0.4	0.5	0.8	1.1	1.4
Sri Lanka	–1.9	–3.0	–1.5	–1.3	–0.9	–0.6	–2.0	–2.3	–0.7	0.0	0.8	1.3	1.7	1.5	1.2
Thailand	1.6	–1.5	–0.7	0.8	–0.1	1.3	–0.1	0.7	0.9	–0.9	–0.8	–0.8	–0.7	–0.6	–0.6
Turkey	1.6	–1.4	0.7	1.9	1.0	1.2	0.3	0.6	–0.6	–1.3	–0.1	0.8	0.9	1.0	1.1
Ukraine	–2.5	–4.9	–4.1	–0.8	–2.4	–2.3	–1.2	3.0	1.9	1.2	1.8	1.8	1.8	1.8	1.8
United Arab Emirates	20.1	–4.1	2.3	6.5	11.2	10.8	5.2	–1.9	–3.7	–2.3	–0.4	0.2	0.4	0.4	0.6
Uruguay	1.4	1.1	1.5	1.9	–0.2	0.4	–0.6	0.0	–0.7	–0.3	0.2	0.5	0.6	0.8	0.8
Venezuela	–2.0	–7.2	–8.6	–9.4	–12.4	–10.9	–13.0	–15.9	–13.6	–13.9	–15.6	–16.8	–17.2	–17.4	–17.4
Average	2.5	–2.0	–0.4	0.8	0.6	0.1	–0.8	–2.7	–3.0	–2.5	–1.9	–1.5	–1.3	–1.2	–1.1
Asia	–0.3	–2.0	–0.8	–0.3	–0.4	–0.6	–0.7	–2.0	–2.4	–2.3	–2.0	–1.9	–1.9	–1.8	–1.7
Europe	2.0	–4.3	–2.1	1.1	0.6	–0.2	–0.3	–1.5	–1.6	–1.9	–1.0	–0.1	0.3	0.5	0.7
Latin America	2.4	–0.6	0.1	0.6	–0.1	–0.2	–1.6	–2.9	–2.7	–2.4	–1.6	–0.7	–0.2	0.1	0.4
MENAP	12.9	–0.7	2.9	4.8	6.5	4.9	–0.3	–7.9	–9.2	–4.6	–3.1	–2.3	–1.5	–1.7	–1.6
G20 Emerging	2.5	–2.0	–0.4	0.8	0.4	–0.2	–0.9	–2.6	–3.0	–2.5	–1.9	–1.6	–1.3	–1.2	–1.1

Source: IMF staff estimates and projections. Projections are based on staff assessment of current policies (see "Fiscal Policy Assumptions" in text).

Note: Primary balance is defined as the overall balance excluding net interest payments. For country-specific details, see "Data and Conventions" in text, and Table C. MENAP = Middle East, North Africa, and Pakistan.

[1] Based on nominal GDP series prior to the recent revision; therefore, the numbers in the *Fiscal Monitor*'s statistical tables are not comparable to the authorities' numbers because they employ different denominators.

Table A11. Emerging Market and Middle-Income Economies: General Government Cyclically Adjusted Balance, 2008–22
(Percent of potential GDP)

	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Algeria	7.8	–13.3	–5.4	–1.3	–3.8	1.2	–9.8	–18.9	–13.1	–1.7	–2.2	–1.1	–0.1	0.6	1.6
Angola	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Argentina	–0.8	–0.4	–1.3	–3.6	–2.9	–3.6	–3.5	–6.1	–5.0	–5.3	–4.3	–3.1	–2.9	–2.8	–2.9
Azerbaijan	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Belarus	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Brazil	–2.4	–2.8	–3.7	–3.7	–3.5	–4.1	–7.2	–10.1	–7.5	–7.6	–6.6	–6.1	–5.4	–5.0	–4.4
Chile[1]	–1.5	–4.3	–2.5	–1.0	0.0	–1.0	–1.5	–2.0	–2.2	–1.9	–1.7	–1.4	–1.2	–0.9	–0.7
China	–0.3	–1.8	–0.4	–0.1	–0.1	–0.5	–0.5	–2.5	–3.6	–3.7	–3.4	–3.4	–3.4	–3.3	–3.3
Colombia	–0.6	–2.3	–2.7	–2.1	0.1	–1.1	–2.1	–3.7	–3.2	–2.4	–1.8	–1.5	–0.9	–0.7	–0.5
Croatia	–5.1	–5.4	–5.1	–6.8	–3.5	–3.2	–3.3	–1.9	–1.0	–1.9	–1.8	–1.7	–1.7	–1.7	–1.7
Dominican Republic	–4.1	–2.4	–3.2	–3.1	–6.2	–3.2	–2.9	–0.3	–3.4	–4.0	–3.8	–3.7	–3.8	–4.0	–4.2
Ecuador	–4.0	–3.3	–2.4	–2.5	–3.6	–8.4	–8.7	–4.5	–4.9	–0.3	1.1	1.9	3.0	2.6	2.3
Egypt[2]	–7.9	–7.1	–8.6	–9.6	–10.0	–13.0	–12.3	–11.2	–11.8	–10.6	–9.6	–7.5	–5.9	–4.2	–3.9
Hungary	–6.2	–3.3	–3.1	–4.4	0.0	–0.5	–1.4	–1.7	–1.5	–2.6	–2.8	–2.7	–2.6	–2.8	–2.7
India	–8.6	–9.3	–9.0	–8.6	–7.5	–6.8	–7.0	–7.0	–6.5	–6.3	–6.3	–6.0	–5.9	–5.7	–5.5
Indonesia	–0.1	–1.6	–1.2	–0.7	–1.6	–2.3	–2.2	–2.5	–2.5	–2.3	–2.5	–2.5	–2.5	–2.5	–2.5
Iran	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Kazakhstan	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Kuwait	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Libya	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Malaysia	–3.4	–5.5	–4.2	–2.9	–3.8	–3.5	–2.4	–3.2	–3.2	–2.9	–2.6	–2.3	–2.0	–1.7	–1.3
Mexico	–1.2	–4.0	–3.6	–3.3	–3.9	–3.7	–4.5	–4.1	–4.0	–2.7	–2.4	–2.4	–2.5	–2.5	–2.5
Morocco	–0.5	–2.1	–4.3	–6.9	–7.5	–5.5	–5.7	–4.4	–4.9	–4.4	–3.5	–2.2	–2.1	–2.4	–2.6
Oman	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Pakistan	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Peru[1]	1.0	–0.2	–0.4	1.2	1.4	0.1	–0.2	–1.7	–2.2	–2.2	–2.1	–1.9	–1.5	–1.0	–0.9
Philippines	–0.5	–1.8	–2.5	0.0	–0.3	0.1	0.6	0.7	–0.4	–1.0	–1.1	–1.4	–1.5	–1.6	–1.7
Poland	–4.2	–6.8	–7.1	–5.4	–3.6	–3.1	–3.1	–2.6	–2.6	–3.1	–2.9	–2.9	–2.7	–2.7	–2.6
Qatar	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Romania	–9.6	–8.0	–6.1	–3.7	–1.4	–1.7	–1.2	–1.0	–2.5	–4.1	–4.2	–4.0	–3.6	–3.2	–2.9
Russia	4.3	–5.1	–2.8	1.5	0.2	–1.4	0.1	–2.4	–2.9	–2.5	–1.9	–0.5	0.0	0.4	0.6
Saudi Arabia	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
South Africa	–1.0	–3.4	–3.4	–3.3	–3.8	–3.8	–3.4	–2.8	–2.8	–2.7	–2.6	–2.8	–2.8	–2.6	–2.4
Sri Lanka	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Thailand	0.4	–1.4	–1.4	0.0	–0.7	0.4	–0.4	0.5	0.6	–1.5	–1.9	–1.9	–1.9	–1.9	–1.9
Turkey	–3.1	–3.3	–1.6	–0.9	–1.4	–1.6	–2.0	–1.8	–2.4	–2.8	–1.8	–1.2	–1.5	–1.9	–2.0
Ukraine	–3.5	–2.1	–2.7	–3.2	–4.5	–4.6	–3.2	1.7	–0.8	–2.3	–2.1	–2.1	–2.0	–2.0	–2.0
United Arab Emirates	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Uruguay	–1.9	–1.9	–2.5	–2.1	–3.6	–3.3	–4.4	–3.8	–3.8	–3.0	–2.4	–2.2	–2.5	–2.6	–2.6
Venezuela	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Average	–1.4	–3.6	–2.8	–2.0	–1.9	–2.2	–2.5	–3.7	–4.1	–4.0	–3.7	–3.4	–3.3	–3.2	–3.1
Asia	–1.8	–3.2	–2.2	–1.6	–1.4	–1.5	–1.5	–3.0	–3.8	–3.9	–3.7	–3.6	–3.6	–3.5	–3.5
Europe	–0.1	–4.9	–3.4	–0.7	–0.9	–1.8	–1.1	–2.0	–2.5	–2.7	–2.2	–1.4	–1.2	–1.1	–1.0
Latin America	–1.7	–2.8	–3.2	–3.2	–2.9	–3.5	–5.2	–6.5	–5.4	–5.2	–4.4	–4.0	–3.5	–3.3	–3.0
MENAP	–1.6	–7.5	–6.8	–6.8	–7.9	–7.8	–10.4	–11.8	–10.9	–6.7	–6.1	–4.5	–3.4	–2.5	–2.2
G20 Emerging	–1.0	–3.4	–2.5	–1.7	–1.7	–2.1	–2.3	–3.8	–4.2	–4.2	–3.8	–3.6	–3.5	–3.4	–3.3

Source: IMF staff estimates and projections. Projections are based on staff assessment of current policies (see "Fiscal Policy Assumptions" in text).

Note: MENAP = Middle East, North Africa, and Pakistan. For country-specific details, see "Data and Conventions" in text, and Table C.

[1] The data for these countries include adjustments beyond the output cycle.

[2] Based on nominal GDP series prior to the recent revision; therefore, the numbers in the *Fiscal Monitor*'s statistical tables are not comparable to the authorities' numbers because they employ different denominators.

Table A12. Emerging Market and Middle-Income Economies: General Government Cyclically Adjusted Primary Balance, 2008–22

(Percent of potential GDP)

	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Algeria	7.4	–14.0	–6.0	–3.3	–5.2	1.1	–10.0	–19.6	–13.2	–2.1	–2.9	–1.7	–0.6	0.1	1.1
Angola	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Argentina	0.8	0.8	–0.4	–2.4	–1.6	–3.0	–2.8	–4.9	–4.1	–4.0	–2.8	–1.7	–1.6	–1.6	–1.6
Azerbaijan	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Belarus	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Brazil	3.1	2.3	1.5	1.9	1.1	0.8	–1.7	–1.7	–1.3	–1.1	–0.4	0.1	0.7	1.1	1.6
Chile[1]	–1.9	–4.5	–2.4	–0.9	0.1	–0.9	–1.4	–1.8	–1.9	–1.5	–1.2	–0.9	–0.5	–0.1	0.2
China	0.1	–1.4	0.0	0.4	0.4	0.0	0.1	–1.9	–2.8	–2.7	–2.3	–2.2	–2.2	–2.1	–2.1
Colombia	1.6	–0.7	–1.1	–0.2	1.6	1.0	0.0	–0.9	–0.1	0.6	0.9	1.1	1.6	1.7	1.8
Croatia	–3.4	–3.5	–3.0	–4.2	–0.6	–0.2	–0.4	1.1	2.0	1.0	1.1	1.1	1.1	1.1	1.1
Dominican Republic	–2.5	–0.6	–1.3	–1.0	–3.9	–0.9	–0.5	2.3	–0.4	–0.8	–0.5	–0.2	–0.2	–0.2	–0.3
Ecuador	–2.8	–2.7	–1.8	–1.8	–2.8	–7.4	–7.7	–3.2	–3.4	1.4	3.4	4.7	5.8	5.4	5.2
Egypt[2]	–4.1	–4.0	–4.1	–4.7	–4.9	–6.1	–5.4	–4.5	–4.1	–2.6	–0.1	1.3	1.3	0.9	1.2
Hungary	–2.3	0.7	0.6	–0.8	4.0	3.7	2.4	1.7	1.6	0.0	–0.5	–0.5	–0.4	–0.5	–0.2
India	–4.0	–4.8	–4.7	–4.2	–3.1	–2.3	–2.6	–2.5	–1.7	–1.5	–1.7	–1.6	–1.5	–1.4	–1.3
Indonesia	1.5	0.0	0.1	0.5	–0.4	–1.1	–0.9	–1.1	–1.0	–0.8	–0.8	–0.8	–0.8	–0.8	–0.8
Iran	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Kazakhstan	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Kuwait	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Libya	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Malaysia	–2.0	–4.0	–2.7	–1.3	–2.0	–1.7	–0.5	–1.6	–1.5	–0.9	–0.5	–0.2	0.2	0.5	0.9
Mexico	1.4	–1.5	–1.1	–0.9	–1.4	–1.2	–1.9	–1.2	–1.0	0.5	1.3	1.3	1.3	1.2	1.2
Morocco	2.1	0.3	–2.1	–4.7	–5.1	–3.0	–3.0	–1.6	–2.3	–1.8	–1.0	0.1	0.1	–0.4	–0.6
Oman	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Pakistan	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Peru[1]	2.4	0.9	0.6	2.2	2.3	1.1	0.7	–0.8	–1.3	–1.0	–0.8	–0.7	–0.3	0.2	0.3
Philippines	2.9	1.4	0.5	2.5	2.3	2.6	2.9	2.7	1.7	0.8	0.7	0.3	0.2	–0.1	–0.4
Poland	–2.0	–4.3	–4.7	–2.8	–1.0	–0.7	–1.1	–0.8	–0.8	–1.4	–1.3	–1.3	–1.0	–1.0	–1.0
Qatar	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Romania	–8.9	–7.0	–4.9	–2.3	0.3	–0.1	0.3	0.2	–1.2	–2.6	–2.8	–2.6	–2.2	–1.8	–1.5
Russia	4.5	–5.4	–2.7	1.7	0.5	–1.0	0.5	–2.1	–2.3	–2.0	–1.3	0.2	0.7	1.1	1.3
Saudi Arabia	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
South Africa	1.5	–1.0	–0.9	–0.7	–1.0	–0.8	–0.3	0.5	0.7	0.8	1.1	1.0	1.1	1.4	1.6
Sri Lanka	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Thailand	1.3	–0.7	–0.8	0.9	0.2	1.1	0.3	1.1	1.0	–0.8	–0.9	–0.8	–0.7	–0.7	–0.6
Turkey	1.2	0.8	1.8	1.6	1.1	0.8	0.0	0.0	–0.7	–1.1	0.1	1.0	0.9	0.9	1.1
Ukraine	–3.0	–1.1	–1.1	–1.2	–2.6	–2.2	0.0	5.6	3.1	1.8	2.1	2.0	1.9	1.8	1.8
United Arab Emirates	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Uruguay	1.1	0.9	0.6	0.8	–1.0	–0.5	–1.4	–0.3	–0.6	0.1	0.6	0.7	0.7	0.7	0.8
Venezuela	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Average	0.6	–1.7	–0.9	0.0	–0.1	–0.4	–0.7	–1.8	–2.1	–1.9	–1.5	–1.2	–1.1	–1.0	–0.9
Asia	–0.5	–1.9	–0.9	–0.3	–0.2	–0.3	–0.3	–1.8	–2.4	–2.3	–2.0	–1.9	–1.9	–1.8	–1.8
Europe	1.4	–3.4	–1.9	0.6	0.4	–0.4	0.2	–0.8	–1.2	–1.5	–0.9	0.0	0.3	0.5	0.7
Latin America	1.8	0.5	0.2	0.5	0.1	–0.4	–1.7	–1.9	–1.6	–1.0	–0.3	0.2	0.5	0.8	0.9
MENAP	0.7	–5.6	–4.2	–4.3	–5.0	–3.6	–6.1	–7.5	–5.8	–2.3	–1.1	0.2	0.5	0.4	0.8
G20 Emerging	1.0	–1.4	–0.6	0.2	–0.1	–0.4	–0.6	–1.9	–2.3	–2.1	–1.6	–1.4	–1.3	–1.2	–1.1

Source: IMF staff estimates and projections. Projections are based on staff assessment of current policies (see "Fiscal Policy Assumptions" in text).

Note: Cyclically adjusted primary balance is defined as the cyclically adjusted balance plus net interest payable/paid (interest expense minus interest revenue) following the *World Economic Outlook* convention. For country-specific details, see "Data and Conventions" in text, and Table C. MENAP = Middle East, North Africa, and Pakistan.

[1] The data for these countries include adjustments beyond the output cycle. For country-specific details, see "Data and Conventions" in text, and Table C.

[2] Based on nominal GDP series prior to the recent revision; therefore, the numbers in the *Fiscal Monitor*'s statistical tables are not comparable to the authorities' numbers because they employ different denominators.

Table A13. Emerging Market and Middle-Income Economies: General Government Revenue, 2008–22
(Percent of GDP)

	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Algeria	47.6	36.8	37.2	40.2	39.1	35.8	33.4	30.8	29.0	33.6	30.4	30.1	30.0	30.0	29.9
Angola	50.9	34.6	43.5	48.8	45.9	40.2	35.3	27.3	19.6	19.8	19.5	19.4	19.4	19.3	19.5
Argentina	29.3	30.2	30.4	30.6	32.1	32.6	32.4	33.9	33.7	32.3	32.2	32.2	32.1	32.1	31.9
Azerbaijan	51.7	42.0	46.0	45.5	41.5	39.5	38.9	33.9	34.5	34.6	37.3	38.1	38.1	36.5	34.6
Belarus	47.2	42.6	38.3	35.9	37.5	38.0	37.1	39.4	38.1	37.6	37.1	36.9	36.2	36.3	36.3
Brazil	35.9	33.9	36.1	35.1	34.7	34.5	32.6	31.2	32.7	31.6	32.0	32.3	32.5	32.5	32.4
Chile	25.8	20.7	23.0	24.3	23.8	22.6	22.3	23.0	23.3	23.1	24.2	24.6	24.7	24.9	25.2
China	22.4	23.8	24.6	26.9	27.8	27.7	28.1	28.5	28.2	27.4	27.5	27.3	27.0	26.9	26.8
Colombia	26.4	26.7	26.1	26.7	28.3	28.1	27.7	26.4	24.9	25.3	25.3	25.9	26.6	26.8	27.0
Croatia	42.0	41.6	41.3	41.0	41.8	43.0	42.9	43.6	45.5	44.6	44.4	44.3	44.2	44.2	44.2
Dominican Republic	15.0	13.2	13.1	12.9	13.6	14.4	14.8	17.5	14.4	14.5	14.4	14.2	14.2	14.1	14.0
Ecuador	35.8	29.4	33.3	39.3	39.3	39.2	38.2	33.5	30.7	33.2	33.0	32.8	32.8	32.8	32.9
Egypt[1]	26.6	26.3	23.9	20.9	20.8	21.7	23.4	21.8	20.9	22.0	22.3	22.1	21.7	21.3	21.3
Hungary	45.1	46.0	45.0	44.2	46.2	46.9	47.2	48.3	45.8	47.7	47.6	46.4	45.4	43.0	43.1
India	19.7	18.5	18.8	19.3	19.8	19.6	19.2	20.4	21.3	20.9	20.8	20.9	20.9	20.9	21.0
Indonesia	19.4	15.4	15.6	17.0	17.2	16.9	16.5	14.9	14.3	14.1	13.9	13.9	13.9	14.0	14.0
Iran	22.7	21.4	21.9	19.2	14.2	14.1	14.6	16.2	15.1	18.5	17.4	17.7	18.0	18.0	18.1
Kazakhstan	28.3	22.1	23.9	27.0	26.3	24.8	23.7	16.6	18.0	19.6	19.8	20.0	20.7	20.6	21.4
Kuwait	60.6	69.4	70.7	72.1	72.1	72.5	71.4	55.9	51.9	54.5	52.9	50.9	49.2	47.4	45.8
Libya	71.3	59.3	66.1	34.9	66.4	68.5	49.7	29.6	17.5	34.5	31.7	25.9	21.3	17.5	15.4
Malaysia	23.8	24.8	22.5	23.9	25.0	24.1	23.7	22.2	20.4	19.7	19.7	19.7	19.7	19.8	19.9
Mexico	25.0	23.3	22.8	23.7	23.9	24.3	23.3	23.1	23.2	21.6	21.3	21.0	20.9	20.9	20.8
Morocco	31.3	28.7	26.8	27.2	28.0	27.8	28.1	26.7	26.1	26.1	26.9	27.5	27.8	28.0	28.1
Oman	46.1	37.9	39.4	48.7	48.7	49.4	46.3	35.4	31.5	33.8	35.5	36.1	35.2	34.2	33.5
Pakistan	14.4	14.2	14.3	12.6	13.0	13.5	15.2	14.5	15.2	15.1	15.8	15.7	15.8	15.8	15.9
Peru	22.3	20.1	21.2	22.0	22.8	22.8	22.3	20.0	18.7	19.5	19.5	19.4	19.5	19.6	19.5
Philippines	18.7	17.4	16.8	17.6	18.6	18.9	18.9	19.4	19.5	19.7	19.8	19.8	19.9	19.9	19.9
Poland	40.9	38.0	38.4	39.0	39.0	38.4	38.7	38.9	39.3	40.1	40.3	40.0	40.0	39.9	39.8
Qatar	33.0	47.8	37.3	35.9	42.2	50.9	48.7	47.1	30.3	29.1	29.1	28.8	27.8	27.1	26.2
Romania	31.6	30.6	31.6	32.1	32.4	31.4	32.0	32.8	29.1	29.0	29.2	29.3	29.3	29.5	29.7
Russia	36.5	32.6	32.2	34.9	35.0	34.4	33.8	31.8	32.3	31.6	31.1	31.8	31.9	32.2	32.4
Saudi Arabia	56.5	31.7	37.5	44.4	45.2	41.3	36.8	25.1	22.0	26.0	29.6	31.8	35.2	35.0	35.1
South Africa	28.0	26.7	26.7	27.2	27.4	27.6	28.2	29.6	29.4	29.6	29.9	29.9	30.0	30.1	30.2
Sri Lanka	13.6	13.1	13.0	13.6	12.2	12.0	11.5	13.1	13.2	13.9	15.2	15.8	16.4	16.1	15.9
Thailand	20.0	19.5	20.7	21.1	21.3	22.1	21.4	22.4	21.9	21.9	22.1	22.3	22.3	22.3	22.3
Turkey	30.4	31.0	31.5	32.2	31.5	32.2	30.5	30.9	31.2	30.6	31.4	31.9	31.8	32.0	32.2
Ukraine	42.4	40.8	43.4	42.9	44.7	43.3	40.3	41.9	38.4	39.0	38.9	38.8	38.7	38.3	37.9
United Arab Emirates	42.0	30.7	34.6	37.7	40.1	40.8	37.3	28.8	26.3	26.0	26.9	26.7	26.1	25.6	25.1
Uruguay	27.1	28.1	29.0	28.3	27.8	29.5	28.8	28.7	28.6	29.0	29.3	29.4	29.5	29.6	29.7
Venezuela	31.4	24.6	21.2	27.9	25.1	26.1	30.3	19.2	14.7	14.5	12.8	11.6	11.2	11.0	11.0
Average	29.5	26.8	27.5	28.9	29.4	29.1	28.5	27.3	26.8	26.6	26.6	26.7	26.6	26.4	26.3
Asia	21.5	21.9	22.4	24.3	25.3	25.3	25.6	26.1	25.8	25.1	25.1	25.0	24.8	24.7	24.6
Europe	36.4	33.9	33.8	35.3	35.2	34.7	34.0	33.0	33.3	32.9	33.0	33.3	33.3	33.3	33.5
Latin America	30.4	28.6	29.8	30.2	30.0	30.0	29.0	27.5	27.6	27.3	27.3	27.7	27.8	27.8	27.8
MENAP	40.7	31.4	33.0	33.9	36.6	35.9	33.1	26.3	23.2	25.8	26.6	26.9	27.2	26.6	26.1
G20 Emerging	28.1	25.9	26.8	28.5	28.9	28.6	28.1	27.5	27.3	26.8	26.9	26.9	26.8	26.7	26.6

Source: IMF staff estimates and projections. Projections are based on staff assessment of current policies (see "Fiscal Policy Assumptions" in text).

Note: For country-specific details, see "Data and Conventions" in text, and Table C. MENAP = Middle East, North Africa, and Pakistan.

[1] Based on nominal GDP series prior to the recent revision; therefore, the numbers in the *Fiscal Monitor*'s statistical tables are not comparable to the authorities' numbers because they employ different denominators.

Table A14. Emerging Market and Middle-Income Economies: General Government Expenditure, 2008–22

(Percent of GDP)

	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Algeria	37.9	42.6	37.3	40.3	43.5	36.2	40.7	46.1	40.6	35.8	32.4	31.0	30.0	29.6	29.1
Angola	55.4	41.9	40.0	40.2	41.3	40.5	41.9	30.6	23.7	25.6	23.5	22.9	22.4	21.9	21.5
Argentina	29.0	32.6	31.7	33.1	34.9	35.6	36.4	39.5	39.5	38.4	37.3	36.1	35.6	35.3	35.2
Azerbaijan	30.1	33.7	31.8	33.8	37.2	38.5	35.7	38.7	35.9	45.0	34.4	34.6	34.9	34.3	33.7
Belarus	56.6	51.6	40.6	33.4	37.6	40.8	38.8	43.5	42.7	45.8	44.8	44.4	41.7	40.8	40.4
Brazil	37.4	37.1	38.8	37.6	37.2	37.4	38.6	41.4	41.6	40.7	39.5	38.8	38.0	37.5	36.8
Chile	21.8	24.9	23.4	22.8	23.1	23.1	23.7	25.1	26.2	26.3	26.7	26.6	26.1	26.2	26.2
China	22.4	25.5	25.0	27.0	28.1	28.5	29.0	31.3	32.0	31.1	30.9	30.7	30.4	30.2	30.0
Colombia	26.6	29.5	29.4	28.7	28.3	29.0	29.4	29.8	28.3	28.1	27.6	27.7	27.7	27.6	27.5
Croatia	44.7	47.6	47.5	48.8	47.1	48.3	48.3	46.9	47.0	46.5	46.2	46.0	45.9	45.9	45.9
Dominican Republic	18.3	16.2	15.8	16.0	20.1	17.9	17.7	17.7	17.6	18.4	18.1	17.9	18.0	18.1	18.2
Ecuador	35.2	33.0	34.7	39.5	40.3	43.7	43.4	38.7	37.3	35.3	33.8	33.1	32.5	32.5	32.6
Egypt[1]	34.0	32.9	31.8	30.3	30.7	35.0	36.2	33.3	32.9	32.9	32.1	29.6	27.6	25.3	25.3
Hungary	48.7	50.6	49.5	49.7	48.6	49.4	49.5	50.3	47.6	50.3	50.2	48.8	47.7	45.5	45.7
India	28.7	28.1	27.4	27.6	27.4	26.6	26.4	27.5	27.9	27.3	27.1	26.9	26.7	26.6	26.4
Indonesia	19.4	17.0	16.9	17.7	18.8	19.1	18.6	17.4	16.8	16.5	16.4	16.4	16.5	16.5	16.5
Iran	22.1	20.6	19.1	18.5	14.5	15.0	15.7	17.9	17.9	17.9	17.9	18.0	18.0	18.1	18.0
Kazakhstan	27.1	23.5	22.5	21.2	21.9	19.8	21.3	22.9	22.4	25.9	21.9	21.8	21.7	21.7	21.7
Kuwait	40.4	42.2	44.7	39.1	38.8	38.1	44.3	54.7	55.5	51.0	50.5	50.4	50.2	49.8	48.4
Libya	42.6	65.2	54.4	49.1	40.8	72.7	102.7	105.2	70.9	50.9	49.2	47.3	45.5	43.7	41.7
Malaysia	27.3	31.3	27.0	27.5	28.8	28.2	26.3	25.1	23.4	22.7	22.3	22.0	21.8	21.5	21.2
Mexico	25.8	28.2	26.7	27.1	27.7	28.0	27.9	27.1	26.0	24.5	23.8	23.5	23.4	23.4	23.3
Morocco	30.6	30.4	31.1	33.8	35.2	32.9	32.9	30.9	30.2	29.6	29.5	29.6	29.8	30.0	30.1
Oman	29.3	38.2	33.9	39.3	44.0	44.8	47.4	50.5	52.1	43.8	43.9	43.2	41.4	40.2	39.3
Pakistan	21.8	19.3	20.3	19.3	21.7	21.8	20.1	19.7	19.6	19.4	19.6	19.7	19.7	19.8	19.8
Peru	19.6	21.5	21.1	20.0	20.7	22.0	22.5	22.2	21.0	21.9	21.7	21.3	21.0	20.6	20.4
Philippines	18.6	20.1	19.2	17.9	18.9	18.7	18.1	18.8	19.9	20.7	21.0	21.2	21.3	21.5	21.6
Poland	44.5	45.3	45.7	43.8	42.7	42.4	42.1	41.5	41.8	43.0	42.8	42.5	42.3	42.1	42.0
Qatar	23.0	32.9	30.6	28.5	31.0	28.3	33.4	41.5	34.4	32.3	29.7	28.3	27.3	26.5	24.3
Romania	36.3	37.8	37.9	36.3	34.9	33.9	33.9	34.3	31.5	32.7	33.1	33.1	32.7	32.6	32.5
Russia	31.9	38.5	35.4	33.5	34.6	35.6	34.9	35.2	36.0	34.2	33.0	32.3	31.9	31.8	31.8
Saudi Arabia	26.7	37.1	34.0	33.3	33.2	35.5	40.2	40.9	38.9	35.9	36.0	36.4	36.6	36.4	36.2
South Africa	28.7	31.7	31.4	30.9	31.4	31.5	31.8	33.2	33.0	33.2	33.2	33.3	33.2	33.0	32.8
Sri Lanka	19.7	21.7	20.0	19.9	17.8	17.2	17.7	20.0	18.8	19.2	19.9	19.9	19.9	19.6	19.4
Thailand	19.2	21.7	22.0	21.1	22.2	21.6	22.2	22.2	21.5	23.5	24.0	24.2	24.2	24.1	24.1
Turkey	33.0	36.8	34.3	32.8	33.1	33.3	32.2	32.1	33.5	33.6	33.5	33.4	33.5	33.9	34.2
Ukraine	45.4	46.8	49.2	45.7	49.0	48.1	44.8	43.0	40.6	42.0	41.4	41.1	40.8	40.3	39.9
United Arab Emirates	21.9	35.0	32.6	31.4	29.2	30.4	32.3	30.9	30.2	28.6	27.5	26.8	26.1	25.5	24.9
Uruguay	28.7	29.7	30.5	29.2	30.5	31.8	32.3	32.2	32.6	32.4	32.1	31.9	32.1	32.2	32.3
Venezuela	34.9	33.3	31.6	39.5	40.7	40.4	47.2	36.8	29.3	28.7	28.5	28.4	28.4	28.4	28.4
Average	28.7	30.5	29.6	29.8	30.3	30.6	30.9	31.7	31.6	31.0	30.5	30.2	29.8	29.6	29.3
Asia	23.2	25.2	24.6	26.0	26.9	27.1	27.4	29.3	29.7	29.0	28.8	28.7	28.4	28.2	28.0
Europe	35.8	39.7	37.4	35.4	35.9	36.2	35.5	35.7	36.2	36.0	35.2	34.7	34.4	34.3	34.4
Latin America	31.3	32.5	32.9	33.1	33.1	33.3	34.1	34.7	34.0	33.8	32.9	32.4	31.9	31.7	31.3
MENAP	27.8	32.5	30.7	29.6	30.6	31.6	34.0	34.7	32.7	31.0	30.5	30.0	29.6	29.1	28.6
G20 Emerging	27.6	29.8	29.1	29.6	30.1	30.4	30.6	31.9	32.1	31.3	30.9	30.6	30.2	30.0	29.8

Source: IMF staff estimates and projections. Projections are based on staff assessment of current policies (see "Fiscal Policy Assumptions" in text).

Note: For country-specific details, see "Data and Conventions" in text, and Table C. MENAP = Middle East, North Africa, and Pakistan.

[1] Based on nominal GDP series prior to the recent revision; therefore, the numbers in the *Fiscal Monitor*'s statistical tables are not comparable to the authorities' numbers because they employ different denominators.

Table A15. Emerging Market and Middle-Income Economies: General Government Gross Debt, 2008–22
(Percent of GDP)

	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Algeria	8.1	9.8	10.5	9.3	9.3	7.6	7.7	8.8	20.4	17.3	17.8	17.6	16.4	14.9	13.5
Angola	16.6	22.7	44.3	33.8	29.5	32.9	40.7	65.4	71.9	61.3	62.4	62.9	63.1	63.2	61.8
Argentina	43.9	53.8	42.6	38.1	39.4	42.2	43.6	52.0	51.3	49.4	49.2	47.7	46.4	45.3	44.8
Azerbaijan	7.3	12.4	12.5	11.4	13.9	12.7	11.2	28.3	37.7	33.1	30.8	29.0	28.1	27.8	28.9
Belarus	20.2	32.2	36.5	53.9	37.0	36.9	38.8	53.0	52.3	58.0	63.1	65.6	66.9	62.4	60.4
Brazil[1]	61.9	64.9	63.0	61.2	62.2	60.2	62.3	72.5	78.3	81.2	82.7	83.1	84.0	86.4	87.8
Chile	4.9	5.8	8.6	11.1	11.9	12.7	14.9	17.4	21.2	24.8	27.4	29.2	30.1	30.8	31.2
China	27.0	34.3	33.7	33.6	34.3	37.0	39.9	42.6	46.2	49.3	52.0	54.4	56.3	57.7	58.9
Colombia	32.1	35.2	36.4	35.7	34.1	37.8	44.2	50.7	47.6	45.7	45.3	44.3	42.7	40.8	38.8
Croatia	39.6	49.0	58.3	65.2	70.7	82.2	86.6	86.7	84.4	83.1	81.6	79.8	78.5	77.2	75.8
Dominican Republic	19.5	22.6	23.7	25.9	30.0	34.3	33.7	33.0	34.4	36.0	37.3	38.9	40.4	42.1	43.9
Ecuador[2]	16.7	13.5	13.3	14.2	13.5	16.5	19.7	22.6	29.2	31.5	32.3	32.3	31.3	31.2	31.1
Egypt[3]	66.8	69.5	69.6	72.8	73.8	84.0	85.1	88.5	97.1	100.4	95.2	93.6	90.0	85.2	79.8
Hungary	71.6	77.8	80.5	80.7	78.2	76.6	75.7	74.7	74.2	73.3	71.9	70.9	70.2	69.9	69.7
India	74.5	72.5	67.5	69.6	69.1	68.5	68.6	69.6	69.5	67.8	66.1	64.3	62.6	60.9	59.3
Indonesia	30.3	26.5	24.5	23.1	23.0	24.8	24.7	26.9	27.9	28.2	28.5	29.0	29.1	29.3	29.3
Iran	9.3	10.4	12.2	8.9	11.8	11.2	12.0	42.4	35.0	29.2	26.1	23.3	20.6	18.3	16.2
Kazakhstan	6.8	10.2	10.7	10.2	12.1	12.6	14.5	21.9	21.1	21.8	22.1	22.8	23.2	24.3	24.4
Kuwait	9.6	11.0	11.3	8.5	6.8	6.5	7.5	11.2	18.6	19.8	22.2	24.7	27.0	29.2	31.2
Libya	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Malaysia	39.9	51.1	51.9	52.6	54.6	56.4	56.2	57.9	56.3	56.0	54.9	53.2	51.3	49.2	46.8
Mexico	42.8	43.9	42.2	43.2	43.2	46.4	49.5	53.7	58.1	57.2	56.8	56.0	55.4	54.7	54.1
Morocco	45.4	46.1	49.0	52.5	56.5	61.7	63.5	64.1	64.7	64.3	63.6	61.8	60.0	58.6	57.1
Oman	4.7	6.7	5.7	5.2	4.9	5.0	4.9	15.3	34.3	38.5	41.2	44.1	46.2	47.7	49.3
Pakistan	57.3	58.6	60.7	58.9	63.3	64.2	63.7	63.6	66.9	65.2	64.0	62.5	60.4	58.9	57.1
Peru	28.0	28.4	25.5	23.3	21.6	20.8	20.7	24.0	24.8	25.9	26.6	27.0	28.2	28.5	28.5
Philippines	44.2	44.3	43.5	41.4	40.6	39.3	36.4	36.3	33.7	32.6	31.7	30.9	30.2	29.8	29.3
Poland	46.6	49.8	53.1	54.1	53.7	55.7	50.2	51.1	54.2	54.6	54.1	53.6	52.9	52.3	51.7
Qatar	11.1	36.0	41.8	36.0	37.2	33.1	32.3	34.9	47.6	50.2	50.8	51.9	53.8	54.5	53.3
Romania	13.4	23.3	30.5	33.9	37.6	38.8	40.5	39.4	39.2	40.6	41.7	43.0	43.8	44.5	44.9
Russia	7.4	9.9	10.6	10.9	11.8	13.1	15.6	15.9	17.0	17.1	17.3	17.8	18.2	18.4	18.5
Saudi Arabia	12.1	14.0	8.4	5.4	3.6	2.1	1.6	5.0	12.4	15.6	19.1	22.6	24.3	25.3	26.4
South Africa	26.5	30.1	34.7	38.2	41.0	44.0	46.9	49.8	50.5	52.4	54.0	54.5	54.5	54.3	53.7
Sri Lanka	71.1	75.2	71.6	71.1	68.7	70.8	70.7	76.0	77.3	79.6	77.1	74.6	71.8	69.3	66.3
Thailand	34.9	42.4	39.8	39.1	41.9	42.2	43.4	42.7	42.2	41.8	42.0	42.2	42.2	42.0	41.8
Turkey	38.2	43.9	40.1	36.4	32.6	31.3	28.7	27.6	29.1	29.8	29.8	28.6	28.7	29.0	29.0
Ukraine	19.7	34.1	40.6	36.9	37.5	40.5	70.3	79.3	81.2	89.8	85.3	78.1	71.6	65.6	60.2
United Arab Emirates	12.5	24.1	22.2	17.6	17.0	15.8	15.6	18.1	19.3	19.1	19.0	19.0	18.8	18.4	18.1
Uruguay	67.7	63.1	59.4	58.1	58.0	60.2	61.4	64.3	60.9	62.9	63.9	64.0	63.8	63.9	64.0
Venezuela	20.3	27.6	36.5	50.6	58.1	73.7	63.5	32.1	28.2	17.3	16.6	17.3	17.7	17.8	17.8
Average	33.6	39.0	38.4	37.5	37.5	38.7	40.8	44.5	47.4	48.6	49.8	50.8	51.5	52.1	52.4
Asia	36.9	41.7	40.3	39.7	39.7	41.4	43.6	45.8	48.5	50.5	52.2	53.6	54.6	55.3	55.8
Europe	22.9	28.4	28.2	26.9	25.8	26.8	28.4	30.8	32.7	32.2	32.3	32.2	32.2	32.2	32.0
Latin America	46.0	49.6	48.6	48.6	48.8	49.4	51.4	55.0	58.3	60.1	60.7	61.3	61.5	62.1	62.5
MENAP	20.2	26.2	25.2	22.0	23.5	24.0	24.5	33.8	38.9	36.3	36.3	36.9	36.8	36.2	35.7
G20 Emerging	35.4	40.5	39.0	38.0	37.6	38.8	41.2	44.7	47.9	49.8	51.4	52.7	53.7	54.5	55.1

Source: IMF staff estimates and projections. Projections are based on staff assessment of current policies (see "Fiscal Policy Assumptions" in text).

Note: For country-specific details, see "Data and Conventions" in text, and Table C. MENAP = Middle East, North Africa, and Pakistan.

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

[2] In late 2016, the authorities changed the definition of debt to a consolidated basis, which in 2016 was 11.5 percent of GDP lower than the previous aggregate definition. Both the historic and projection numbers are now presented on a consolidated basis.

[3] Based on nominal GDP series prior to the recent revision; therefore, the numbers in the *Fiscal Monitor*'s statistical tables are not comparable to the authorities' numbers because they employ different denominators.

Table A16. Emerging Market and Middle-Income Economies: General Government Net Debt, 2008–22

(Percent of GDP)

	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Algeria	–30.7	–33.5	–29.9	–27.8	–25.4	–25.8	–17.9	–3.7	15.9	16.9	17.8	17.6	16.4	14.9	13.0
Angola	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Argentina	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Azerbaijan	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Belarus	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Brazil	37.1	40.4	38.0	34.5	32.2	30.5	32.6	35.6	46.2	51.5	53.4	54.0	55.1	57.7	59.3
Chile	–19.3	–10.5	–7.0	–8.6	–6.8	–5.6	–4.3	–3.5	–0.9	1.9	4.5	6.5	7.8	8.9	9.6
China	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Colombia	22.3	26.1	28.4	27.1	24.9	27.0	33.7	42.3	41.4	41.0	41.0	40.4	39.2	37.8	36.1
Croatia	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Dominican Republic	19.5	22.6	23.7	25.9	30.0	34.3	33.7	33.0	34.4	36.0	37.3	38.9	40.4	42.1	43.9
Ecuador	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Egypt[1]	52.8	55.9	57.1	61.3	63.5	73.7	77.1	78.8	88.1	93.6	89.7	88.9	85.9	81.5	76.6
Hungary	63.6	72.1	75.1	74.4	72.0	71.1	70.5	70.8	70.4	69.7	68.5	67.7	67.1	67.0	66.9
India	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Indonesia	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Iran	–2.8	2.5	2.0	–2.7	0.8	–5.9	–5.8	25.6	20.2	14.4	10.7	7.8	5.4	3.6	1.9
Kazakhstan	–13.9	–11.0	–10.2	–12.7	–15.9	–17.6	–19.2	–30.9	–22.4	–15.2	–11.7	–9.0	–7.2	–5.7	–5.0
Kuwait	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Libya	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Malaysia	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Mexico	33.2	36.2	36.2	37.5	37.7	40.4	43.1	47.3	51.8	50.9	50.4	49.6	49.1	48.3	47.7
Morocco	44.7	45.5	48.5	52.1	56.0	61.2	63.0	63.5	64.2	63.8	63.1	61.3	59.5	58.1	56.6
Oman	–24.7	–32.0	–29.2	–29.7	–29.0	–43.8	–44.1	–42.5	–29.3	–16.1	–7.2	–0.4	5.4	10.8	15.8
Pakistan	52.0	51.4	52.0	51.7	55.9	58.6	57.1	57.0	58.5	57.0	55.8	54.6	52.9	51.6	50.2
Peru	13.0	12.3	10.3	7.2	4.6	3.6	3.6	5.6	7.5	9.5	11.1	12.3	13.1	13.4	13.5
Philippines	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Poland	5.8	10.4	15.2	17.8	18.6	21.8	14.7	15.9	20.0	21.4	21.9	22.3	22.7	23.1	23.5
Qatar	–36.8	–39.3	–34.4	–43.7	–58.9	–83.3	–97.2	–131.9	–133.3	–115.0	–99.9	–91.6	–83.9	–78.0	–73.7
Romania	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Russia	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Saudi Arabia	–38.4	–39.3	–37.8	–37.7	–47.2	–51.7	–48.2	–38.0	–18.9	–7.3	–0.5	4.1	5.3	6.5	7.4
South Africa	21.7	25.4	28.5	31.3	34.8	37.5	40.2	43.6	45.2	47.0	48.6	49.5	50.3	50.9	51.0
Sri Lanka	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Thailand	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Turkey	31.1	35.8	32.9	29.1	25.1	23.7	21.6	20.3	22.2	23.5	24.0	23.4	24.0	24.7	27.1
Ukraine	. . .	. . .	. . .	. . .	. . .	20.9	41.7	49.8	52.3	61.5	57.9	51.6	46.1	41.1	36.6
United Arab Emirates	–203.0	–247.1	–227.9	–200.9	–209.9	–215.3	–221.9	–243.6	–247.7	–232.1	–223.8	–219.9	–215.1	–210.9	–209.3
Uruguay	31.6	30.7	31.1	28.8	25.9	24.2	22.9	25.7	30.7	32.9	34.0	34.2	34.0	34.2	34.3
Venezuela	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Average	9.9	13.0	14.5	12.8	9.8	9.0	9.6	11.8	17.5	19.9	21.1	21.8	22.4	23.1	23.6
Asia	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Europe	22.1	26.9	26.8	24.6	21.7	21.3	19.9	18.8	23.3	24.9	25.1	24.8	24.8	25.1	26.0
Latin America	30.7	33.9	33.1	31.2	29.5	29.6	32.2	35.5	41.7	44.8	45.9	46.2	46.7	47.8	48.4
MENAP	–36.9	–35.4	–32.1	–31.0	–37.3	–41.3	–40.6	–33.1	–25.8	–25.8	–23.8	–21.7	–20.6	–19.7	–19.3
G20 Emerging	25.1	28.9	28.0	25.6	22.1	21.4	23.1	26.2	34.0	38.2	40.1	40.9	41.6	. . .	. . .

Source: IMF staff estimates and projections. Projections are based on staff assessment of current policies (see "Fiscal Policy Assumptions" in text).

Note: For country-specific details, see "Data and Conventions" in text, and Table C. MENAP = Middle East, North Africa, and Pakistan.

[1] Based on nominal GDP series prior to the recent revision; therefore, the numbers in the *Fiscal Monitor*'s statistical tables are not comparable to the authorities' numbers because they employ different denominators.

Table A17. Low-Income Developing Countries: General Government Overall Balance, 2008–22
(Percent of GDP)

	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Bangladesh	–4.0	–3.2	–2.7	–3.6	–3.0	–3.4	–3.1	–3.9	–3.4	–4.7	–4.2	–4.1	–3.9	–3.5	–3.4
Benin	–0.1	–3.1	–0.4	–1.3	–0.3	–1.9	–2.3	–7.6	–6.1	–7.9	–4.0	–1.9	–0.8	–0.2	0.6
Bolivia	3.6	0.0	1.7	0.8	1.8	0.7	–3.4	–6.9	–6.5	–6.2	–5.3	–5.3	–5.3	–5.0	–5.0
Burkina Faso	–4.1	–4.7	–3.0	–1.4	–3.1	–4.0	–2.0	–2.3	–2.5	–3.6	–3.3	–3.5	–3.5	–3.5	–3.5
Cambodia	0.5	–4.1	–2.8	–4.1	–3.8	–2.1	–1.3	–1.6	–2.9	–3.2	–3.6	–3.7	–4.4	–4.4	–4.3
Cameroon	2.2	0.0	–1.1	–2.6	–1.6	–4.0	–4.6	–2.7	–4.7	–3.2	–2.6	–2.1	–1.8	–1.3	–1.4
Chad	3.6	–9.2	–4.2	2.4	0.5	–2.1	–4.2	–3.1	–1.3	0.0	0.0	0.4	0.6	0.8	0.9
Democratic Republic of the Congo	–0.5	0.9	2.4	–1.0	1.9	3.1	5.0	–0.1	–0.8	–1.0	0.1	0.1	0.3	0.5	0.7
Republic of Congo	27.2	4.9	15.7	16.0	7.3	–1.9	–7.7	–18.7	–17.2	–0.3	2.8	0.8	2.9	4.6	2.2
Côte d'Ivoire	–0.4	–1.4	–1.8	–4.0	–3.1	–2.2	–2.2	–2.9	–4.0	–4.5	–3.7	–3.0	–3.0	–2.8	–2.7
Ethiopia	–2.9	–0.9	–1.3	–1.6	–1.2	–1.9	–2.6	–1.9	–2.4	–3.1	–3.0	–3.1	–3.1	–3.0	–2.9
Ghana	–8.0	–7.2	–10.1	–7.4	–11.3	–12.0	–10.9	–5.3	–8.3	–5.0	–4.1	–3.0	–3.5	–2.5	–2.2
Guinea	0.6	–7.1	–14.0	–1.3	–3.3	–5.3	–4.2	–9.0	–0.4	–2.1	–1.7	–0.9	–0.6	–0.4	0.0
Haiti	–3.0	–3.5	–2.7	–2.5	–4.8	–7.2	–6.4	–2.5	0.0	–2.6	–1.1	–1.1	–1.5	–2.1	–2.1
Honduras	–1.7	–4.5	–2.8	–2.8	–4.2	–7.6	–4.2	–1.4	–1.3	–1.7	–1.4	–1.4	–1.5	–1.3	–1.2
Kenya	–3.4	–4.3	–4.4	–4.1	–5.0	–5.7	–7.4	–8.2	–7.3	–6.5	–5.4	–4.3	–3.6	–3.4	–3.5
Kyrgyz Republic	0.5	–1.5	–5.9	–4.7	–5.9	–3.7	1.0	–1.2	–4.5	–3.0	–2.1	–1.9	–1.8	–1.7	–1.7
Lao P.D.R.	–1.4	–4.1	–3.2	–1.7	–0.5	–5.6	–4.5	–2.7	–5.9	–5.3	–5.2	–5.2	–5.2	–5.1	–5.0
Madagascar	–2.0	–2.5	–0.9	–2.4	–2.6	–4.0	–2.3	–3.3	–3.2	–4.4	–4.4	–4.4	–4.3	–4.0	–3.7
Mali	–2.0	–3.7	–2.6	–3.4	–1.0	–2.4	–2.9	–1.8	–4.0	–3.5	–3.4	–3.0	–3.0	–3.0	–3.0
Moldova	–0.9	–6.4	–2.6	–2.5	–2.3	–1.9	–1.9	–2.3	–2.1	–3.7	–3.3	–2.9	–2.9	–2.8	–2.7
Mongolia	–3.1	–4.0	0.4	–4.0	–9.1	–8.9	–11.3	–8.5	–17.0	–10.5	–8.2	–5.5	–3.8	–1.9	–1.4
Mozambique	–2.1	–4.9	–3.8	–4.8	–3.9	–2.7	–10.7	–7.4	–6.0	–6.2	–5.7	–5.0	–4.0	–3.1	–2.4
Myanmar	–2.1	–4.4	–5.5	–3.5	0.9	–1.3	–0.9	–4.4	–4.6	–4.5	–4.5	–4.5	–4.5	–4.5	–4.3
Nepal	–0.4	–2.6	–0.8	–0.8	–1.3	1.8	1.5	0.7	1.4	–1.1	–1.2	–1.0	–0.5	–0.4	–0.4
Nicaragua	–0.2	–1.2	0.1	0.2	–0.1	–0.7	–1.2	–1.4	–1.7	–1.6	–1.4	–1.6	–1.9	–1.8	–1.9
Niger	1.5	–5.3	–2.4	–1.5	–1.1	–2.6	–8.0	–9.1	–6.5	–7.4	–6.0	–4.7	–2.9	–0.9	–0.1
Nigeria	5.7	–5.4	–4.2	0.2	0.1	–2.5	–2.2	–3.5	–4.4	–5.0	–4.2	–4.0	–3.9	–3.8	–3.8
Papua New Guinea	2.8	–5.5	3.1	2.2	–1.2	–6.9	–6.5	–5.1	–4.4	–2.7	–2.4	–2.0	–1.5	–0.8	–0.8
Rwanda	0.9	0.3	–0.7	–0.9	–2.5	–1.3	–4.0	–2.8	–2.4	–2.8	–1.9	–1.2	–0.9	–0.6	–0.6
Senegal	–4.4	–4.6	–4.9	–6.1	–5.2	–5.5	–5.0	–4.8	–4.2	–3.7	–3.0	–3.0	–3.0	–3.0	–3.4
Sudan	0.6	–4.2	0.2	0.1	–3.3	–2.3	–1.4	–1.9	–1.8	–2.5	–2.6	–2.8	–2.9	–3.2	–3.6
Tajikistan	–5.1	–5.2	–3.0	–2.1	0.6	–0.8	0.0	–1.9	–4.4	–2.5	–1.9	–1.5	–1.5	–1.5	–1.3
Tanzania	–1.9	–4.5	–4.8	–3.6	–4.1	–3.9	–3.0	–3.3	–3.8	–4.3	–4.6	–4.5	–4.1	–3.3	–2.6
Uganda	–2.6	–2.1	–5.7	–2.7	–3.0	–3.9	–3.3	–2.7	–3.6	–4.3	–4.4	–4.6	–5.6	–2.9	–2.6
Uzbekistan	7.7	2.5	3.6	7.8	7.8	2.4	2.2	–0.5	–0.3	–0.2	–0.1	0.1	0.1	0.2	1.1
Vietnam	–0.5	–6.0	–2.8	–1.1	–6.9	–7.4	–6.3	–6.2	–6.6	–5.7	–5.7	–5.3	–5.1	–5.0	–4.7
Yemen	–4.5	–10.2	–4.1	–4.5	–6.3	–6.9	–4.1	–10.6	–13.5	–6.0	–2.1	–1.4	–1.0	–1.2	–1.3
Zambia	–0.7	–2.1	–2.4	–1.8	–2.8	–6.2	–5.8	–9.5	–6.1	–7.5	–7.0	–5.2	–5.0	–3.6	–3.3
Zimbabwe	–2.0	–2.1	0.7	–1.2	–0.5	–1.9	–1.5	–1.1	–10.2	–6.9	–5.4	–5.0	–4.6	–4.7	–4.2
Average	1.1	–4.1	–2.8	–1.2	–2.0	–3.4	–3.2	–4.0	–4.4	–4.4	–3.9	–3.6	–3.5	–3.3	–3.2
Oil Producers	5.0	–4.9	–3.2	0.1	–0.4	–2.9	–2.7	–4.1	–5.1	–4.8	–3.8	–3.6	–3.4	–3.3	–3.3
Asia	–1.8	–4.5	–2.7	–2.3	–3.8	–4.7	–4.1	–4.6	–4.8	–4.9	–4.6	–4.4	–4.2	–4.0	–3.8
Latin America	0.3	–2.1	–0.6	–0.8	–1.1	–2.7	–3.6	–3.9	–3.5	–3.9	–3.3	–3.3	–3.5	–3.4	–3.3
Sub-Saharan Africa	2.4	–4.1	–3.5	–1.0	–1.4	–3.2	–3.2	–3.9	–4.6	–4.6	–3.9	–3.6	–3.4	–3.1	–3.0
Others	0.8	–3.7	–0.2	0.9	–0.5	–1.8	–0.7	–3.0	–3.0	–2.3	–1.8	–1.8	–1.9	–2.2	–2.2

Source: IMF staff estimates and projections. Projections are based on staff assessment of current policies (see "Fiscal Policy Assumptions" in text).
Note: For country-specific details, see "Data and Conventions" in text, and Table D.

Table A18. Low-Income Developing Countries: General Government Primary Balance, 2008–22

(Percent of GDP)

	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Bangladesh	–1.9	–1.0	–0.8	–1.9	–1.1	–1.4	–1.0	–1.8	–1.5	–2.6	–2.1	–2.0	–1.7	–1.4	–1.2
Benin	0.3	–2.6	0.1	–0.9	0.3	–1.4	–1.9	–6.9	–4.8	–6.1	–2.3	0.0	0.9	1.3	2.0
Bolivia	5.5	1.7	3.1	2.1	2.8	1.6	–2.4	–5.9	–5.5	–5.2	–4.2	–4.0	–3.9	–3.5	–3.4
Burkina Faso	–3.7	–4.3	–2.6	–0.8	–2.4	–3.4	–1.2	–1.7	–1.8	–2.7	–2.6	–2.8	–2.8	–2.9	–2.8
Cambodia	0.7	–3.9	–2.5	–3.8	–3.3	–1.4	–0.9	–1.2	–2.5	–2.9	–3.3	–3.4	–4.2	–4.2	–4.1
Cameroon	2.6	0.2	–0.8	–2.2	–1.2	–3.6	–4.2	–2.3	–3.6	–2.1	–1.5	–1.1	–0.8	–0.4	–0.5
Chad	3.8	–8.8	–3.6	3.0	0.9	–1.5	–3.6	–2.7	0.8	2.0	1.3	1.4	1.6	1.6	1.7
Democratic Republic of the Congo	–0.1	1.3	2.7	–0.3	2.5	3.6	5.4	0.2	–0.6	–0.5	0.5	0.7	1.0	1.1	1.2
Republic of Congo	30.1	6.3	16.6	16.1	7.3	–1.6	–7.5	–18.2	–16.6	0.7	3.6	1.6	3.7	5.3	2.9
Côte d'Ivoire	1.3	0.1	–0.3	–2.2	–1.4	–0.8	–0.9	–1.3	–2.3	–2.6	–1.8	–1.1	–0.9	–0.8	–0.7
Ethiopia	–2.4	–0.6	–0.9	–1.2	–0.9	–1.6	–2.2	–1.5	–1.9	–2.6	–2.4	–2.5	–2.5	–2.4	–2.3
Ghana	–5.8	–4.4	–6.9	–4.8	–7.8	–7.3	–4.7	1.2	–1.9	1.3	1.0	2.0	1.2	1.8	1.8
Guinea	3.2	–5.0	–12.0	0.7	–1.6	–4.1	–2.9	–7.9	1.6	–0.3	–0.3	0.3	0.5	0.6	0.8
Haiti	–2.3	–2.9	–2.2	–2.1	–4.4	–6.7	–5.9	–2.2	0.3	–2.1	–0.5	–0.6	–1.0	–1.6	–1.6
Honduras	–2.7	–5.4	–3.4	–3.0	–4.3	–7.1	–3.8	–0.3	–0.4	–0.5	0.1	0.2	0.1	–0.1	–0.6
Kenya	–1.8	–2.7	–2.5	–2.2	–2.9	–3.3	–4.8	–5.3	–4.5	–3.6	–2.3	–1.3	–0.7	–0.7	–0.9
Kyrgyz Republic	1.2	–0.7	–5.1	–3.7	–4.9	–2.9	1.9	–0.2	–3.4	–1.8	–0.9	–1.0	–1.0	–0.8	–0.9
Lao P.D.R.	–0.8	–3.8	–2.8	–1.2	0.2	–4.5	–3.7	–1.7	–4.7	–3.8	–3.6	–3.5	–3.4	–3.3	–3.2
Madagascar	–1.2	–1.8	–0.1	–1.5	–1.9	–3.3	–1.7	–2.5	–2.3	–3.5	–3.4	–3.4	–3.2	–2.9	–2.5
Mali	–1.7	–3.4	–2.2	–2.8	–0.4	–1.9	–2.3	–1.2	–3.3	–2.8	–2.8	–2.3	–2.3	–2.3	–2.3
Moldova	0.3	–5.0	–1.8	–1.6	–1.5	–1.3	–1.3	–1.4	–0.8	–2.3	–1.9	–1.5	–1.5	–1.5	–1.3
Mongolia	–2.9	–3.6	0.9	–3.7	–8.3	–7.5	–8.8	–5.6	–13.1	–5.5	–3.1	–1.0	0.3	1.5	1.6
Mozambique	–1.7	–4.4	–3.1	–3.9	–2.9	–1.9	–9.6	–6.1	–3.0	–1.7	–1.6	–1.0	–0.4	0.0	0.0
Myanmar	–1.6	–3.6	–4.6	–2.5	2.3	–0.1	0.3	–3.3	–3.3	–2.3	–2.2	–2.2	–2.2	–2.2	–2.1
Nepal	0.3	–1.9	0.0	0.0	–0.5	2.6	2.1	1.1	1.7	–0.6	–0.7	–0.6	–0.1	0.0	0.0
Nicaragua	0.0	–0.9	0.2	0.4	0.4	–0.3	–0.8	–0.9	–1.0	–0.8	–0.7	–0.8	–1.1	–0.9	–1.0
Niger	1.7	–5.1	–2.2	–1.1	–0.8	–2.3	–7.6	–8.5	–5.7	–6.3	–4.9	–3.4	–1.7	0.2	0.8
Nigeria	6.3	–4.7	–3.6	1.1	1.1	–1.5	–1.2	–2.4	–3.4	–3.9	–2.9	–2.4	–2.1	–1.9	–1.7
Papua New Guinea	4.0	–4.1	4.0	3.2	–0.2	–5.8	–4.8	–3.3	–2.0	–0.8	–0.2	0.2	0.7	1.2	1.1
Rwanda	1.4	0.6	–0.2	–0.5	–2.1	–0.4	–3.2	–1.9	–1.4	–1.7	–0.8	0.0	0.3	0.6	0.7
Senegal	–3.8	–3.9	–4.0	–4.6	–3.7	–4.0	–3.3	–2.8	–2.1	–1.7	–0.5	–0.5	–0.4	–0.7	–1.0
Sudan	1.5	–3.2	1.3	1.3	–2.2	–1.8	–0.5	–1.1	–1.2	–1.9	–2.0	–2.2	–2.3	–2.6	–2.6
Tajikistan	–4.8	–4.7	–2.5	–1.6	1.1	0.1	0.4	–1.5	–3.9	–1.8	–0.4	0.2	0.1	0.0	0.1
Tanzania	–1.2	–3.8	–4.1	–2.8	–3.1	–2.7	–1.6	–1.8	–2.2	–2.6	–2.8	–2.7	–2.2	–1.4	–0.6
Uganda	–1.4	–1.1	–4.8	–1.7	–1.7	–2.6	–1.9	–1.0	–1.3	–2.0	–1.7	–1.5	–2.4	0.5	0.8
Uzbekistan	7.8	2.5	3.6	7.8	7.8	2.4	2.2	–0.5	–0.3	–0.1	0.0	0.1	0.1	0.2	1.1
Vietnam	0.5	–4.9	–1.6	–0.1	–5.6	–5.9	–4.6	–4.2	–4.4	–3.7	–3.3	–2.9	–2.7	–2.5	–2.2
Yemen	–2.1	–7.7	–1.7	–0.2	–0.9	–1.5	1.5	–3.1	–5.3	1.1	4.7	5.3	5.1	4.8	4.6
Zambia	0.7	–0.7	–1.0	–0.8	–1.5	–4.7	–3.6	–6.7	–2.7	–4.2	–3.7	–1.8	–1.7	–0.3	–0.1
Zimbabwe	0.3	0.4	1.9	–0.2	0.4	–1.0	–0.6	0.0	–8.7	–5.1	–3.4	–2.4	–1.9	–1.9	–1.7
Average	2.0	–3.1	–1.8	–0.1	–0.7	–2.2	–1.8	–2.5	–2.8	–2.7	–2.1	–1.8	–1.6	–1.4	–1.3
Oil Producers	5.8	–4.0	–2.4	1.2	0.8	–1.7	–1.4	–2.6	–3.6	–3.2	–2.2	–1.7	–1.5	–1.2	–1.1
Asia	–0.5	–3.1	–1.5	–1.1	–2.5	–3.2	–2.4	–2.9	–3.0	–2.9	–2.5	–2.3	–2.0	–1.8	–1.7
Latin America	0.9	–1.6	–0.1	–0.3	–0.5	–2.0	–2.9	–3.1	–2.7	–2.9	–2.2	–2.1	–2.2	–2.1	–2.2
Sub-Saharan Africa	3.2	–3.2	–2.7	–0.1	–0.3	–2.0	–1.9	–2.6	–3.1	–3.0	–2.2	–1.7	–1.5	–1.2	–1.0
Others	1.8	–2.6	0.8	2.4	1.1	–0.4	0.9	–1.3	–1.6	–1.0	–0.6	–0.7	–0.8	–1.1	–1.0

Source: IMF staff estimates and projections. Projections are based on staff assessment of current policies (see "Fiscal Policy Assumptions" in text).

Note: Primary balance is defined as the overall balance excluding net interest payments. For country-specific details, see "Data and Conventions" in text, and Table D.

Table A19. Low-Income Developing Countries: General Government Revenue, 2008–22
(Percent of GDP)

	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Bangladesh	9.8	9.5	10.0	10.4	11.2	11.2	10.9	9.9	10.4	10.8	11.9	12.3	12.8	13.1	13.1
Benin	19.8	20.2	18.9	18.8	19.2	18.5	17.2	17.3	15.2	16.8	17.9	18.5	19.0	18.9	19.3
Bolivia	38.9	35.8	33.2	36.2	37.8	39.1	39.9	37.7	32.4	31.9	32.0	31.7	30.7	30.4	29.8
Burkina Faso	16.8	19.5	19.8	20.7	22.4	24.5	21.7	19.4	22.0	22.9	23.5	24.0	23.9	24.0	24.0
Cambodia	15.9	15.8	17.1	15.6	16.9	18.6	19.6	18.8	19.4	20.1	21.0	21.6	21.0	21.1	20.5
Cameroon	21.2	17.4	16.6	17.9	17.9	18.0	18.1	17.9	16.6	17.1	17.6	17.8	17.9	18.1	18.5
Chad	22.4	14.9	20.2	24.8	24.4	20.7	17.8	14.0	13.0	15.8	15.2	15.7	15.8	15.6	15.8
Democratic Republic of the Congo	11.5	13.7	19.0	13.7	16.5	14.6	17.7	15.9	10.1	10.9	10.6	11.0	11.4	11.7	12.1
Republic of Congo	54.8	30.3	36.7	41.4	42.7	45.1	40.7	29.6	27.4	26.2	27.4	26.1	27.4	28.2	27.7
Côte d'Ivoire	19.9	18.5	18.1	14.2	19.2	19.7	18.9	20.2	19.9	20.2	20.8	21.1	21.5	21.8	21.8
Ethiopia	15.9	16.2	17.2	16.6	15.5	15.8	14.9	15.4	16.0	15.4	15.3	15.5	15.8	16.0	16.3
Ghana	15.9	16.4	16.7	19.1	18.5	16.7	18.4	19.3	17.1	19.0	18.8	19.6	19.3	19.3	19.3
Guinea	16.1	16.5	15.7	20.4	22.8	20.2	22.3	19.3	21.1	22.0	22.3	22.5	22.6	22.4	22.3
Haiti	15.1	16.8	19.9	22.0	23.8	21.0	18.9	19.4	18.5	16.7	20.4	20.3	20.3	20.2	20.1
Honduras	26.4	24.4	24.1	23.1	22.5	22.9	24.1	26.0	26.8	26.4	26.8	27.1	27.2	27.2	27.2
Kenya	19.4	18.8	19.8	19.5	19.1	19.7	19.8	19.3	20.2	21.2	21.4	21.5	21.0	21.1	21.5
Kyrgyz Republic	29.8	32.9	31.2	32.7	34.7	34.4	35.3	35.6	36.4	36.2	34.7	33.8	33.5	33.5	33.6
Lao P.D.R.	15.9	17.1	22.6	22.4	24.1	23.9	23.2	24.0	18.4	19.7	20.1	20.2	20.5	20.7	20.8
Madagascar	15.9	11.5	13.2	11.7	10.8	10.9	12.4	11.8	13.0	13.9	13.1	13.6	13.9	14.3	14.7
Mali	17.0	19.1	17.7	17.1	14.6	17.4	17.1	19.1	21.6	20.6	19.7	19.9	19.8	19.9	19.9
Moldova	40.6	38.9	38.3	36.6	37.9	36.7	37.9	35.6	34.2	34.8	34.6	34.5	34.5	34.4	34.5
Mongolia	23.0	23.2	32.0	33.9	29.8	31.2	27.8	25.1	23.7	24.7	26.3	26.8	27.0	27.1	27.2
Mozambique	21.8	24.0	26.1	27.3	27.0	31.4	31.8	28.0	24.7	25.4	26.0	25.8	26.0	25.9	26.1
Myanmar	10.1	9.3	9.1	9.8	19.0	20.1	21.9	18.6	17.3	16.5	16.8	17.1	17.3	17.4	17.6
Nepal	14.9	16.8	18.0	17.8	18.0	19.6	20.4	20.9	23.3	24.2	24.1	24.1	24.1	24.0	24.0
Nicaragua	21.5	20.9	22.3	23.4	24.0	23.8	23.5	24.0	25.6	25.6	25.5	25.4	25.3	25.3	25.3
Niger	24.1	18.6	18.2	17.9	21.4	24.6	23.0	23.6	20.0	20.7	21.3	21.8	23.2	23.6	24.1
Nigeria	20.1	10.1	12.4	17.7	14.3	11.0	10.5	7.6	4.8	5.7	5.9	6.1	6.5	6.8	7.0
Papua New Guinea	22.7	19.3	21.5	21.9	21.3	20.9	21.7	18.3	17.4	16.5	16.5	16.7	16.9	17.1	17.1
Rwanda	24.8	23.8	24.6	25.3	23.2	25.5	24.2	24.7	23.6	21.7	21.9	22.5	22.2	22.2	22.1
Senegal	21.8	22.0	22.1	22.7	23.3	22.6	24.8	25.1	26.6	25.0	24.7	24.6	24.5	24.6	23.5
Sudan	24.0	16.4	19.8	18.7	9.9	11.0	12.0	11.0	9.3	9.7	9.4	9.0	8.6	8.1	7.9
Tajikistan	22.1	23.4	23.2	24.9	25.1	26.9	28.4	29.9	27.9	28.1	28.2	28.3	28.2	28.3	28.4
Tanzania	16.6	15.7	15.5	15.6	15.7	15.5	14.9	14.5	15.9	16.6	16.6	16.8	17.0	17.2	17.5
Uganda	14.2	13.2	13.2	14.5	13.4	12.5	13.2	14.9	14.4	16.3	16.0	16.5	16.5	17.7	18.4
Uzbekistan	40.7	36.7	37.0	40.2	41.5	35.9	34.9	35.2	32.9	32.9	32.9	33.0	33.0	33.0	33.0
Vietnam	26.6	25.6	27.3	25.9	22.6	23.1	22.2	23.7	23.2	23.3	23.1	23.1	23.0	22.9	23.0
Yemen	36.7	25.0	26.1	25.3	29.9	23.9	23.6	12.9	10.8	18.6	23.9	24.7	24.6	24.1	23.9
Zambia	18.8	15.7	15.6	17.7	18.7	17.6	18.9	18.8	17.9	17.0	17.5	17.7	17.9	18.3	18.7
Zimbabwe	2.2	12.0	23.3	26.7	28.0	27.7	26.6	27.5	24.7	23.8	21.8	21.4	21.3	21.2	19.4
Average	20.7	16.5	17.8	19.7	18.7	17.6	17.3	16.0	15.3	15.9	15.9	15.8	15.8	15.9	16.0
Oil Producers	22.1	12.8	14.7	18.8	16.5	13.6	13.0	9.7	7.6	8.8	9.1	9.1	9.4	9.8	10.0
Asia	17.4	16.5	17.6	17.7	18.3	18.6	18.3	17.6	17.2	17.4	17.8	18.0	18.1	18.2	18.2
Latin America	28.5	27.0	26.8	28.4	29.4	30.1	30.5	30.1	28.2	27.9	28.6	28.5	28.0	27.9	27.7
Sub-Saharan Africa	19.5	13.9	15.4	18.4	16.7	15.0	14.6	13.0	12.1	12.9	12.7	12.7	12.9	13.3	13.6
Others	31.5	25.3	26.7	27.5	26.4	24.2	24.3	21.4	19.3	19.7	19.5	18.7	18.0	17.1	16.5

Source: IMF staff estimates and projections. Projections are based on staff assessment of current policies (see "Fiscal Policy Assumptions" in text).
Note: For country-specific details, see "Data and Conventions" in text, and Table D.

Table A20. Low-Income Developing Countries: General Government Expenditure, 2008–22

(Percent of GDP)

	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Bangladesh	13.8	12.7	12.7	14.0	14.2	14.6	14.0	13.8	13.8	15.6	16.1	16.4	16.7	16.6	16.5
Benin	19.9	23.2	19.2	20.1	19.5	20.4	19.4	24.9	21.3	24.7	21.9	20.4	19.7	19.1	18.7
Bolivia	35.3	35.8	31.5	35.4	36.0	38.4	43.3	44.6	38.9	38.0	37.3	37.0	35.9	35.4	34.8
Burkina Faso	20.9	24.2	22.8	22.1	25.5	28.4	23.7	21.7	24.5	26.5	26.8	27.5	27.4	27.5	27.5
Cambodia	15.4	19.9	19.9	19.7	20.7	20.7	20.9	20.4	22.3	23.3	24.6	25.3	25.4	25.5	24.7
Cameroon	19.0	17.5	17.7	20.5	19.5	21.9	22.7	20.6	21.3	20.3	20.2	19.9	19.7	19.4	19.9
Chad	18.8	24.1	24.4	22.4	23.9	22.8	22.0	17.0	14.3	15.8	15.2	15.3	15.2	14.8	14.9
Democratic Republic of the Congo	12.1	12.7	16.6	14.7	14.6	11.6	12.6	16.0	10.9	11.9	10.4	10.9	11.0	11.2	11.4
Republic of Congo	27.6	25.3	21.0	25.4	35.4	47.0	48.4	48.3	44.6	26.4	24.6	25.4	24.4	23.5	25.5
Côte d'Ivoire	20.3	19.9	20.0	18.2	22.3	21.9	21.0	23.1	23.8	24.7	24.5	24.1	24.5	24.6	24.5
Ethiopia	18.8	17.1	18.5	18.2	16.6	17.8	17.5	17.3	18.4	18.5	18.3	18.6	18.9	19.0	19.2
Ghana	24.0	23.6	26.8	26.6	29.8	28.7	29.4	24.6	25.4	23.9	22.9	22.6	22.8	21.8	21.6
Guinea	15.6	23.7	29.7	21.6	26.1	25.5	26.5	28.3	21.4	24.1	24.1	23.5	23.2	22.8	22.3
Haiti	18.0	20.3	22.7	24.5	28.6	28.1	25.3	21.9	18.5	19.3	21.5	21.4	21.7	22.3	22.1
Honduras	28.1	28.9	27.0	25.9	26.7	30.6	28.3	27.4	28.1	28.0	28.3	28.5	28.7	28.5	28.4
Kenya	22.8	23.1	24.2	23.6	24.2	25.4	27.2	27.5	27.5	27.7	26.8	25.8	24.6	24.5	25.0
Kyrgyz Republic	29.3	34.4	37.1	37.4	40.6	38.1	34.3	36.7	40.9	39.1	36.8	35.7	35.3	35.2	35.4
Lao P.D.R.	17.3	21.3	25.9	24.1	24.6	29.6	27.8	26.7	24.3	25.0	25.3	25.5	25.7	25.8	25.8
Madagascar	17.9	14.1	14.0	14.1	13.4	14.9	14.7	15.1	16.2	18.3	17.6	18.0	18.2	18.3	18.3
Mali	19.0	22.8	20.3	20.6	15.5	19.7	20.0	20.9	25.6	24.1	23.1	22.9	22.9	22.9	22.9
Moldova	41.5	45.3	40.9	39.1	40.3	38.6	39.8	37.9	36.3	38.5	37.8	37.5	37.4	37.2	37.2
Mongolia	26.1	27.2	31.6	37.9	38.9	40.1	39.1	33.6	40.7	35.2	34.5	32.3	30.8	29.0	28.6
Mozambique	23.9	28.9	29.9	32.2	30.8	34.1	42.5	35.4	30.7	31.6	31.7	30.8	30.0	29.0	28.5
Myanmar	12.2	13.7	14.6	13.4	18.1	21.4	22.9	23.0	21.8	21.1	21.3	21.6	21.8	21.9	21.9
Nepal	15.4	19.4	18.8	18.7	19.3	17.8	18.8	20.2	22.0	25.3	25.3	25.0	24.6	24.5	24.4
Nicaragua	21.7	22.1	22.2	23.2	24.1	24.4	24.8	25.4	27.3	27.2	26.9	26.9	27.2	27.2	27.2
Niger	22.6	23.9	20.6	19.4	22.5	27.2	31.0	32.7	26.5	28.1	27.3	26.5	26.0	24.5	24.2
Nigeria	14.4	15.5	16.7	17.5	14.2	13.5	12.7	11.1	9.3	10.7	10.2	10.1	10.4	10.7	10.8
Papua New Guinea	20.0	24.8	18.5	19.7	22.4	27.8	28.3	23.4	21.8	19.2	19.0	18.6	18.3	17.9	17.9
Rwanda	23.9	23.5	25.3	26.2	25.7	26.8	28.3	27.5	26.0	24.5	23.8	23.7	23.2	22.7	22.7
Senegal	26.3	26.6	27.0	28.8	28.5	28.1	29.8	29.9	30.9	28.7	27.7	27.6	27.5	27.6	26.8
Sudan	23.5	20.6	19.6	18.6	13.3	13.3	13.4	12.9	11.1	12.2	12.0	11.7	11.5	11.4	11.4
Tajikistan	27.2	28.6	26.1	27.0	24.6	27.7	28.4	31.8	32.4	30.6	30.1	29.7	29.7	29.8	29.7
Tanzania	18.5	20.2	20.2	19.1	19.8	19.4	17.9	17.8	19.6	21.0	21.2	21.4	21.1	20.5	20.1
Uganda	16.8	15.3	18.8	17.2	16.4	16.5	16.5	17.6	18.0	20.6	20.5	21.1	22.0	20.6	21.0
Uzbekistan	33.0	34.3	33.4	32.4	33.7	33.6	32.8	35.7	33.2	33.1	33.0	32.9	32.9	32.8	31.9
Vietnam	27.1	31.6	30.0	27.0	29.5	30.5	28.5	30.0	29.8	29.0	28.8	28.4	28.1	27.9	27.7
Yemen	41.2	35.2	30.2	29.8	36.2	30.8	27.8	23.5	24.4	24.7	26.0	26.2	25.6	25.3	25.2
Zambia	19.5	17.8	18.1	19.5	21.5	23.8	24.7	28.3	24.0	24.5	24.6	22.9	22.8	21.8	22.0
Zimbabwe	4.3	14.0	22.6	27.8	28.5	29.6	28.1	28.6	35.0	30.7	27.2	26.4	25.9	25.9	23.6
Average	19.7	20.6	20.6	20.8	20.7	21.0	20.5	20.1	19.7	20.3	19.8	19.4	19.3	19.2	19.2
Oil Producers	17.1	17.6	17.9	18.7	16.9	16.6	15.7	13.9	12.7	13.6	13.0	12.7	12.9	13.1	13.3
Asia	19.2	21.0	20.3	20.0	22.2	23.3	22.4	22.3	22.1	22.3	22.4	22.4	22.3	22.2	22.0
Latin America	28.1	29.1	27.4	29.1	30.5	32.8	34.1	34.0	31.8	31.8	31.9	31.8	31.5	31.3	31.0
Sub-Saharan Africa	17.1	18.0	19.0	19.4	18.1	18.2	17.7	16.9	16.7	17.5	16.7	16.2	16.3	16.4	16.6
Others	30.7	29.0	26.9	26.6	26.9	26.0	25.0	24.4	22.4	22.0	21.3	20.6	19.9	19.3	18.7

Source: IMF staff estimates and projections. Projections are based on staff assessment of current policies (see "Fiscal Policy Assumptions" in text).
Note: For country-specific details, see "Data and Conventions" in text, and Table D.

Table A21. Low-Income Developing Countries: General Government Gross Debt, 2008–22
(Percent of GDP)

	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Bangladesh	40.6	39.5	36.6	35.3	33.8	34.5	33.9	33.9	33.1	33.7	33.9	34.0	33.8	33.4	33.0
Benin	25.0	25.6	28.7	29.9	26.7	25.3	30.5	42.4	50.3	55.6	56.1	54.3	51.1	47.2	42.8
Bolivia	37.2	40.0	38.5	35.7	35.7	36.1	37.0	40.6	42.1	42.4	43.3	44.6	46.1	47.2	48.3
Burkina Faso	25.2	28.5	29.3	29.8	28.3	29.3	30.6	32.5	32.5	33.3	33.6	33.9	34.4	35.1	35.8
Cambodia	27.8	29.1	29.4	30.3	32.1	32.1	32.3	32.5	33.0	33.6	34.3	34.9	35.4	35.7	35.2
Cameroon	9.7	10.1	11.5	13.2	15.4	19.0	26.2	27.1	32.8	33.9	35.5	36.2	35.7	35.2	33.8
Chad	19.9	31.6	30.1	30.6	28.8	30.4	39.2	42.8	51.2	50.4	48.5	45.9	42.7	39.8	36.8
Democratic Republic of the Congo	90.5	93.2	31.9	26.3	23.2	19.1	16.8	18.8	21.5	24.3	27.6	29.6	31.4	30.0	29.9
Republic of Congo	79.3	63.3	22.4	32.2	34.2	36.7	45.2	70.6	83.0	73.8	67.5	66.7	61.7	55.1	52.6
Côte d'Ivoire	70.8	64.2	63.0	69.2	45.1	43.3	44.8	47.8	48.8	52.1	52.7	50.4	48.4	46.8	45.4
Ethiopia	41.4	37.6	40.5	44.0	36.9	42.4	46.3	54.6	54.9	56.9	57.0	56.3	55.1	53.6	52.6
Ghana	33.6	36.1	46.3	42.6	47.9	57.2	70.2	71.5	72.4	71.7	66.8	63.9	61.8	58.6	55.5
Guinea	90.2	89.3	99.6	78.3	35.4	46.5	46.1	54.7	56.0	51.6	49.1	45.8	43.1	40.0	37.0
Haiti	38.0	27.8	17.3	11.8	16.3	21.5	26.3	30.2	33.5	33.9	34.6	34.3	34.0	32.8	31.4
Honduras	23.0	27.5	30.7	32.1	35.2	45.7	45.9	46.2	45.4	45.9	46.7	47.5	48.4	47.2	45.4
Kenya	41.5	41.1	44.4	43.0	41.7	44.0	48.6	52.4	54.4	54.7	54.4	52.9	51.1	49.1	47.4
Kyrgyz Republic	48.3	58.1	59.7	49.4	49.0	46.2	52.3	64.9	58.5	63.2	64.0	63.0	61.3	59.3	56.6
Lao P.D.R.	60.3	63.2	62.1	56.9	62.2	61.5	65.3	65.6	67.3	71.6	75.0	77.0	77.9	78.2	78.2
Madagascar	31.5	33.7	31.7	32.2	33.0	33.9	34.7	35.5	42.3	43.2	44.0	44.8	45.5	45.9	46.1
Mali	20.3	21.9	25.3	24.0	25.4	26.4	27.3	30.9	30.5	31.2	32.4	33.9	35.5	37.1	38.5
Moldova	19.3	29.1	26.9	24.1	24.4	23.7	30.1	38.5	38.1	40.2	41.5	43.2	43.4	44.3	45.6
Mongolia	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Mozambique	36.3	41.9	43.3	38.0	40.1	53.1	62.4	88.1	115.2	106.9	103.6	99.9	95.4	90.1	79.0
Myanmar	53.1	55.1	49.6	46.1	40.7	33.2	29.9	34.9	35.8	36.2	36.3	36.6	36.8	37.0	37.3
Nepal	41.9	38.5	34.0	31.7	33.9	31.9	28.3	25.2	27.3	25.7	23.2	22.8	22.5	22.3	21.6
Nicaragua	26.5	29.4	30.9	29.3	28.5	29.5	29.3	29.4	31.1	32.0	32.7	33.0	33.3	33.8	34.6
Niger	21.1	27.7	24.3	27.8	26.9	26.3	31.9	41.3	45.9	51.5	53.2	54.0	51.8	49.3	46.7
Nigeria	7.3	8.6	9.6	12.6	12.5	12.6	10.6	12.1	18.6	23.3	24.1	24.3	24.6	25.0	24.9
Papua New Guinea	21.8	21.8	17.3	16.3	19.1	25.0	28.1	30.4	33.5	33.1	33.0	32.3	31.4	29.7	28.1
Rwanda	19.5	19.5	20.0	19.9	20.0	26.7	29.1	33.4	37.6	41.4	43.5	44.3	43.8	43.0	41.8
Senegal	23.9	34.2	35.5	40.7	42.8	46.9	54.2	56.9	57.4	57.1	55.6	54.2	52.9	51.8	50.9
Sudan	68.8	72.1	73.5	71.0	94.2	89.9	77.3	72.9	64.2	55.2	50.1	46.3	43.2	41.0	39.2
Tajikistan	30.0	36.2	36.3	35.5	32.4	29.1	27.3	33.9	35.3	48.5	51.7	50.7	50.1	49.6	48.2
Tanzania	21.5	24.4	27.3	27.8	29.2	30.9	33.8	36.9	39.0	40.3	41.2	42.1	42.8	43.1	43.1
Uganda	20.3	19.2	22.4	23.4	24.3	27.2	30.1	33.2	36.9	40.1	41.6	42.3	42.8	43.5	42.9
Uzbekistan	12.7	11.0	10.0	9.1	8.6	7.9	7.1	10.3	11.6	13.2	12.2	10.9	10.3	9.8	9.3
Vietnam	39.4	45.2	48.1	45.8	47.9	51.8	55.1	58.3	62.4	63.4	65.1	66.2	66.8	67.2	67.2
Yemen	36.4	49.8	42.4	45.7	47.3	48.2	48.7	66.7	85.4	77.4	59.0	51.9	46.5	42.6	39.8
Zambia	19.2	20.5	18.9	20.8	24.9	25.9	33.3	57.5	53.1	57.7	61.5	63.3	62.7	62.4	61.3
Zimbabwe	68.9	68.3	63.2	43.7	50.1	54.6	55.3	58.9	75.3	75.7	79.2	80.3	81.1	81.5	82.3
Average	29.8	32.3	30.8	30.7	31.0	31.8	32.0	36.1	40.4	41.9	41.6	41.0	40.5	40.2	39.7
Oil Producers	15.0	16.5	15.2	18.1	17.0	17.5	16.5	19.4	26.5	29.9	29.3	28.6	28.3	28.3	27.9
Asia	40.9	43.0	41.9	40.0	40.0	40.9	41.5	43.2	44.7	45.2	45.8	46.2	46.3	46.2	45.9
Latin America	31.0	32.5	32.0	30.5	32.0	35.8	36.9	39.1	40.2	40.8	41.6	42.5	43.5	43.8	44.0
Sub-Saharan Africa	22.4	24.2	22.3	23.6	22.9	24.3	24.9	29.4	36.0	39.2	39.1	38.3	37.9	37.6	37.2
Others	44.4	47.8	47.2	44.7	51.3	48.5	44.2	49.0	48.2	45.0	41.0	38.3	36.2	34.8	33.6

Source: IMF staff estimates and projections. Projections are based on staff assessment of current policies (see "Fiscal Policy Assumptions" in text).
Note: For country-specific details, see "Data and Conventions" in text, and Table D.

Table A22. Low-Income Developing Countries: General Government Net Debt, 2008–22

(Percent of GDP)

	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Bangladesh	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Benin	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Bolivia	20.6	23.1	17.7	14.3	11.6	12.1	16.7	24.0	29.4	32.2	34.9	37.8	40.7	42.5	44.0
Burkina Faso	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Cambodia	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Cameroon	9.7	10.1	11.5	13.2	15.4	19.0	26.2	27.1	32.8	33.9	35.5	36.2	35.7	35.2	33.8
Chad	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Democratic Republic of the Congo	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Republic of Congo	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Côte d'Ivoire	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Ethiopia	34.7	32.0	35.5	39.5	32.2	37.3	42.2	49.1	49.5	51.8	54.3	54.4	53.6	52.7	51.7
Ghana	30.1	32.6	43.0	38.8	45.8	53.2	63.4	66.1	65.5	66.8	62.3	59.6	57.7	54.8	52.1
Guinea	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Haiti	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Honduras	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Kenya	37.1	36.9	40.2	39.1	37.9	40.1	44.5	47.2	49.8	52.1	52.4	51.0	49.3	47.2	45.5
Kyrgyz Republic	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Lao P.D.R.	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Madagascar	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Mali	14.6	12.4	16.9	17.1	21.2	20.5	19.9	24.9	27.3	29.9	31.3	32.1	33.2	34.1	35.1
Moldova	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Mongolia	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Mozambique	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Myanmar	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Nepal	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Nicaragua	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Niger	1.6	0.9	4.3	2.6	2.2	2.9	3.6	5.0	4.1	3.7	3.3	3.0	2.7	2.6	2.6
Nigeria	0.5	6.0	8.9	11.2	10.0	11.9	9.7	11.3	17.3	22.1	23.0	23.4	23.8	24.2	24.3
Papua New Guinea	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Rwanda	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Senegal	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Sudan	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Tajikistan	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Tanzania	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Uganda	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Uzbekistan	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Vietnam	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Yemen	31.4	43.6	38.3	42.3	45.3	46.7	47.8	65.6	84.2	76.5	58.4	51.4	46.1	42.3	39.5
Zambia	16.3	16.5	15.9	16.4	19.5	24.0	28.9	51.3	44.8	51.6	57.9	61.6	62.7	62.4	61.2
Zimbabwe	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Average	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Oil Producers	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Asia	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Latin America	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Sub-Saharan Africa	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Others	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .

Source: IMF staff estimates and projections. Projections are based on staff assessment of current policies (see "Fiscal Policy Assumptions" in text).
Note: For country-specific details, see "Data and Conventions" in text, and Table D.

Table A23. Selected Advanced Economies: Gross Financing Needs, 2017–19

(Percent of GDP)

	2017			2018			2019		
	Maturing Debt	Budget Deficit	Total Financing Need	Maturing Debt[1]	Budget Deficit	Total Financing Need	Maturing Debt[1]	Budget Deficit	Total Financing Need
Australia	1.0	2.2	3.2	2.3	1.3	3.6	2.5	0.4	3.0
Austria	3.9	1.0	4.9	7.0	0.7	7.7	8.2	0.4	8.6
Belgium	15.4	2.1	17.5	14.4	2.2	16.6	12.9	2.3	15.2
Canada	8.2	2.4	10.6	10.7	2.2	12.9	8.8	1.9	10.7
Czech Republic	5.3	0.2	5.5	5.7	0.0	5.7	5.4	0.0	5.4
Denmark	3.6	1.1	4.7	3.2	0.5	3.7	4.2	0.1	4.3
Finland	5.7	2.1	7.8	3.7	1.5	5.3	3.7	0.9	4.7
France	9.9	3.2	13.2	11.6	2.8	14.4	11.9	2.2	14.1
Germany	3.4	–0.6	2.7	5.3	–0.6	4.7	3.4	–0.8	2.7
Iceland	0.7	–0.6	0.2	6.2	–1.1	5.0	2.9	–1.5	1.5
Ireland	5.3	0.5	5.8	5.9	0.3	6.2	8.0	0.0	7.9
Italy	14.1	2.4	16.5	15.8	1.4	17.3	14.8	0.7	15.5
Japan	36.8	4.0	40.8	39.5	3.3	42.8	34.0	2.8	36.8
Korea	2.3	–0.7	1.6	3.6	–1.1	2.4	2.4	–1.5	0.9
Lithuania	5.1	0.6	5.6	7.7	0.7	8.4	7.9	0.5	8.4
Malta	5.8	0.6	6.4	5.7	0.6	6.2	5.8	0.6	6.3
Netherlands	5.6	0.0	5.6	7.8	–0.1	7.7	6.1	–0.2	5.9
New Zealand	4.0	–0.6	3.4	1.3	–1.5	–0.2	5.0	–2.1	2.9
Portugal	10.1	1.9	12.0	10.7	2.2	12.9	14.4	2.2	16.6
Slovak Republic	7.5	1.8	9.2	4.1	1.1	5.3	2.3	0.7	3.0
Slovenia	6.5	1.5	8.1	6.1	1.6	7.8	6.8	1.8	8.6
Spain[2]	14.5	3.3	17.8	14.6	2.7	17.3	14.5	2.4	16.9
Sweden	4.3	0.3	4.5	3.9	0.2	4.1	4.7	0.0	4.7
Switzerland	2.0	0.1	2.1	2.3	0.0	2.3	2.0	0.0	1.9
United Kingdom	6.3	2.8	9.2	6.8	2.1	8.9	8.3	1.2	9.5
United States[3]	15.3	4.0	19.3	16.6	4.5	21.1	14.8	5.3	20.1
Average	13.8	2.9	16.6	15.2	2.8	18.0	13.6	2.9	16.5

Sources: Bloomberg L.P.; and IMF staff estimates and projections.

Note: For most countries, data on maturing debt refer to central government securities. For some countries, general government deficits are reported on an accrual basis. For country-specific details, see "Data and Conventions" and Table B in the text.

[1] Assumes that short-term debt outstanding in 2017 and 2018 will be refinanced with new short-term debt that will mature in 2018 and 2019, respectively. Countries that are projected to have budget deficits in 2017 or 2018 are assumed to issue new debt based on the maturity structure of debt outstanding at the end of 2016.

[2] Data refer to the general government on a consolidated basis.

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

Table A24. Selected Emerging Market and Middle-Income Economies: Gross Financing Needs, 2017–18

(Percent of GDP)

	2017			2018		
	Maturing Debt	Budget Deficit	Total Financing Need	Maturing Debt	Budget Deficit	Total Financing Need
Argentina	4.4	6.1	10.5	3.9	5.1	9.0
Brazil	8.3	9.1	17.4	13.0	7.5	20.5
Chile	1.1	3.2	4.2	1.4	2.6	3.9
Colombia	2.3	2.8	5.1	1.9	2.2	4.2
Croatia	13.6	1.9	15.4	10.2	1.8	12.0
Dominican Republic	3.7	3.9	7.6	4.1	3.8	7.8
Ecuador	5.1	2.1	7.1	5.3	0.8	6.1
Egypt	33.9	10.9	44.8	37.2	9.8	47.0
Hungary	13.7	2.6	16.3	17.2	2.5	19.8
India	4.1	6.4	10.5	3.8	6.3	10.0
Indonesia	1.9	2.4	4.3	2.3	2.5	4.8
Malaysia	7.5	3.0	10.5	7.7	2.7	10.4
Mexico	5.6	2.9	8.5	4.9	2.5	7.4
Morocco	7.3	3.5	10.9	7.5	2.7	10.1
Pakistan	27.7	4.3	32.0	25.9	3.8	29.7
Peru	2.4	2.4	4.8	1.7	2.2	3.9
Philippines	6.9	1.0	7.9	8.2	1.2	9.4
Poland	6.5	2.9	9.5	6.0	2.6	8.6
Romania	4.6	3.7	8.3	4.7	3.9	8.7
Russia	1.6	2.6	4.2	0.8	1.9	2.7
South Africa	8.4	3.5	11.9	8.6	3.4	12.0
Sri Lanka	11.7	5.2	17.0	11.9	4.6	16.6
Thailand	5.7	1.6	7.3	5.6	1.8	7.5
Turkey	5.1	3.0	8.1	5.7	2.0	7.8
Ukraine	4.2	3.0	7.2	6.8	2.5	9.3
Uruguay	8.9	3.4	12.3	9.3	2.8	12.1
Average	6.0	4.7	10.7	6.7	4.1	10.8

Source: IMF staff estimates and projections.

Note: Data in the table refer to general government data. For some countries, general government deficits are reported on an accrual basis. For country-specific details, see "Data and Conventions" and Table C in the text.

Table A25. Advanced Economies: Structural Fiscal Indicators

(Percent of GDP, except where indicated otherwise)

	Pension Spending Change, 2015–30[1]	Net Present Value of Pension Spending Change, 2015–50[1,2]	Health Care Spending Change, 2015–30	Net Present Value of Health Care Spending Change, 2015–50[2]	Gross Financing Need, 2017[3]	Average Term to Maturity, 2017 (Years)[4]	Debt to Average Maturity, 2017	Projected Interest Rate–Growth Differential, 2017–22 (Percent)	Precrisis Overall Balance, 2000–07	Projected Overall Balance, 2017–22	Nonresident Holding of General Government Debt, 2016 (Percent of total)[5]
Australia	0.8	21.7	1.6	52.8	3.2	7.4	5.6	–1.3	1.1	–0.6	42.0
Austria	0.5	13.7	1.8	63.6	4.9	8.5	9.9	–0.9	–2.2	–0.5	85.2
Belgium	0.5	18.0	2.2	81.3	17.5	9.0	11.7	–0.9	–0.5	–2.3	66.7
Canada	1.0	24.0	1.1	40.4	10.6	5.5	16.8	–0.4	1.1	–1.8	24.0
Cyprus	0.4	0.7	. . .	. . .	6.2	4.8	22.5	–1.1	–2.3	–0.1	75.0
Czech Republic	0.0	1.9	0.7	27.5	5.5	4.5	8.3	–1.6	–3.8	–0.1	45.8
Denmark	–1.2	–36.9	1.4	44.9	4.7	7.6	5.2	–1.0	2.5	–0.1	37.6
Estonia	–0.5	–13.4	0.3	13.8	. . .	. . .	. . .	–4.8	1.2	–0.2	81.2
Finland	1.6	21.8	1.4	43.9	7.8	6.3	10.1	–1.6	4.0	–1.0	81.2
France	–0.1	–16.8	0.8	30.6	13.2	7.3	13.3	–1.2	–2.7	–1.9	65.2
Germany	1.4	40.0	0.9	37.5	2.7	6.1	11.0	–1.4	–2.4	0.9	63.4
Hong Kong SAR	1.4	36.6	. . .	. . .	. . .	. . .	. . .	0.8	0.0	1.2	. . .
Iceland	0.4	7.5	2.6	89.1	0.2	13.6	3.9	–0.2	1.2	1.0	34.5
Ireland	1.3	37.7	0.8	29.5	5.8	11.1	6.9	–1.6	1.5	0.2	68.6
Israel[6]	0.4	13.0	0.3	14.0	. . .	7.4	10.5	0.9	–4.4	–3.6	13.7
Italy	0.1	–1.8	1.1	40.0	16.5	6.7	19.7	0.8	–3.0	–0.8	38.8
Japan	–0.7	–7.7	2.0	63.3	40.8	7.6	31.7	–1.1	–5.6	–2.7	10.1
Korea	2.0	72.5	2.4	82.5	1.6	6.2	6.2	–1.3	2.0	1.4	12.4
Latvia	–1.4	–39.6	0.7	23.9	. . .	7.8	4.4	–2.5	–1.3	–0.5	86.2
Lithuania	1.5	33.6	0.8	30.4	5.6	5.3	7.5	–0.1	–1.8	–0.5	88.2
Luxembourg	2.2	59.2	1.0	38.9	. . .	7.3	3.1	–3.3	2.4	0.1	37.5
Malta	0.0	6.4	. . .	. . .	6.4	9.2	6.5	–1.5	–4.9	–0.6	11.0
Netherlands	0.9	28.8	3.8	123.5	5.6	6.6	9.5	–1.2	–0.6	0.2	55.1
New Zealand	2.5	69.4	2.3	76.6	3.4	6.9	4.2	1.1	2.9	2.1	79.7
Norway	1.1	28.1	1.6	54.4	. . .	4.7	7.0	–1.5	13.2	3.8	54.9
Portugal	1.0	22.7	2.5	83.4	12.0	6.5	20.1	0.7	–4.4	–2.3	64.3
Singapore[7]	0.7	21.8	. . .	. . .	. . .	3.7	30.1	–3.6	5.6	1.7	. . .
Slovak Republic	–0.5	–1.0	0.8	30.3	9.2	7.3	7.1	–2.1	–4.9	–0.9	63.2
Slovenia	0.6	36.9	0.9	35.2	8.1	7.9	10.0	–0.5	–1.0	–1.9	73.9
Spain	–0.5	–1.1	2.1	72.7	17.8	6.7	14.8	–0.7	0.4	–2.5	50.6
Sweden	–0.8	–25.4	0.4	16.4	4.5	4.9	8.6	–2.1	1.2	0.1	41.7
Switzerland	0.5	15.2	3.2	107.4	2.1	9.8	4.6	–1.2	0.3	0.1	11.4
United Kingdom	0.3	9.1	1.6	55.3	9.2	14.9	6.0	–0.8	–1.8	–1.4	33.9
United States	1.5	35.6	3.9	118.3	19.3	5.8	18.4	–1.0	–3.1	–5.1	31.5
Average	0.9	22.7	2.6	82.3	16.7	6.9	16.4	–1.0	–2.2	–2.7	37.4
G7	0.9	22.9	2.7	86.4	19.0	6.9	18.2	–0.9	–3.0	–3.4	35.0
G20 Advanced	1.0	24.8	2.7	85.0	17.8	6.9	17.4	–0.9	–2.7	–3.1	34.4

Sources: Bloomberg L.P.; Joint External Debt Hub, Quarterly External Debt Statistics; national authorities; and IMF staff estimates and projections.

Note: All country averages are weighted by nominal GDP converted to U.S. dollars at average market exchange rates in the years indicated and based on data availability.

[1] Projections rely on authorities' estimates when these are available. For the European Union countries, pension projections are based on *The 2015 Ageing Report* of the European Commission. When authorities' estimates are not available, IMF staff pension projections use the methodology described in B. Clements, F. Eich, and S. Gupta, *Equitable and Sustainable Pensions: Challenges and Experience* (Washington, DC: IMF, 2014). For health care spending projections, refer to note 7 of Annex Table 1.1.1.

[2] For net present value calculations, a discount rate of 1 percent a year in excess of GDP growth is used for each country.

[3] Gross financing need is defined as the projected overall deficit and maturing government debt in 2017. Data are from Bloomberg L.P. and IMF staff projections.

[4] For most countries, average term to maturity data refer to central government securities; the source is Bloomberg L.P.

[5] Nonresident holding of general government debt data are for the fourth quarter of 2016 or latest available from the Joint External Debt Hub (JEDH), Quarterly External Debt Statistics, which include marketable and nonmarketable debt. For some countries, tradable instruments in the JEDH are reported at market value. External debt in U.S. dollars is converted to local currency, then taken as a percentage of 2016 gross general government debt.

[6] Average term to maturity for Israel refers to 2015 figure.

[7] Singapore's general government debt is covered by financial assets and issued to develop the bond market.

Table A26. Emerging Market and Middle-Income Economies: Structural Fiscal Indicators

(Percent of GDP, except where indicated otherwise)

	Pension Spending Change, 2015–30[1]	Net Present Value of Pension Spending Change, 2015–50[1,2]	Health Care Spending Change, 2015–30	Net Present Value of Health Care Spending Change, 2015–50[2]	Gross Financing Need, 2017[3]	Average Term to Maturity, 2017 (Years)[4]	Debt to Average Maturity, 2017	Projected Interest Rate–Growth Differential, 2017–22 (Percent)	Precrisis Overall Balance, 2000–07	Projected Overall Balance, 2017–22	Nonresident Holding of General Government Debt, 2016 (Percent of total)[5]
Algeria	. . .	0.0	1.4	51.8	. . .	. . .	. . .	–3.8	7.4	–0.6	2.2
Angola	. . .	0.0	0.4	13.0	. . .	. . .	. . .	–8.1	3.1	–3.5	. . .
Argentina	1.0	44.7	1.3	49.7	11.4	9.1	5.6	–12.6	–0.3	–4.2	36.1
Azerbaijan	4.9	134.2	0.4	14.9	. . .	. . .	. . .	–5.3	0.2	0.4	. . .
Belarus	2.3	64.9	0.9	31.2	. . .	0.6	87.1	–2.4	–2.5	–6.3	53.3
Brazil[6]	3.4	135.9	1.7	61.8	17.4	6.8	11.5	2.4	–3.6	–6.3	8.7
Chile	–0.9	–20.4	1.4	50.0	4.2	8.5	2.5	–1.8	2.4	–1.9	21.9
China	2.7	83.7	1.3	47.1	. . .	. . .	. . .	–5.6	–1.8	–3.4	. . .
Colombia	–0.7	–26.7	2.1	74.9	5.1	9.0	5.3	0.9	–1.9	–1.6	32.7
Croatia	–1.2	–48.9	1.5	51.9	15.4	4.5	18.8	0.3	–4.3	–1.7	39.4
Dominican Republic	0.1	5.4	0.8	31.0	7.6	8.4	4.1	0.9	–1.9	–3.9	67.4
Ecuador	1.0	39.4	0.9	33.5	7.1	5.8	5.1	6.9	1.2	–0.4	77.3
Egypt	2.6	50.8	0.4	15.9	44.8	2.7	35.4	–7.0	–8.5	–7.0	7.6
Hungary	–1.9	–35.8	1.2	42.7	16.3	3.8	19.3	–1.5	–6.5	–2.5	50.6
India	0.0	–5.5	0.4	14.3	10.5	9.7	7.2	–4.1	–8.6	–5.9	6.0
Indonesia	0.2	6.8	0.4	13.2	4.3	8.5	3.3	–3.1	–0.7	–2.5	59.0
Iran	2.0	97.2	1.1	41.6	. . .	. . .	. . .	–5.1	3.2	0.0	. . .
Kazakhstan	1.0	27.9	0.6	19.9	. . .	7.4	2.8	–4.5	4.7	–2.1	45.0
Kuwait	4.1	169.8	0.7	28.7	. . .	6.6	2.8	–3.1	29.0	0.1	. . .
Malaysia	0.3	13.1	0.8	28.3	10.5	6.3	9.0	–2.8	–3.8	–2.2	34.4
Mexico	1.2	10.9	1.1	41.0	8.5	9.3	6.3	0.4	–2.0	–2.6	31.0
Morocco	. . .	0.0	0.7	25.6	10.9	6.2	10.4	–1.7	–3.3	–2.4	22.4
Oman	0.5	25.6	0.8	33.8	. . .	8.8	3.9	–2.2	10.0	–7.3	. . .
Pakistan	0.1	6.2	0.2	8.0	32.0	2.0	33.1	–3.0	–2.9	–4.0	. . .
Peru	0.7	29.5	0.9	35.3	4.8	6.2	4.0	–1.0	–0.4	–1.7	42.2
Philippines	0.2	6.1	0.4	15.7	7.9	9.7	3.5	–4.3	–2.4	–1.4	31.2
Poland	–0.8	–23.9	1.6	56.3	9.5	5.0	10.8	–2.1	–4.1	–2.5	52.7
Qatar	. . .	0.0	0.7	27.4	. . .	5.1	9.3	–4.1	8.9	0.0	. . .
Romania	–0.1	1.5	1.1	38.9	8.3	5.1	7.8	–2.6	–2.6	–3.5	47.2
Russia	1.8	58.3	0.9	30.5	4.2	7.0	2.4	0.0	4.2	–0.7	16.5
Saudi Arabia	2.5	87.5	0.8	30.2	. . .	12.1	1.0	0.3	6.9	–4.1	. . .
South Africa	0.5	16.6	1.0	37.2	11.9	13.0	3.9	0.1	–0.6	–3.1	32.3
Sri Lanka	0.7	24.4	0.5	18.7	17.0	5.7	13.7	–2.4	–6.9	–4.1	39.8
Thailand	2.7	82.4	1.4	48.4	7.3	6.0	7.0	–1.5	–0.4	–1.8	12.1
Turkey	–1.6	–36.4	1.6	59.5	8.1	6.4	4.6	–1.5	–6.5	–2.0	35.3
Ukraine	3.5	113.6	0.9	31.5	7.2	6.0	13.5	–5.2	–2.3	–2.3	48.3
United Arab Emirates	0.7	26.7	0.9	35.4	. . .	. . .	. . .	–4.6	13.7	–0.5	. . .
Uruguay	0.4	27.9	1.3	47.9	12.3	12.9	4.7	–3.7	–2.1	–2.7	43.6
Venezuela	. . .	. . .	. . .	. . .	. . .	9.3	3.0	–95.2	0.1	–16.5	. . .
Average	1.7	56.1	1.1	40.4	11.0	7.0	7.8	–4.1	–1.1	–3.5	25.0
G20 Emerging	2.0	63.8	1.1	41.5	10.0	7.2	6.9	–3.8	–1.9	–3.7	21.3

Sources: Bloomberg L.P.; Joint External Debt Hub, Quarterly External Debt Statistics; national authorities; and IMF staff estimates and projections.

Note: All country averages are weighted by nominal GDP converted to U.S. dollars at average market exchange rates in the years indicated and based on data availability.

[1] Projections rely on authorities' estimates when these are available. For the European Union countries, pension projections are based on *The 2015 Ageing Report* of the European Commission. When authorities' estimates are not available, IMF staff pension projections use the methodology described in B. Clements, F. Eich, and S. Gupta, *Equitable and Sustainable Pensions: Challenges and Experience* (Washington, DC: IMF, 2014). For health care spending projections, refer to note 7 of Annex Table 1.1.2.

[2] For net present value calculations, a discount rate of 1 percent a year in excess of GDP growth is used for each country.

[3] Gross financing need is defined as the projected overall balance and maturing government debt in 2017. Data are from IMF staff projections.

[4] Average term to maturity data refer to government securities; the source is Bloomberg L.P.

[5] Nonresident holding of general government debt data are for the fourth quarter of 2016 or latest available from the Joint External Debt Hub (JEDH), Quarterly External Debt Statistics, which include marketable and nonmarketable debt. For some countries, tradable instruments in the JEDH are reported at market value. External debt in U.S. dollars is converted to local currency, then taken as a percentage of 2016 gross general government debt.

[6] The IMF staff projects an increase in pension spending in Brazil equivalent to 5.9 percent of GDP by 2030. See "Fiscal Challenges of an Aging Population in Brazil," in *Brazil: Selected Issues*, IMF Country Report 16/349 (Washington, DC: IMF, 2016).

Table A27. Low-Income Developing Countries: Structural Fiscal Indicators

(Percent of GDP, except where indicated otherwise)

	Pension Spending Change, 2015–30[1]	Net Present Value of Pension Spending Change, 2015–50[1,2]	Health Care Spending Change, 2015–30	Net Present Value of Health Care Spending Change, 2015–50[2]	Average Term to Maturity, 2017 (Years)[3]	Debt to Average Maturity, 2017	Projected Interest Rate–Growth Differential, 2017–22 (Percent)	Precrisis Overall Balance, 2000–07	Projected Overall Balance, 2017–22	Nonresident Holding of General Government Debt, 2016 (Percent of total)[4]
Bangladesh	0.4	17.9	0.4	15.5	4.9	6.8	–5.3	–2.8	–4.0	39.0
Benin	0.0	1.9	0.4	16.3	3.8	13.3	–4.5	–2.3	–2.4	. . .
Bolivia	0.3	22.9	1.0	37.9	15.6	2.7	–5.1	–3.6	–5.3	. . .
Burkina Faso	–0.1	1.9	0.6	21.9	2.3	14.2	–5.7	–1.8	–3.5	71.5
Cambodia	0.3	12.1	0.4	14.7	. . .	. . .	–8.2	–3.4	–3.9	. . .
Cameroon	–0.1	–0.1	0.3	11.5	6.5	5.1	–3.1	5.7	–2.1	. . .
Chad	0.0	–0.2	0.2	9.2	. . .	. . .	–2.4	–2.4	0.4	. . .
Democratic Republic of the Congo	0.0	–0.3	0.5	17.2	. . .	. . .	–8.7	–1.1	0.1	. . .
Republic of Congo	0.0	1.1	0.4	15.0	. . .	. . .	–5.1	6.6	2.2	. . .
Côte d'Ivoire	0.0	–0.2	. . .	0.0	. . .	. . .	–4.2	–1.0	–3.3	. . .
Ethiopia	0.0	0.6	0.4	14.9	. . .	. . .	–12.3	–4.8	–3.0	. . .
Ghana	0.0	3.7	0.6	21.5	3.1	23.3	–5.2	–4.6	–3.4	. . .
Guinea	0.0	0.0	0.3	11.3	. . .	. . .	–7.3	–3.4	–1.0	. . .
Haiti	. . .	0.0	0.4	13.7	. . .	. . .	–6.6	–1.9	–1.7	. . .
Honduras	0.0	2.3	1.4	52.2	3.8	12.0	–1.4	–3.3	–1.4	. . .
Kenya	0.1	8.2	0.4	14.4	4.9	11.0	–4.7	–1.4	–4.4	. . .
Kyrgyz Republic	0.7	22.1	1.1	40.6	. . .	. . .	–6.1	–5.2	–2.0	. . .
Lao P.D.R.	0.0	0.9	0.4	14.3	. . .	. . .	–6.7	–4.0	–5.2	. . .
Madagascar	0.0	1.4	0.5	18.4	. . .	. . .	–7.5	–3.4	–4.2	65.3
Mali	–0.3	–3.1	0.3	13.1	2.4	12.8	–3.6	1.3	–3.2	. . .
Moldova	1.1	49.8	1.7	61.3	0.2	173.8	–5.2	–0.4	–3.0	53.6
Mongolia	6.1	218.4	1.4	51.0	. . .	. . .	0.0	–0.8	–5.2	. . .
Mozambique	–0.1	–1.5	0.4	15.9	4.5	25.6	–8.9	–3.3	–4.4	. . .
Myanmar	. . .	0.0	. . .	. . .	. . .	. . .	–6.6	–4.1	–4.5	. . .
Nepal	0.0	3.4	0.6	22.2	. . .	. . .	–8.3	–1.0	–0.7	. . .
Nicaragua	0.6	26.5	1.6	61.1	1.4	21.9	–7.8	–1.3	–1.7	80.5
Niger	–0.1	–1.6	0.4	13.4	. . .	. . .	–5.5	2.6	–3.7	. . .
Nigeria	–0.1	–1.3	0.3	11.2	4.5	4.1	–7.8	2.3	–4.1	. . .
Papua New Guinea	0.0	0.5	1.0	35.9	. . .	. . .	–2.3	1.8	–1.7	. . .
Rwanda	0.1	5.6	1.5	56.1	. . .	. . .	–8.6	–0.5	–1.3	. . .
Senegal	–0.1	3.3	0.5	18.7	1.3	45.6	–3.7	–1.2	–3.2	. . .
Sudan	0.0	0.9	0.4	12.9	. . .	. . .	–14.3	–1.1	–2.9	. . .
Tajikistan	1.0	29.6	0.5	16.5	. . .	. . .	–6.8	–2.8	–1.7	. . .
Tanzania	–0.1	1.7	0.5	17.2	3.4	11.4	–6.3	–1.8	–3.9	. . .
Uganda	–0.1	–0.6	0.3	11.9	3.2	11.3	–3.6	–1.0	–4.1	. . .
Uzbekistan	2.5	96.0	0.9	34.0	. . .	. . .	–13.3	0.6	0.2	. . .
Vietnam	2.2	82.2	1.0	38.6	5.6	11.1	–6.1	–1.7	–5.2	. . .
Yemen	–0.4	5.7	0.3	12.4	. . .	. . .	–7.1	–0.7	–2.2	. . .
Zambia	2.9	90.3	0.7	26.1	5.2	10.2	–4.8	–0.4	–5.3	. . .
Zimbabwe	. . .	. . .	. . .	. . .	. . .	. . .	–2.5	. . .	–5.1	. . .
Average	0.4	17.7	0.5	18.8	2.0	5.1	–7.5	–0.2	–3.6	0.0

Sources: Bloomberg L.P.; Joint External Debt Hub, Quarterly External Debt Statistics; national authorities; and IMF staff estimates and projections.

Note: All country averages are weighted by nominal GDP converted to U.S. dollars at average market exchange rates in the years indicated and based on data availability.

[1] Pension projections are based on B. Clements, F. Eich, and S. Gupta, *Equitable and Sustainable Pensions: Challenges and Experience* (Washington, DC: IMF, 2014). Projections rely on authorities' estimates when these are available. For health care spending projections, refer to note 7 of Annex Table 1.1.2.

[2] For net present value calculations, a discount rate of 1 percent a year in excess of GDP growth is used for each country.

[3] Average term to maturity data refer to government securities; the source is Bloomberg L.P.

[4] Nonresident holding of general government debt data are for the fourth quarter of 2016 or latest available from the Joint External Debt Hub (JEDH), Quarterly External Debt Statistics, which include marketable and nonmarketable debt. For some countries, tradable instruments in the JEDH are reported at market value. External debt in U.S. dollars is converted to local currency, then taken as a percentage of 2016 gross general government debt.

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IMF EXECUTIVE BOARD DISCUSSION OF THE OUTLOOK, APRIL 2017

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 4, 2017.*

Executive Directors broadly shared the assessment of global economic prospects and risks. They welcomed the positive developments since the second half of 2016: global economic activity has accelerated, headline inflation has generally risen following a rebound in commodity prices, and financial market sentiment has strengthened. Global growth is expected to pick up further in 2017–18, reflecting a stronger-than-expected recovery in many advanced economies and projected higher growth in many emerging market and developing economies, including from improved conditions in several commodity exporters. However, growth momentum is still modest and downside risks continue to dominate, with heightened policy uncertainty and persistent structural headwinds. Directors underscored the importance of using all policy tools at the national level and strengthening multilateral cooperative efforts to sustain a stronger recovery, ward off downside risks, safeguard hard-won gains in global integration and financial stability, and promote inclusion.

Directors noted that the balance of risks remain tilted to the downside, especially over the medium term. In advanced economies, while the ongoing cyclical recovery is encouraging, output remains below potential and unemployment above precrisis levels in many countries. Population aging, low labor productivity growth, and crisis legacies are weighing on growth potential. In emerging market and developing economies, medium-term prospects are closely linked to developments in commodity markets, global financial conditions, the ongoing economic transition in China, and progress in resolving domestic imbalances and structural challenges in some economies.

Directors observed that elevated political and policy uncertainties in many parts of the world pose difficult challenges to the economic outlook and financial stability. They cited, among other things, faster-than-expected normalization of interest rates; a rollback of financial regulation, which could spur excessive risk taking; and a potential rise in protectionist and inward-looking policies.

Against this backdrop, Directors emphasized the need for comprehensive, consistent, and well-communicated policy actions to achieve strong, sustainable, and balanced growth; enhance resilience; and ensure that the benefits of economic integration and technological progress are shared more widely. Policy priorities vary across individual economies depending on cyclical positions, structural challenges, and vulnerabilities facing them. Multilateral cooperation is as essential as ever to complement national efforts as well as tackle common challenges, including preserving a rules-based, open trading system; ensuring a level playing field in international taxation; and strengthening the global financial safety net. Multilateral efforts are also needed to address the withdrawal of correspondent banking relationships and the refugee crisis. Both deficit and surplus countries should implement appropriate policies to reduce persistent global excess imbalances.

Directors agreed that a common challenge across advanced economies is to boost potential output, through fiscal and structural reforms that target country-specific priorities, including to upgrade public infrastructure where needed; improve labor force participation and skills; eliminate product market distortions; and reform corporate income taxation to promote private investment, research and development, and resource reallocation to productive areas. Resisting a retreat from global economic integration must also be part of the agenda to secure strong, sustainable global growth.

Directors saw a need to tackle the adverse side effects of technological change and trade integration with appropriate policies. In this context, they noted the staff's finding that technological progress appears to be the main factor explaining the decline

in labor income share in advanced economies, while trade integration—which has contributed to significant improvements in living standards and poverty reduction around the world—seems to be the dominant driver in emerging market economies. Directors stressed that the design of inclusive fiscal policies, such as transfer and tax instruments, should strike the right balance between promoting redistribution and maintaining incentives to invest and work. They also emphasized the importance of improving education, training, health services, social insurance, and pension systems. In some cases, active labor market policies could be an effective tool in the short term.

Directors agreed that strengthening the recovery remains a priority in many economies, requiring support from both monetary and fiscal policies, combined with growth-enhancing structural reforms. Where core inflation is persistently low and/or the risk of deflation remains tangible, unconventional monetary policies remain appropriate to support economic activity and lift inflation expectations, while their potential negative consequences on financial stability should be closely monitored. Fiscal policy can play an important role, particularly when monetary policy has become less effective. Directors agreed that, as a general principle, fiscal policy should be countercyclical, be growth friendly, and promote inclusion, anchored in a credible medium-term framework that ensures debt sustainability. Depending on country-specific circumstances in terms of economic slack, fiscal space, and debt levels, policy choices range from discretionary fiscal support to budget recomposition and rebuilding of fiscal buffers.

Directors concurred that, while emerging market and developing economies can retain influence over their domestic financial conditions, many could face elevated risks that arise from external negative spillovers, including a sudden reversal of market sentiment and sharp volatility in capital flows and exchange rates. Directors urged policymakers in these countries to be prepared for less favorable external conditions. Specifically, it will be critical to maintain sound policies and strong frameworks, including exchange rate flexibility and a robust macroprudential toolkit, while capital flow management measures may be used temporarily as warranted, though not as a substitute for warranted macroeconomic adjustment. For many countries, priorities include proactively monitoring vulnerabilities and addressing weaknesses in the corporate and banking sectors, improving corporate governance, and reducing infrastructure bottlenecks and barriers to entry. These should be complemented by measures to enhance resilience, such as developing a local investor base, fostering depth and liquidity in the equity and bond markets, and upgrading the tax system to promote efficient use of resources.

Directors stressed that solidifying improvements in financial stability and market expectations requires concerted efforts across countries. In the United States, where tax reform and financial deregulation could have a significant impact on the financial and corporate sectors globally, authorities should be vigilant to the increase in leverage and deterioration in credit quality and should take preemptive measures against excessive risk taking. In Europe, where important progress has been achieved, further efforts are still needed to adjust bank business models, facilitate the disposal of nonperforming loans, and remove structural impediments to bank profitability. In China, where major reforms to the financial system are taking place, special attention should be paid to the rapid growth in assets among smaller banks, the increasing reliance on wholesale funding, and the close interconnections between shadow products and interbank markets. At the global level, completing the regulatory reform agenda remains important, and a rollback of regulatory standards should be resisted.

Directors observed that commodity-exporting low-income developing countries have faced a difficult adjustment process since the commodity cycle turned in 2014. In light of rising debt and weaker external positions in several of these economies, Directors called for intensified policy efforts to mobilize revenue, improve tax administration, enhance spending efficiency, and contain the buildup of debt. For many diversified countries, the priorities are to build fiscal buffers while growth remains relatively strong and to achieve a better balance between meeting social and developmental needs and securing debt sustainability. A common challenge across all low-income developing countries is to maintain progress toward attaining their sustainable development goals.

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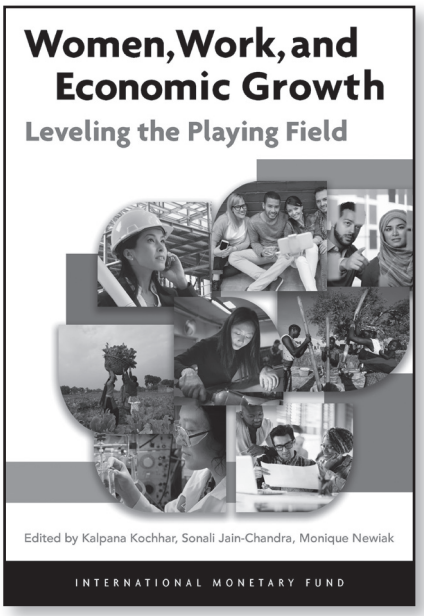

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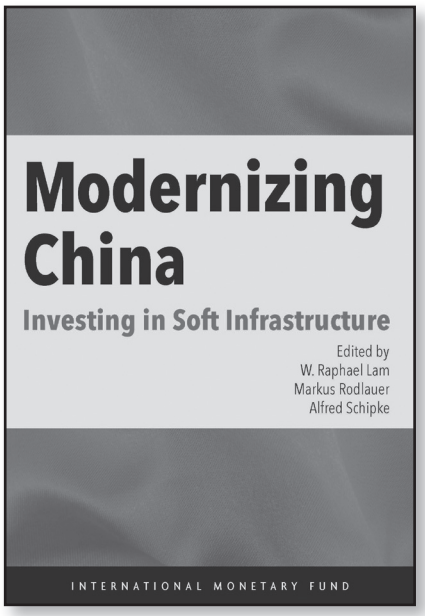

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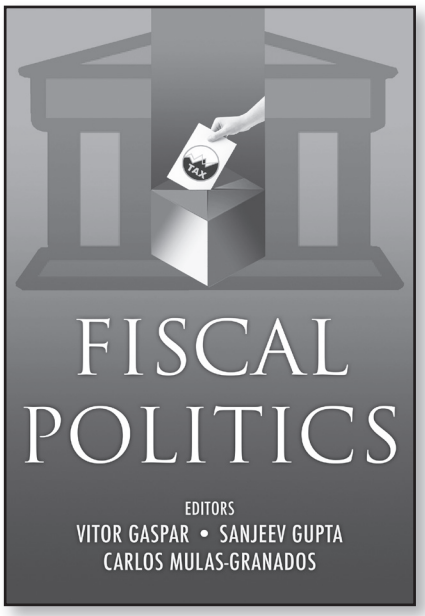

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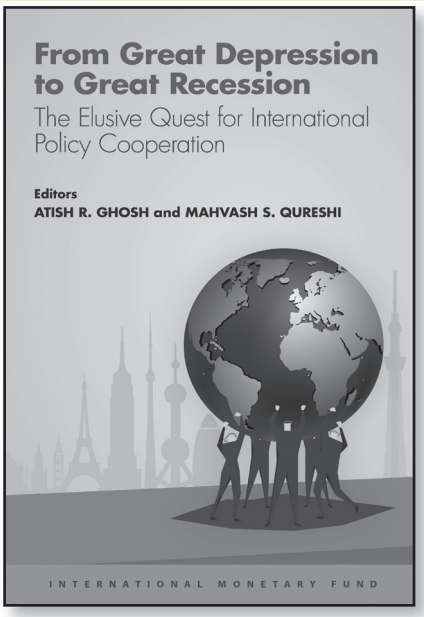

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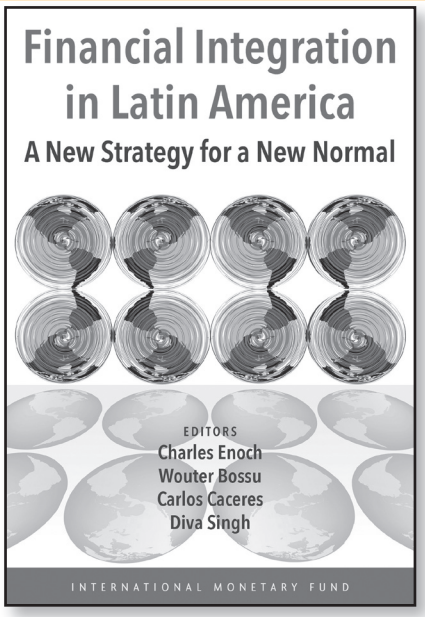

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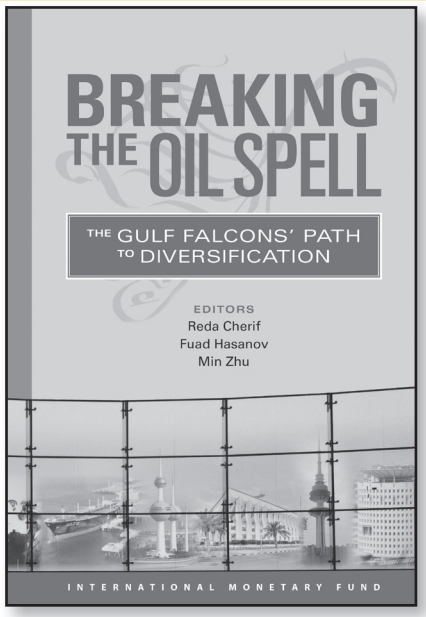

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