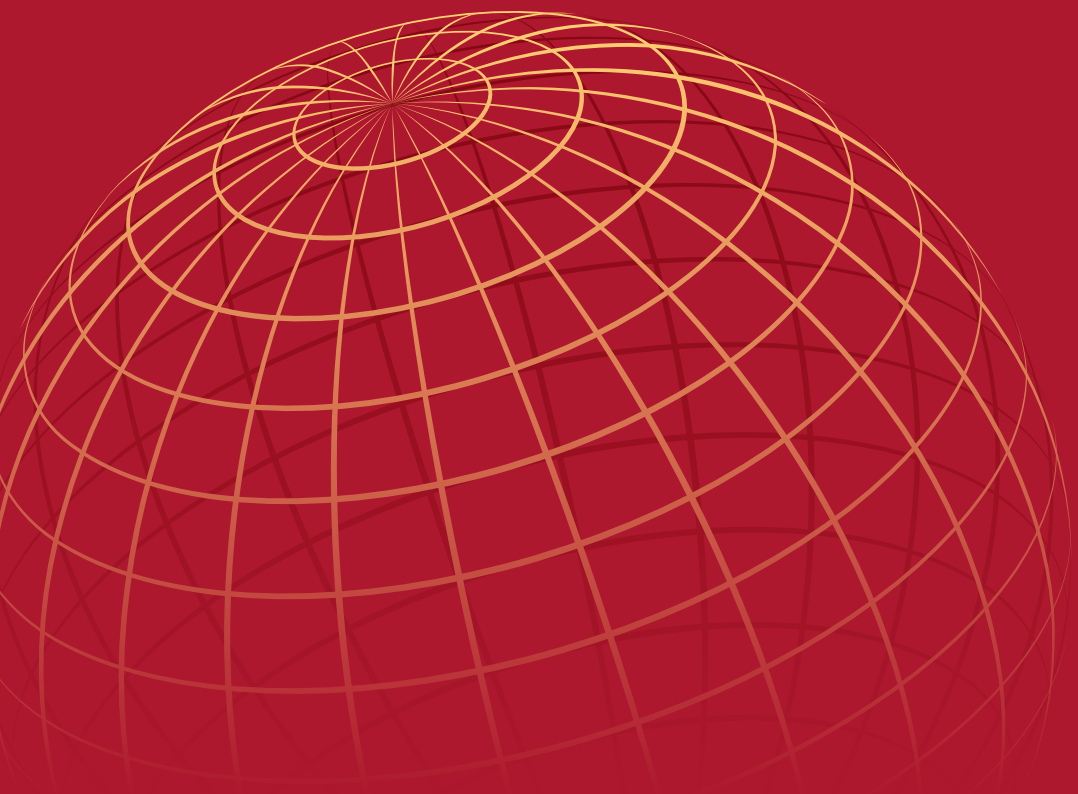
A World Bank Group Flagship Report

JANUARY 2018

Global Economic Prospects

Broad-Based Upturn, but for How Long?



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Foreword

"Cinema," Martin Scorsese once said, "is a matter of what's in the frame and what's out." The same could be said about economic growth, as this January 2018 edition of *Global Economic Prospects (GEP)* illustrates. On the one hand, the GEP points out that, for the first time since the global financial crisis, all major regions of the world are experiencing an uptick in economic growth. The current, broad-based growth acceleration is a welcome trend and could be self-reinforcing.

On the other hand, stepping outside the frame of short-term forecasting, the GEP observes that growth in investment and in total factor productivity (TFP) has been declining over the past five years. Thanks to demographic trends, labor force growth has also been slowing in many parts of the world. This means that potential output—the amount the economy can produce if labor and capital were fully employed—would grow at a subdued pace in the future. The current demand-led recovery is likely to run up against supply constraints. The decline in TFP growth is particularly troubling since this has been a key source of rising living standards in many countries in the past.

The combination of what's in the original frame and what's outside—the movie, if you like—is a clarion call for public action. To arrest and possibly reverse this decline in potential growth, emerging market and developing economies need to accelerate investment in both physical and human capital, especially if TFP growth is likely to remain anemic. This may sound like the standard prescriptions of development economics. There's a reason for that: they are fundamental to economic growth. Today, the costs of neglecting these principles have gone sky-high.

Stepping even further outside the original frame, the GEP and other research suggest ways to promote investment in physical and human capital by examining what limits them now. For example, private investment is often constrained by the lack of infrastructure. And infrastructure investment has been limited because governments lacked "fiscal space." But as the section in the GEP on the recent oil price decline shows, oil-importing countries missed the opportunity to rebuild fiscal space by reducing energy subsidies; some of them did, but not nearly enough. Similarly, according to the 2018 World Development Report, *Learning to Realize Education's Promise*, while developing countries have been investing in school enrollment, learning outcomes—what really matters for human capital accumulation—have been woefully inadequate.

Taken together, these findings point to what is constraining investment in human and physical capital: politics. Energy subsidy reform is difficult in an oil-importing country where, say, 8 percent of the firms are highly energy-intensive, but 45 percent of the politically-connected ones are. Learning can be difficult in countries where teachers, who run the campaigns of local politicians, are absent 25 percent of the time.

What can be done to overcome these constraints? If a majority of the population stand to benefit from reforms that promote physical and human capital accumulation, then they should be able to bring pressure to bear on politicians, who may be catering to special interests, for broad-based reform. To do this, citizens need to be informed about the costs and benefits of reform (and of not reforming). Publications like the GEP contribute to this effort by putting objective, rigorous analysis in the hands of the public. Not only does the January 2018 *Global Economic Prospects* identify the problem of limited potential growth, it is also part of the solution.

Among these measures, efforts to invest in infrastructure and education, health and other human skills and wellbeing, as well as initiatives to promote economic diversification and liberalize trade, will boost growth prospects and improve standards of living. The international community has an important role to play in the pursuit of these goals.

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Executive Summary

The global economy is experiencing a broad-based cyclical upturn, which is expected to be sustained over the next couple of years, although with downside risks. In contrast, growth in potential output (full-employment output) is flagging, languishing below its longer-term and pre-crisis average both globally and among emerging market and developing economies (EMDEs). The forces depressing potential output growth will continue unless countered by structural policies. In oil-exporting economies, the 2014-16 oil price collapse has already prompted some reforms. Nevertheless, across all EMDEs, room for policy improvements remains. Policy initiatives to lift physical and human capital, encourage labor force participation, and improve institutions could help raise potential growth and reduce inequality.

Global Outlook. A broad-based cyclical global recovery is underway, aided by a rebound in investment and trade, against the backdrop of benign financing conditions, generally accommodative policies, improved confidence, and the dissipating impact of the earlier commodity price collapse. Global growth is expected to be sustained over the next couple of years—and even accelerate somewhat in emerging market and developing economies (EMDEs) thanks to a rebound in commodity exporters. Although near-term growth could surprise on the upside, the global outlook is still subject to substantial downside risks, including the possibility of financial stress, increased protectionism, and rising geopolitical tensions. Particularly worrying are longer-term risks and challenges associated with subdued productivity and potential growth. With output gaps closing or already closed in many countries, supporting aggregate demand with the use of cyclical policies is becoming less of a priority. Focus should now turn to the structural policies needed to boost potential growth and living standards.

Regional Perspectives. Growth in most EMDE regions with large numbers of commodity exporters recovered in 2017, with the notable exception of the Middle East and North Africa, mainly due to oil production cuts. These regions are generally expected to see faster growth during the forecast horizon, as commodity prices rise and the impact of the earlier terms of trade shock diminishes. The robust pace of expansion in EMDE regions with a substantial number of commodity importers is expected to continue. Risks to the outlook have become more balanced in some regions, but continue to tilt down in all of them.

This edition of *Global Economic Prospects* includes a chapter on the sources of slowing global potential growth and policy options to raise it, as well as two special focus pieces—on the impact of the 2014-16 oil price collapse and the potential implications of improving education for inequality.

Building Solid Foundations: How to Promote Potential Growth. Despite a recent acceleration of global economic activity, potential output growth is flagging. At 2.5 percent, 2013-17 potential growth was 0.5 percentage point below its longer-term average and 0.9 percentage points below its average a decade ago, with an even steeper decline in EMDEs. More than one-half of the deceleration reflects weaker-than-average rates of capital accumulation, but weaker total factor productivity growth and demographic trends have also played a role. These forces are not expected to diminish over the next decade and, unless countered, will depress global and EMDE potential growth further by 0.2 and 0.5 percentage point, respectively, over the next decade. Policy initiatives to lift physical and human capital, encourage labor force participation, and improve institutions could help reverse this trend.

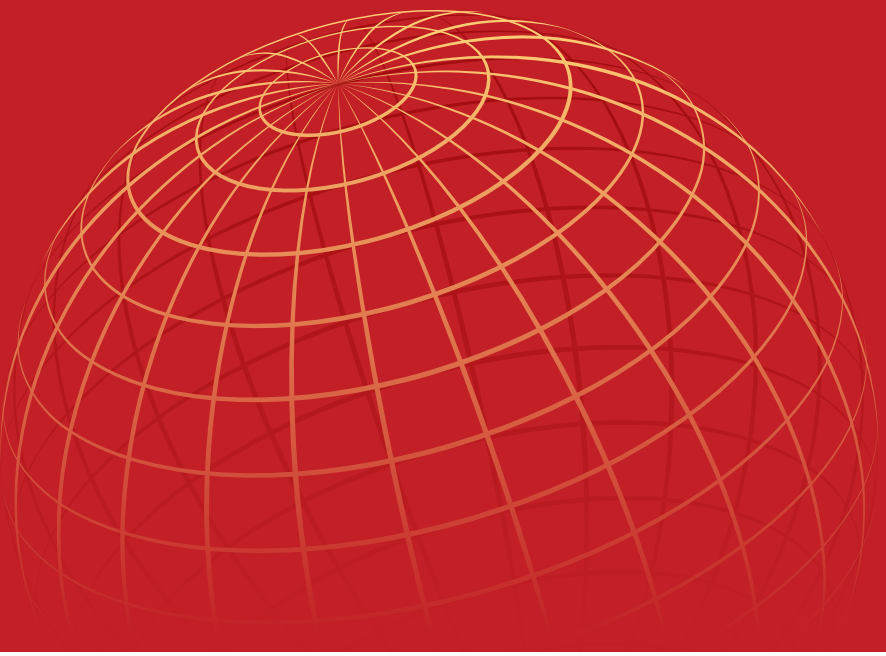
With the Benefit of Hindsight: The Impact of the 2014-16 Oil Price Collapse. The 2014-16 collapse in oil prices was one of the largest in modern history, but failed to provide an expected boost to global growth. The short-term benefits of falling oil prices to global growth were muted by several factors, including the low responsiveness of activity in key oil-importing emerging markets, economic rebalancing in China, and the dampening impact of a sharp contraction in energy investment and a rapid appreciation of the U.S. dollar on growth in the United States. Among oil-exporting countries, those with flexible exchange rates, more diversified economies, and larger fiscal buffers fared better than others. Since 2014, many countries have taken advantage of lower prices to reduce energy subsidies, and some have implemented broader structural reforms.

Education Demographics and Global Inequality. An expected shift in the skill composition of the global labor force will have important consequences for the future of global inequality. Specifically, a better-educated labor force from emerging market and developing economies will likely reduce inequality between countries. It could mitigate, especially in EMDEs, the deterioration of within-country inequality that may result from other developments, including increasing urbanization, skill-biased technological change, labor market frictions that cause persistent unemployment, or trade that raises skill premia.

Abbreviations

ADB	Asian Development Bank
AE	advanced economies
Bbbl	billion barrels per liter
bbl	barrels per liter
BIS	Bank for International Settlements
CEMAC	Central African Economic and Monetary Community
CGE	computable general equilibrium
CPEC	China-Pakistan Economic Corridor
EAP	East Asia and Pacific
EBRD	European Bank for Reconstruction and Development
EC	European Commission
ECA	Europe and Central Asia
ECB	European Central Bank
EIA	U.S. Energy Information Administration
EM	emerging market economies
EMDE	emerging market and developing economy
EM7	seven largest emerging markets
EU	European Union
FDI	foreign direct investment
FOMC	Federal Open Market Committee
$GE_{(0)}$	mean log deviation
G20	Group of Twenty
GCC	Gulf Cooperation Council
GDP	gross domestic product
GEP	Global Economic Prospects
GIDD	Global Income Distribution Dynamics
GNFS	goods and non-factor services
GSP+	Generalized System of Preferences Plus
GST	goods and services tax
GTAP	Global Trade Analysis Project
GVC	global value chain
IDB or IADB	Inter-American Development Bank
IEA	International Energy Agency
IFC	International Finance Corporation
ILO	International Labor Organization
IMF	International Monetary Fund
LAC	Latin America and the Caribbean
LIC	low-income country
MVF	multivariate filter
MENA or MNA	Middle East and North Africa
Mb/d	million barrels per day

NAFTA	North American Free Trade Agreement
OECD	Organisation for Economic Co-operation and Development
OPEC	Organization of the Petroleum Exporting Countries
PF	production function approach
PMI	purchasing managers' index
PPP	purchasing power parity
R&D	research and development
RBI	Reserve Bank of India
SAR	South Asia
SAR	special Administrative Region
SF	Special Focus
S&P	Standard & Poor's
SSA	Sub-Saharan Africa
SVAR	structural vector autoregressive
SWF	sovereign wealth funds
TFP	total factor productivity
UCM	unobserved components model
UN	United Nations
UNCTAD	United Nations Conference on Trade and Development
UNIDO	United Nations Industrial Development Organization
VAT	value-added tax
WAEMU	West African Economic and Monetary Union
WHO	World Health Organization
WTO	World Trade Organization



CHAPTER 1

GLOBAL OUTLOOK

Broad-Based Upturn—Will It Last?

A broad-based cyclical global recovery is underway, aided by a rebound in investment and trade, against the backdrop of benign financing conditions, generally accommodative policies, improved confidence, and the dissipating impact of the earlier commodity price collapse. Global growth is expected to be sustained over the next couple of years—and even accelerate somewhat in emerging market and developing economies (EMDEs) thanks to a rebound in commodity exporters. Although near-term growth could surprise on the upside, the global outlook is still subject to substantial downside risks, including the possibility of financial stress, increased protectionism, and rising geopolitical tensions. Particularly worrying are longer-term risks and challenges associated with subdued productivity and potential growth. With output gaps closing or closed in many countries, supporting aggregate demand with the use of cyclical policies is becoming less of a priority. Focus should now turn to the structural policies needed to boost longer-term productivity and living standards. A combination of improvements in education and health systems; high-quality investment; and labor market, governance, and business climate reforms could yield substantial long-run growth dividends and thus contribute to poverty reduction. Among commodity-exporting EMDEs, oil exporters in particular should take advantage of an incipient recovery to pursue policies that support diversification.

Summary

The global economy is experiencing a cyclical recovery, reflecting a rebound in investment, manufacturing activity, and trade. This improvement comes against the backdrop of benign global financing conditions, generally accommodative policies, rising confidence, and firming commodity prices. Global GDP growth is estimated to have picked up from 2.4 percent in 2016 to 3 percent in 2017, above the June forecast of 2.7 percent (Figure 1.1). The upturn is broad-based, with growth increasing in more than half of the world's economies. In particular, the rebound in global investment growth—which accounted for three quarters of the acceleration in global GDP growth from 2016 to 2017—was supported by favorable financing costs, rising profits, and improved business sentiment across both advanced economies and emerging market and developing economies (EMDEs). This synchronous, investment-led recovery is providing a substantial boost to global exports and imports in the near term.

In advanced economies, growth in 2017 is estimated to have rebounded to 2.3 percent, driven by a pickup in capital spending, a turnaround in inventories, and strengthening external demand. While growth accelerated in all major economies, the improvement was markedly stronger than expected in the Euro Area.

Growth among EMDEs is estimated to have accelerated to 4.3 percent in 2017, reflecting firming activity in commodity exporters and continued solid growth in commodity importers. Most EMDE regions benefited from a recovery in exports. The improvement in economic activity among commodity exporters took place as key economies—such as Brazil and the Russian Federation—emerged from recession, prices of most commodities rose, confidence improved, the drag from earlier policy tightening diminished, and investment growth bottomed out after a prolonged period of weakness. Nonetheless, the estimated pace of growth in commodity exporters in 2017, at 1.8 percent, was still subdued and not enough to improve average per capita incomes, which continued to stagnate after two consecutive years of contraction.

Global growth is projected to edge up to 3.1 percent in 2018, as the cyclical momentum continues, and then slightly moderate to an average of 3 percent in 2019-20. This broadly

Note: Prepared by Carlos Arteta and Marc Stocker, with contributions from Ekaterine Vashakmadze and Collette M. Wheeler. Additional inputs were provided by John Baffes, Sinem Kilic Celik, Delfin Go, Gerard Kambou, Eung Ju Kim, Csilla Lakatos, Hideaki Matsuoka, Yirbehogre Modeste Some, and Dana Vorisek. Research assistance was provided by Anh Mai Bui, Ishita Dugar, Xinghao Gong, and Jinxin Wu.

TABLE 1.1 Real GDP[1]

(Percent change from previous year)

	2015	2016	2017e	2018f	2019f	2020f	Percentage point differences from June 2017 projections: 2017e	2018f	2019f
World	**2.8**	**2.4**	**3.0**	**3.1**	**3.0**	**2.9**	**0.3**	**0.2**	**0.1**
Advanced economies	**2.2**	**1.6**	**2.3**	**2.2**	**1.9**	**1.7**	**0.4**	**0.4**	**0.2**
United States	2.9	1.5	2.3	2.5	2.2	2.0	0.2	0.3	0.3
Euro Area	2.1	1.8	2.4	2.1	1.7	1.5	0.7	0.6	0.2
Japan	1.4	0.9	1.7	1.3	0.8	0.5	0.2	0.3	0.2
Emerging market and developing economies (EMDEs)	**3.6**	**3.7**	**4.3**	**4.5**	**4.7**	**4.7**	**0.2**	**0.0**	**0.0**
Commodity-exporting EMDEs	0.4	0.8	1.8	2.7	3.1	3.1	0.0	0.0	0.2
Other EMDEs	6.1	5.9	6.0	5.7	5.7	5.7	0.3	0.0	-0.1
Other EMDEs excluding China	5.2	4.9	5.1	4.8	5.1	5.1	0.5	-0.1	0.0
East Asia and Pacific	6.5	6.3	6.4	6.2	6.1	6.0	0.2	0.1	0.0
China	6.9	6.7	6.8	6.4	6.3	6.2	0.3	0.1	0.0
Indonesia	4.9	5.0	5.1	5.3	5.3	5.3	-0.1	0.0	-0.1
Thailand	2.9	3.2	3.5	3.6	3.5	3.4	0.3	0.3	0.1
Europe and Central Asia	1.0	1.7	3.8	2.9	3.0	3.0	1.3	0.2	0.2
Russia	-2.8	-0.2	1.7	1.7	1.8	1.8	0.4	0.3	0.4
Turkey	6.1	3.2	6.7	3.5	4.0	4.0	3.2	-0.4	-0.1
Poland	3.8	2.9	4.5	4.0	3.5	3.1	1.2	0.8	0.3
Latin America and the Caribbean	-0.6	-1.5	0.9	2.0	2.6	2.7	0.1	-0.1	0.1
Brazil	-3.5	-3.5	1.0	2.0	2.3	2.5	0.7	0.2	0.2
Mexico	3.3	2.9	1.9	2.1	2.6	2.6	0.1	-0.1	0.1
Argentina	2.6	-2.2	2.7	3.0	3.0	3.2	0.0	-0.2	-0.2
Middle East and North Africa	2.8	5.0	1.8	3.0	3.2	3.2	-0.3	0.1	0.1
Saudi Arabia	4.1	1.7	0.3	1.2	2.1	2.2	-0.3	-0.8	0.0
Iran, Islamic Rep.	-1.3	13.4	3.6	4.0	4.3	4.3	-0.4	-0.1	0.1
Egypt, Arab Rep.[2]	4.4	4.3	4.2	4.5	5.3	5.8	0.3	-0.1	0.0
South Asia	7.1	7.5	6.5	6.9	7.2	7.2	-0.3	-0.2	-0.1
India[3]	8.0	7.1	6.7	7.3	7.5	7.5	-0.5	-0.2	-0.2
Pakistan[2]	4.1	4.5	5.3	5.5	5.8	6.0	0.1	0.0	0.0
Bangladesh[2]	6.6	7.1	7.2	6.4	6.7	6.7	0.4	0.0	0.0
Sub-Saharan Africa	3.1	1.3	2.4	3.2	3.5	3.6	-0.2	0.0	0.0
South Africa	1.3	0.3	0.8	1.1	1.7	1.7	0.2	0.0	-0.3
Nigeria	2.7	-1.6	1.0	2.5	2.8	2.8	-0.2	0.1	0.3
Angola	3.0	0.0	1.2	1.6	1.5	1.5	0.0	0.7	0.0
Memorandum items:									
Real GDP[1]									
High-income countries	2.3	1.7	2.2	2.2	1.9	1.8	0.3	0.3	0.2
Developing countries	3.6	3.8	4.5	4.7	4.8	4.9	0.2	0.0	-0.1
Low-income countries	4.7	4.5	5.1	5.4	5.5	5.7	-0.3	-0.4	-0.3
BRICS	4.0	4.4	5.2	5.3	5.4	5.4	0.2	0.1	0.0
World (2010 PPP weights)	3.3	3.2	3.7	3.7	3.7	3.7	0.3	0.1	0.0
World trade volume[4]	2.7	2.3	4.3	4.0	3.9	3.8	0.3	0.2	0.1
Commodity prices									
Oil price[5]	-47.3	-15.6	23.8	9.4	1.7	1.7	0.0	3.7	-3.7
Non-energy commodity price index	-15.0	-2.6	4.9	0.6	0.8	1.2	0.9	-0.1	-0.2

Source: World Bank.

Notes: PPP = purchasing power parity; e = estimate; f = forecast. World Bank forecasts are frequently updated based on new information and changing (global) circumstances. Consequently, projections presented here may differ from those contained in other Bank documents, even if basic assessments of countries' prospects do not differ at any given moment in time. Country classifications and lists of emerging market and developing economies (EMDEs) are presented in Table 1.2. BRICS include: Brazil, Russia, India, China, and South Africa.

1. Aggregate growth rates calculated using constant 2010 U.S. dollar GDP weights.

2. GDP growth values are on a fiscal year basis. Aggregates that include these countries are calculated using data compiled on a calendar year basis. Pakistan's growth rates are based on GDP at factor cost. The column labeled 2017 refers to FY2016/17.

3. The column labeled 2016 refers to FY2016/17.

4. World trade volume of goods and non-factor services.

5. Simple average of Dubai, Brent, and West Texas Intermediate.

For additional information, please see www.worldbank.org/gep.

steady forecast masks marked differences between the outlook for advanced economies and EMDEs. Growth in advanced economies is projected to slow, as labor market slack diminishes and monetary policy accommodation is gradually unwound, moving closer to subdued potential growth rates, which remain constrained by aging populations and weak productivity trends.

Conversely, growth in EMDEs is expected to accelerate, reaching 4.5 percent in 2018 and an average of 4.7 percent in 2019-20. This mainly reflects a further pickup of growth in commodity exporters, which is forecast to rise to 2.7 percent in 2018 and to an average of 3.1 percent in 2019-20, as oil and other commodity prices firm and the effects of the earlier commodity price collapse dissipate. Growth in commodity importers is projected to remain stable, averaging 5.7 percent in 2018-20, as a gradual slowdown in China is offset by a pickup in some other large economies. Within the broader group of EMDEs, growth in low-income countries is projected to rise to 5.4 percent in 2018 and to 5.6 percent on average in 2019-20, as conditions gradually improve in oil- and metals-exporting economies.

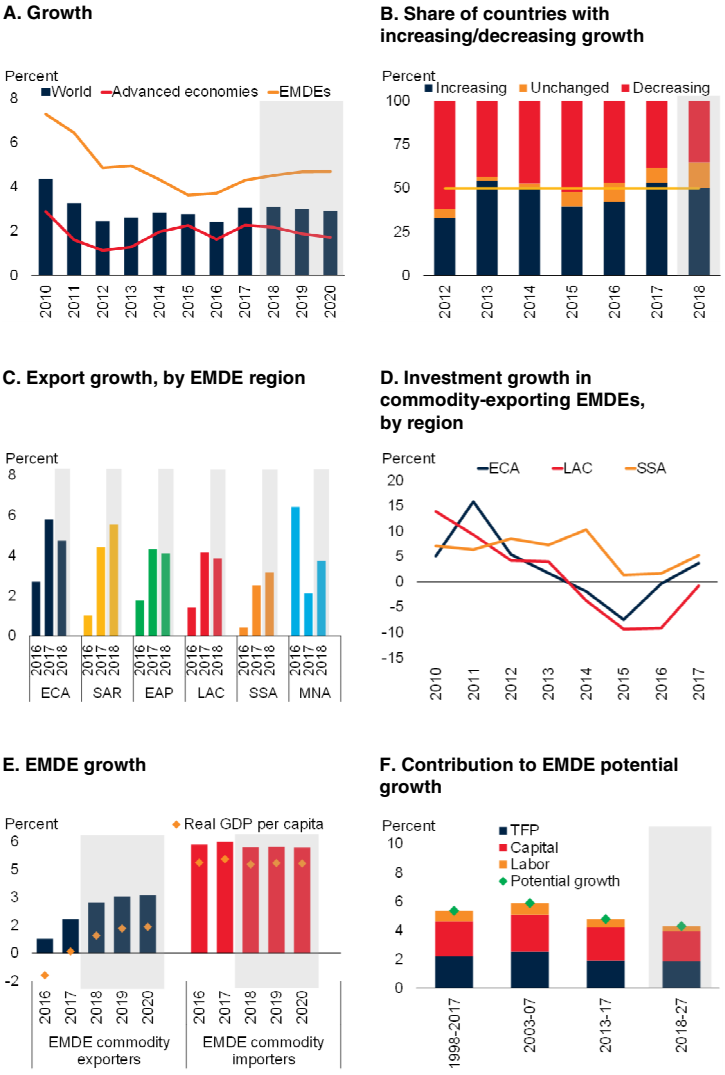
Despite the projected firming of activity among EMDEs over the forecast horizon, their underlying potential growth—which has fallen considerably over the past decade—appears likely to further decline over the next 10 years, reflecting a more subdued pace of capital accumulation, slowing productivity growth, and less favorable demographic trends.

Although risks to the global outlook continue to be tilted to the downside, they are more balanced than in previous forecast exercises (Figure 1.2). This is mainly due to the possibility of stronger-than-expected growth in the largest advanced economies and EMDEs—reflecting, for instance, a more pronounced investment-led recovery in the United States and the Euro Area, or a faster rebound in large commodity exporters. If these positive surprises were to materialize, they could have beneficial international spillovers.

Nonetheless, there remain important downside risks. Disorderly financial market movements, such as an abrupt tightening of global financing

FIGURE 1.1 Summary - Global prospects

Global growth picked up in 2017, supported by a broad-based recovery encompassing more than half of the world's economies. A substantial acceleration in global trade translated into strengthening export growth in most EMDE regions. As headwinds eased in commodity exporters, investment and activity bottomed out in 2017, but income per capita was stagnant. Despite the cyclical recovery, potential growth is likely to decline further, reflecting subdued capital deepening, slowing productivity growth, and less favorable demographics.



Source: World Bank.

Notes: EMDEs = emerging market and developing economies. Data for 2017 are estimates.

A. -C. E. F. Shaded areas indicate forecasts.

A. B. E. Aggregate growth rates calculated using constant 2010 U.S. dollar GDP weights.

C. D. EAP = East Asia and Pacific, ECA = Europe and Central Asia, LAC = Latin America and the Caribbean, MNA = Middle East and North Africa, SAR = South Asia, and SSA = Sub-Saharan Africa.

B. Increasing/decreasing growth are changes of at least 0.1 percentage point from the previous year. Countries with a slower pace of contraction from one year to the next are included in the increasing growth category. Sample includes 36 advanced economies and 146 EMDEs.

C. Exports measured as the volume of goods and services.

F. GDP-weighted averages of production function-based potential growth as described in Chapter 3. TFP is total factor productivity growth. Sample includes 49 EMDEs.

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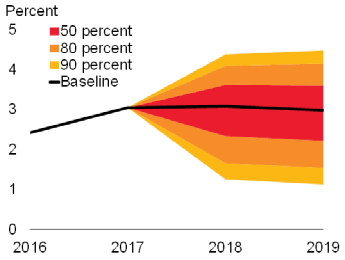
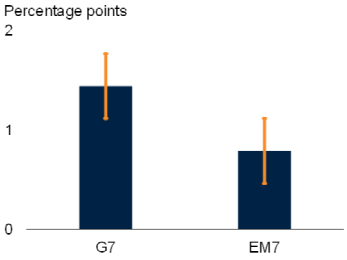
FIGURE 1.2 Global risks and policy challenges

Risks to the outlook remain tilted to the downside, despite the possibility of stronger-than-expected growth in large economies and associated positive international spillovers. Financial market volatility has been unusually low and asset prices have become highly valued, suggesting the risk of sudden market adjustments. Large negative output gaps in commodity exporters would suggest the need for accommodative policies, but fiscal space is limited. Structural reforms are essential to stem a further decline in potential growth in EMDEs.

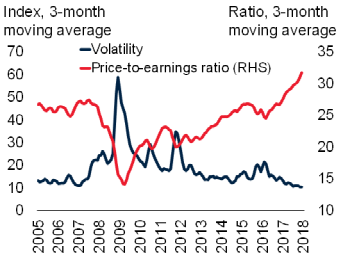
A. Probability distribution around global growth forecasts



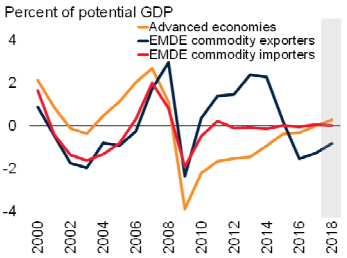
B. Impact of 1-percentage-point increase in G7 and EM7 growth on growth in other EMDEs after one year



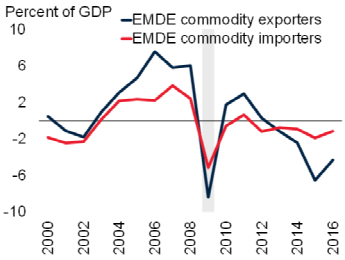
C. U.S. equity prices and volatility



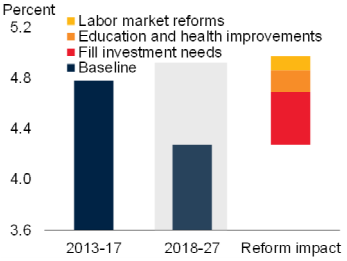
D. Output gaps



E. Fiscal sustainability gaps in EMDEs



F. EMDE potential growth under reform scenarios



Sources: Federal Reserve Bank of St. Louis, Shiller (2015), World Bank.

A. The fan chart shows the forecast distribution of global growth using time-varying estimates of the standard deviation and skewness extracted from the forecast distribution of three underlying risk factors (oil price futures, the S&P 500 equity price futures, and term spread forecasts). Each of the risk factor's weight is derived from the model described in Ohnsorge, Stocker, and Some (2016). Values for 2018 are computed from the forecast distribution of 12-month ahead oil price futures, S&P 500 equity price futures, and term spread forecasts. Values for 2019 are based on 24-month-ahead forecast distributions. Last observation is December 2017.

B. Cumulative impulse responses of a 1-percentage-point increase in EM7 and G7 growth on growth in other EMDEs. Solid bars represent medians, and orange bars represent 16-84 percent confidence intervals.

C. Volatility is measured by the VIX implied volatility index of option prices on the U.S. S&P 500. Price-to-earnings ratio is the cyclically-adjusted ratio as described in Shiller (2015). Last observation is December 2017. Data for December 2017 are estimates.

D. GDP-weighted average of 15 advanced economies and 23 EMDEs. Shaded area indicates forecasts.

E. Simple averages. Sustainability gaps are measured under current conditions. The year of global recession (2009) is shaded in gray.

F. GDP-weighted averages of production function-based potential growth under different policy scenarios as described in Chapter 3. Shaded area indicates forecast.

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conditions or a sudden rise in financial market volatility, could trigger financial turbulence and potentially derail the expansion. The adverse effects of rising borrowing costs could be particularly acute for those EMDEs with large external financing needs, fragile corporate balance sheets, and significant fiscal sustainability gaps. In addition, escalating trade protectionism or rising geopolitical risk could also negatively affect confidence, trade, and overall economic activity. Over the longer term, a more pronounced slowdown in potential output growth in both advanced economies and EMDEs would make the global economy more vulnerable to shocks and worsen prospects for improved living standards.

This outlook underscores the need for policymakers in both advanced economies and EMDEs to shift their focus toward boosting potential growth in the longer term. With unemployment rates returning to pre-crisis levels and recoveries firming in advanced economies, monetary and fiscal policy accommodation become less of a priority, and productivity-enhancing reforms have become increasingly urgent as the pressures on underlying growth from population aging intensify. Among EMDEs, output gaps are near zero in commodity importers but still negative in commodity exporters, suggesting a continued need to nurture the cyclical recovery in the latter, even though fiscal space remains constrained.

Beyond cyclical considerations, EMDEs face the challenge of an expected further decline in potential growth. This argues strongly for the urgency of implementing structural policies, such as improvements in education and health systems; high-quality investment; and labor market, governance, and business climate reforms. All of these efforts will be critical to boost long-term growth prospects, alleviate poverty, and, if accompanied by a rising number of skilled workers in EMDEs thanks to better education outcomes, to help reduce global inequality. In addition to these challenges, oil-exporting EMDEs—which suffered large losses in actual and potential output due to the 2014-16 oil price collapse—need to pursue policies that bolster diversification and resilience to oil price fluctuations.

Major economies: Recent developments and outlook

Growth in advanced economies gained significant momentum in 2017. The recovery was markedly stronger than expected in the Euro Area and, to a lesser degree, in the United States and Japan. As economic slack diminishes and monetary policy becomes less accommodative, growth is expected to gradually moderate toward low potential growth rates in 2018-20. Growth in China continues to be resilient, with drivers of activity shifting away from state-led investment.

Growth in advanced economies strengthened in 2017, reaching an estimated 2.3 percent—0.4 percentage point above previous forecasts—helped by a recovery in capital spending and exports (Figure 1.3). The pickup in investment reflected increased capacity utilization, favorable financing conditions, and rising profits and business sentiment. Confidence was supported by the fact that policy uncertainty, albeit still elevated, diminished during the year.

Consumption growth was stable, as continued labor market improvements offset the dampening impact of a rebound in energy prices. The recovery was substantially stronger than expected in the Euro Area and, to a lesser degree, in the United States and Japan. Despite the strengthening of activity, inflation in advanced economies remained subdued in 2017.

Over the forecast horizon, advanced-economy growth is expected to moderate slightly in 2018, to 2.2 percent, and to average 1.8 percent in 2019-20—close to the upper bound of potential growth estimates. This path reflects the unwinding of a cyclical upturn in investment and further normalization of monetary policy, as advanced-economy output gaps close (Box 1.1).

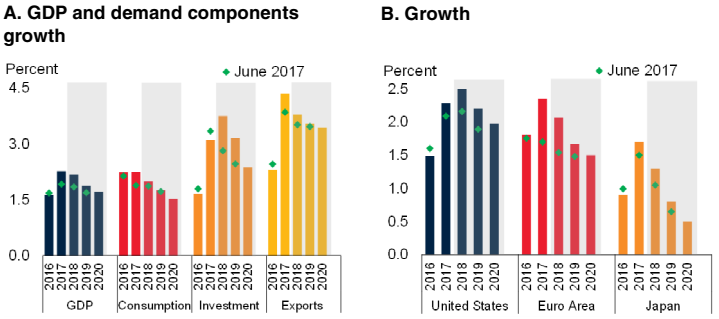
United States

Growth picked up in 2017 to an estimated 2.3 percent, supported by strengthening private investment. The recovery reflected a diminished drag from capacity adjustments in the energy sector, rising profits, a weakening dollar, and robust external demand (Figure 1.4). Economic activity was little disrupted by major hurricane landfalls in September, and reconstruction efforts are likely to offset any negative effects over time (Deryugina, Kawano, and Levitt 2014). Private consumption continued to grow at a robust pace despite modest real income gains and moderate wage growth, as the personal savings rate fell further. Households' income expectations continued to recover following a prolonged period of weakness.

Labor market slack diminished further and employment growth slowed. With the economy moving closer to full employment, and despite inflation running below target, the U.S. Federal Reserve continued to normalize monetary policy in 2017, raising interest rates and starting to gradually reduce the size of its balance sheet (FOMC 2017). Recently legislated corporate and personal income tax cuts are expected to provide a lift to activity over the forecast horizon—particularly to investment, by lowering the statutory corporate tax rate and by allowing full expensing of new equipment. The benefits of fiscal stimulus will likely be constrained because the economy is already operating at near full capacity and the pace of monetary policy normalization might slightly accelerate (Gale and Samwick 2016; Gemmell, Kneller, and Sanz 2011; Kose et al.

FIGURE 1.3 Advanced economies

Growth in advanced economies strengthened in 2017, helped by a recovery in capital spending and exports. The recovery was markedly stronger than expected in the Euro Area and, to a lesser degree, in the United States and Japan. Advanced-economy growth will gradually slow toward potential over the forecast horizon, as the cyclical upturn moderates.



Source: World Bank.
A. B. Green diamonds correspond with the June 2017 edition of the *Global Economic Prospects* report. Shaded areas indicate forecasts.
A. Aggregate growth rates and contributions calculated using constant 2010 U.S. dollar GDP weights.
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BOX 1.1 Is the global economy turning the corner?

The year 2018 will likely mark a turning point for the global economy because, for the first time since 2008, the negative global output gap is expected to be closed. Among EMDEs, helped by the recent recovery in commodity markets, and advanced economies, output gaps should approach zero. The closing gaps in major advanced economies would allow a normalization of monetary policy after a decade of exceptional easing. With the anticipated further withdrawal of stimulus by advanced economies, EMDE policymakers need to remain alert to the potential for adverse spillovers even while pursing policies to support strong, sustained growth.

The global financial crisis tipped the global economy into a deep recession that affected first the advanced economies but spread—especially with the subsequent collapse of commodity prices—to emerging market and developing economies (EMDEs). Recoveries have been slow, but by 2018 the global economy is expected to return to its potential for the first time in a decade as the global output gap is expected to be closed. This in turn could mean a continued withdrawal by advanced economies of the extraordinary policy accommodation that was provided during the crisis, with important spillovers to EMDEs through trade and financial linkages.[1]

Against this backdrop, this box addresses three questions.

- Why do we care about the global output gap?
- What are the main challenges associated with the measurement of output gaps?
- How have output gaps evolved since 2000?

Why do we care about the global output gap?

The global output gap captures the difference between the level of actual global output and its "potential," scaled by potential output. A positive global output gap indicates global excess demand, where economies are operating above the level that is sustainable at full employment. Conversely, a negative global output gap indicates weak demand and the presence of global spare capacity. Negative global output gaps can weigh on global inflation and depress global commodity and financial markets, especially in a world where trade and financial flows are highly integrated (Carney 2017b).

The global output gap is relevant for policies at the individual country level, especially so for smaller and more open economies. A negative global output gap could be a sign of weak external demand that may depress import prices and inflation.[2] The existence of a large negative global output gap may amplify the potential benefits from international policy coordination. For example, the G20 commitments to fiscal stimulus in 2009 were founded on a consensus that the global economy had sizable slack in the wake of the financial crisis and that unemployment and deflationary pressures would continue to rise absent coordinated policy action (G20 2009). In contrast, when output gaps are diverging, lack of policy coordination becomes more likely.

Measuring the global output gap: Navigating through the haze

Measuring output gaps at the national level is complex since the output gap is an unobserved variable. This is compounded when doing so at the global level.[3] National output gaps can be estimated using a range of methods.[4]

- *Production function methods* involve the estimation of the aggregate production capacity from factors of production (labor and capital) and measures of total factor productivity.
- *Long-term growth expectations*, such as five-year-ahead growth forecasts from *Consensus Economics*, incorporate expert judgment about long-term growth potential.

Note: This box was prepared by M. Ayhan Kose, Franziska Ohnsorge, and Modeste Yirbehogre Some.

[1] Some major central banks have already undertaken or signaled measures to shift their monetary policy stance. For potential implications of changes in advanced-economy monetary policies for emerging market economies, see Arteta et al. (2015, 2016). For a discussion of cross-border spillovers from major advanced and emerging market economies, see Huidrom, Kose, and Ohnsorge (2017).

[2] The evidence is still mixed on the link between the global output gap and domestic inflation. Several studies find that the global output gap is an important determinant of domestic inflation (Borio and Filardo 2007; Eickmeier and Pijnenburg 2013; Auer, Borio, and Filardo 2017; Bianchi and Civelli 2015). Others find little support for the role of the global output gap in driving domestic inflation (Calza 2009; Mishkin 2009; Ihrig et al. 2010; Irena and David 2016).

[3] Only two studies focus on the empirical properties of the global output gap (Tanaka and Young 2008; Gerlach 2011). These studies document the major conceptual issues and measurement challenges, and examine the evolutions of a few measures of the global output gap.

[4] These methodologies are discussed and compared in greater detail in Box 3.1.

BOX 1.1 Is the global economy turning the corner? *(continued)*

- *Statistical filters* include univariate or multivariate filters. Univariate filters decompose quarterly output series into a trend and a cycle. Multivariate filters expand on the univariate filters by ensuring that the resulting output gap estimates are consistent with multiple indicators of domestic demand pressures, such as inflation and unemployment.

The use of any of these methods presents tradeoffs and the appropriate choice usually depends on the purpose at hand. The *production function* approach, in principle, captures the supply-side drivers of long-term growth, but in practice relies on estimates and projections of these underlying factors that are themselves subject to considerable measurement error. The resulting output gaps are not necessarily consistent with other indicators of domestic demand pressures. *Long-term growth expectations* may reflect additional information to complement models but may also rest on biased judgments on the part of the forecasters. *Univariate filters* for GDP growth essentially involve a moving average of actual past growth. While their calculation is possible even in data-poor environments, they tend to correlate closely with actual growth. As a result, the filter will likely underestimate both the true extent of output losses stemming from unemployment and the associated disinflationary pressure.[5]

Multivariate filters are sensitive to model specification, and in practice can be heavily influenced by financial and commodity market cycles. They do, however, have the advantage of being consistent with multiple indicators of demand pressures. Since they incorporate additional information, they tend to be less susceptible to the end-point problem. Given their ability to capture multiple dimensions of cycles, the analysis in the rest of this box relies on the results from the multivariate filter.

Database and methodology. The sample includes 15 advanced economies (AEs) and 23 emerging market and developing economies (EMDEs) with quarterly data over the period 2000-16. The countries in the sample together accounted for about 85 percent of global GDP, on average, since 2000. National output gaps of each country are estimated using nine different methods.[6] National output gaps are then aggregated into a global output gap using GDP weights.[7] Group- and region-specific output gaps are similarly aggregated.

Results from different methods. While different methods produce broadly consistent trends in national output gaps in the majority of countries and periods, they also show sizable variation across these measures in some periods (Figure 1.1.1). Output gap estimates during 2008-09 illustrate this variation. All estimates pointed to negative output gaps but with a wide range. In EMDEs, the estimated gaps for these years from different methodologies vary from -0.1 to -0.9 percent.

How have global output gaps evolved?

Following the global slowdown in 2001-02, the recovery in advanced economies in the first half of the 2000s was accompanied by narrowing negative global output gaps (Figure 1.1.2). Although growth slowed in EMDEs in the early years of the decade with recessions in Mexico and Turkey and the legacies of the late 1990s Asian financial crisis, by mid-decade the estimates for EMDEs as well as for advanced economies indicated positive gaps. At their 2007 peak, estimated output gaps for both groups were at a positive 2-3 percent.

The global financial crisis of 2008-09 led to significant economic slack in the majority of countries and a wide global output gap (captured unanimously by all methodologies). During 2010-2014, the global output gap remained large and only narrowed during 2015-17 to be statistically indistinguishable from zero. There were substantial differences in the output gaps of different country groups and regions.

Advanced economies. Even well after the global financial crisis, output gaps in most advanced economies remained negative, averaging about -1 percent of potential GDP during 2011-16. By 2015, the gap had narrowed, and was statistically indistinguishable from zero. In 2018, the output gap for advanced economies is expected to turn slightly positive.

[5] Statistical filters also suffer from end-point problems and large revisions after data updates which tend to be most pronounced at cyclical turning points (Coibion, Gorodnichenko, and Ulate 2017).

[6] These include five univariate filters (Hodrick-Prescott, Baxter-King, Christiano-Fitzgerald, Butterworth filters, and the unobserved components model), the multivariate filter, the production function approach and two expectations-based measures (five-year-ahead *World Economic Outlook* and *Consensus* forecasts). Details of the methodologies are provided in Annexes 1 and 2.

[7] The estimated weighted average global output gap is broadly consistent with a global output gap estimated directly using global variables, such as GDP-weighted average global GDP, median global inflation, labor force-weighted average employment and oil prices.

BOX 1.1 Is the global economy turning the corner? *(continued)*

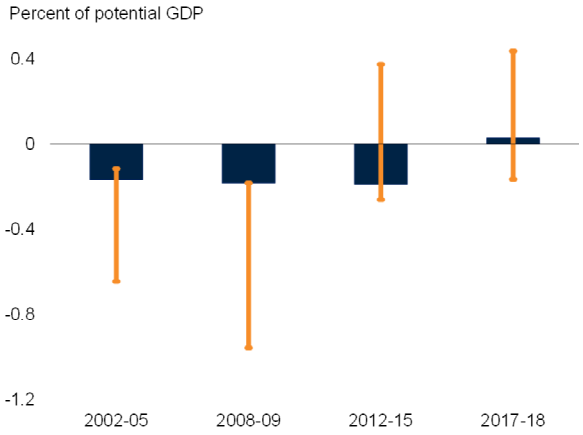
FIGURE 1.1.1 Output gap estimates

The trends in the estimates of the output gap from different methodologies are broadly similar. For example, they signal the same timing of peaks and troughs. However, at times the point estimates show considerable differences, even in sign.

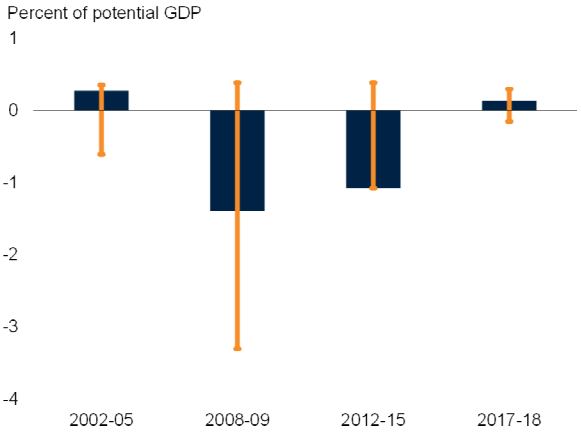
A. Coincidence of signs of output gaps

Percent of country-year pairs	PFA (Funda-mentals)	MVF	HP	BK	CF	BW	Exp. (WEO)	Exp. (CF)
PFA (Fundamentals)								
MVF	73							
HP	65	76						
BK	70	79	92					
CF	58	63	74	76				
BW	61	73	91	88	82			
Exp. (WEO)	65	64	59	64	55	56		
Exp. (CF)	76	69	63	67	58	61	84	
Alt. (WEO)	70	76	74	76	64	72	69	72

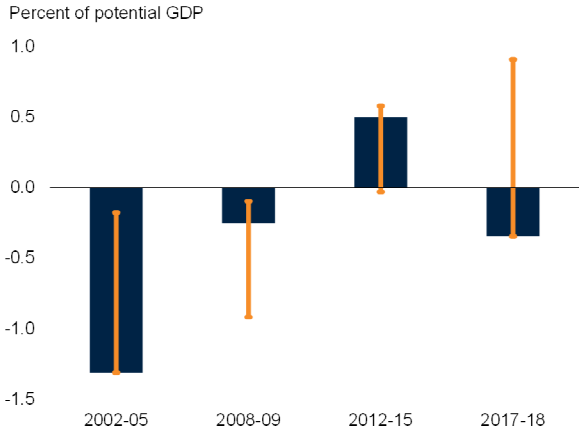
B. Global output gap estimates (range across methodologies)



C. Advanced economies output gap estimates (range across methodologies)



D. EMDE output gap estimates (range across methodologies)



Source: World Bank staff estimates.

Notes: Global, regional, and group output gaps are calculated using constant 2010 U.S. dollar GDP as weights. The sample includes 15 advanced economies (Australia, Canada, Denmark, Finland, France, Germany, Italy, Japan, New Zealand, Norway, Spain, Sweden, Switzerland, United Kingdom, and United States) and 23 EMDEs (Argentina, Bolivia, Brazil, Bulgaria, Chile, China, Colombia, Croatia, Hungary, India, Indonesia, Kazakhstan, Malaysia, Mexico, Peru, Poland, Romania, Russia, Serbia, South Africa, Thailand, Turkey, and Vietnam). 2018 data is forecast.

A. Table shows the share of country-year pairs during 2000-16 in which two different measures of output gap have the same signs. Red represents greater than 80 percent, orange represents 60-80 percent, and yellow represents 50-60 percent. "Exp. (WEO)" stands for five-year-ahead WEO expectations, "Exp. (CF)" stands for five-year-ahead Consensus forecast, "Alt. (WEO)" stands for output gap from WEO.

B.-D. Blue bars denote multivariate filter-based estimates. Vertical orange lines indicate range of all six filter-based estimates. The five univariate filters (HP, BK, CF, BW, UCM), the multivariate filter (MVF), and the production function approach (PFA). "HP" stands for Hodrick-Prescott filter, "BK" stands for Baxter-King filter, "CF" stands for Christiano-Fitzgerald filter, "BW" stands for Butterworth filter, "UCM" stands for unobserved components model.

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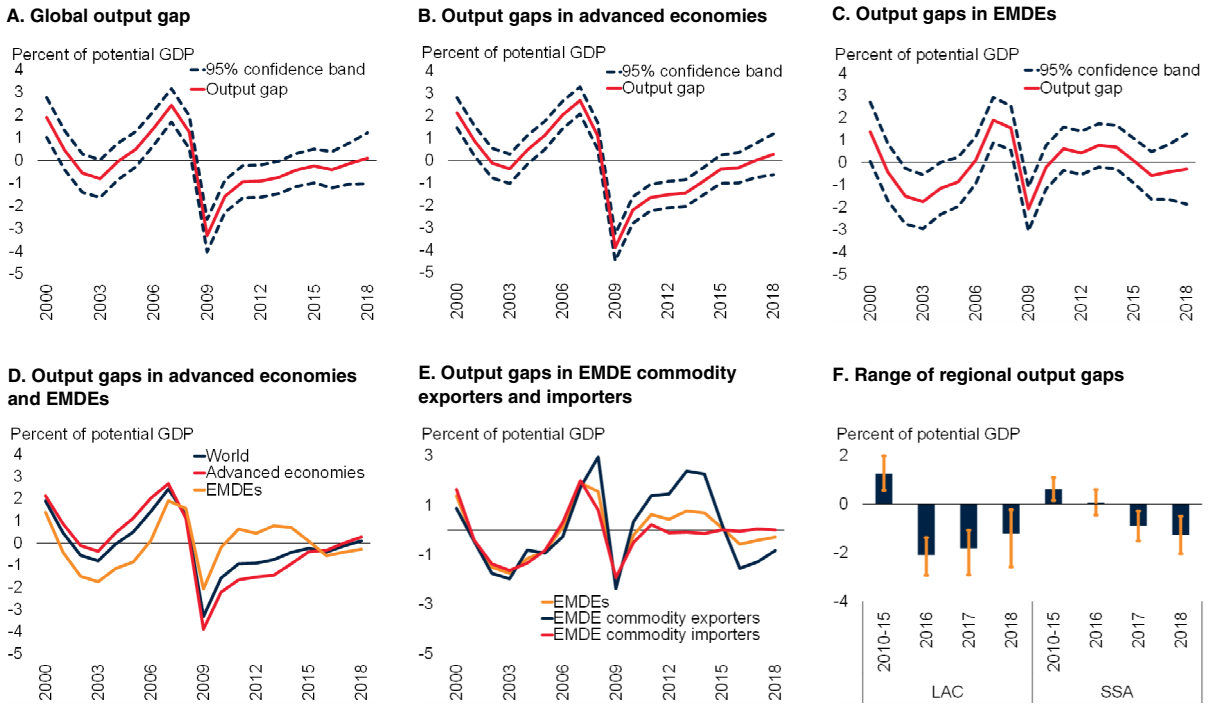
BOX 1.1 Is the global economy turning the corner? *(continued)*

FIGURE 1.1.2 Global and group-specific output gaps

The global financial crisis of 2008-09 opened up a considerable degree of slack in the majority of countries. Post-crisis, a wide divergence in output gaps emerged between advanced economies, which were at the center of the crisis, and EMDEs as well as between commodity-exporting and importing EMDEs.



Source: World Bank staff estimates.

Notes: Output gaps calculated using multivariate filter. Global, regional, and group output gaps are calculated using constant 2010 U.S. dollar GDP as weights. The sample includes 15 advanced economies (Australia, Canada, Denmark, Finland, France, Germany, Italy, Japan, New Zealand, Norway, Spain, Sweden, Switzerland, United Kingdom, and United States) and 23 EMDEs (Argentina, Bolivia, Brazil, Bulgaria, Chile, China, Colombia, Croatia, Hungary, India, Indonesia, Kazakhstan, Malaysia, Mexico, Peru, Poland, Romania, Russia, Serbia, South Africa, Thailand, Turkey, and Vietnam). 2018 GDP is forecast.

A. -C. Dashed lines are 95 percent confidence interval bounds computed from the Kalman smoother state variances. Global lower and upper bounds are obtained as GDP-weighted averages of individual country lower and upper bounds.

E. "EMDE commodity exporters" include Argentina, Bolivia, Brazil, Chile, Colombia, Indonesia, Kazakhstan, Malaysia, Peru, Russia, and South Africa. "EMDE commodity importers" include China, Hungary, India, Mexico, Poland, Romania, Serbia, Thailand, Turkey, and Vietnam.

F. Blue bars denote multivariate filter-based estimates. Vertical orange lines indicate one standard deviation error bands. LAC = Latin America and the Caribbean, SSA = Sub-Saharan Africa.

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EMDEs. Output gaps in EMDEs varied widely between commodity-exporting and importing EMDEs (Figures 1.1.2 and 1.1.3).

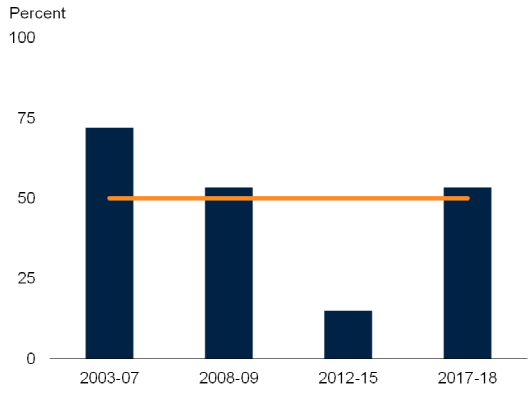
- For commodity exporters (accounting for two-thirds of EMDEs), the slide in commodity prices since the first quarter of 2011 and, especially, the sharp drop in oil prices in mid-2014, as well as weaknesses among their major trading partners, led to an unwinding of their large positive output gaps. By 2016, their gaps had turned negative (below -1 percent), on average, and are expected to remain marginally negative (-0.8 percent) in 2018.
- By contrast, wide negative output gaps emerged among the commodity-importing EMDEs during the global financial crisis and narrowed quickly in the post-crisis rebound. With EMDEs growth remaining steady during 2011-17 at around potential growth, their gaps remained near zero during this period.
- Output gaps in EMDE regions broadly reflected the prevalence of commodity exporters in each region. Notwithstanding a gradual narrowing, LAC and SSA (represented in the sample by South Africa)—two regions with large commodity-exporting economies—are expected to have sizable (and statistically

BOX 1.1 Is the global economy turning the corner? *(concluded)*

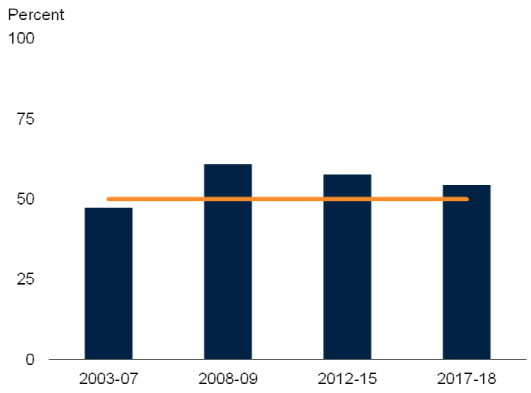
FIGURE 1.1.3 Output gap synchronization

The majority of advanced economies had positive output gaps pre-crisis and negative output gaps post-crisis. In EMDEs, there was greater heterogeneity.

A. Share of economies with positive output gaps: Advanced economies



B. Share of economies with positive output gaps: EMDEs



Source: World Bank staff estimates.
Notes: Output gaps calculated using multivariate filter approach. The sample includes 15 advanced economies (Australia, Canada, Denmark, Finland, France, Germany, Italy, Japan, New Zealand, Norway, Spain, Sweden, Switzerland, United Kingdom, and United States) and 23 EMDEs (Argentina, Bolivia, Brazil, Bulgaria, Chile, China, Colombia, Croatia, Hungary, India, Indonesia, Kazakhstan, Malaysia, Mexico, Peru, Poland, Romania, Russia, Serbia, South Africa, Thailand, Turkey, and Vietnam). 2018 GDP is forecast.
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significant) negative output gaps in 2017 and 2018. Elsewhere, output gaps have been near zero.

Heterogeneity in output gaps. Common shocks and cyclical spillovers through cross-country linkages can generate homogeneity and comovement in output gaps. Since 2000, output gaps in the advanced economies have been less diverse than in EMDEs. Excepting the years of the 2001-02 U.S. recession and the 2011 Euro Area crisis, at least two thirds of advanced economies had output gaps of the same sign. In contrast, in the large majority of years since 2000, around half of EMDEs had positive output gaps (Figure 1.1.3). This heterogeneity among EMDEs has largely reflected the divergences between commodity-exporting and -importing economies.

Implications for EMDEs

Output gap measures are subject to uncertainty as reflected in large variations across methods and wide confidence bands. Policymakers need to account for this uncertainty when assessing and implementing cyclical policies.

That said, for the first time in a decade, the global output gap is expected to approximately close in 2018, with important implications for EMDEs. On the one hand, the expected closing of the global output gap signals a return to health of the world economy after a prolonged period of weak growth, which holds the promise of favorable spillovers to EMDEs, including through trade channels. However, it also means that the coming years may witness an unprecedented shift in the stance of cyclical policies among the advanced economies, with an attendant risk of missteps or disorderly financial market adjustments. This underscores the importance for EMDEs to continue to focus on measures to enhance prospects for strong, sustained growth, but also the need for measures to ensure the resilience of their domestic financial markets and broader macroeconomic policy frameworks in the face of external shocks.

2017a). Other policy initiatives of the U.S. administration, including in the areas of health care and infrastructure, have made limited headways, while the outcome of renegotiations of the North American Free Trade Agreement (NAFTA) remains uncertain.

Barring major additional policy changes, U.S. growth is expected to reach 2.5 percent in 2018, above previous expectations, and then to moderate to an average of 2.1 percent in 2019-20—toward the upper range of potential output growth estimates (Congressional Budget Office 2017; OECD 2017a; Federal Reserve Board 2017). Low labor participation and weak productivity trends remain the most significant drag on U.S. growth over the longer term (Fernald et al. 2017).

Euro Area

Growth gained substantial momentum in 2017, reaching an estimated 2.4 percent—0.7 percentage point higher than previously expected—with broad-based improvements across member countries spurred by policy stimulus and strengthening global demand. In particular, private sector credit continued to respond to the stimulative stance of the European Central Bank (ECB; Figure 1.5), and both domestic demand and import growth were robust.

The unemployment rate reached its lowest level since 2009, and labor shortages became increasingly prevalent in some countries. However, wage growth remained subdued, and the appreciation of the euro during 2017 is likely to further delay a pickup in inflation in 2018, as it puts downward pressure on import prices (ECB 2016). With inflation remaining below target, the ECB is expected to keep interest rates unchanged during 2018, but to gradually scale back asset purchases. The aggregate fiscal stance of the Euro Area was somewhat expansionary in 2017 (European Commission 2017).

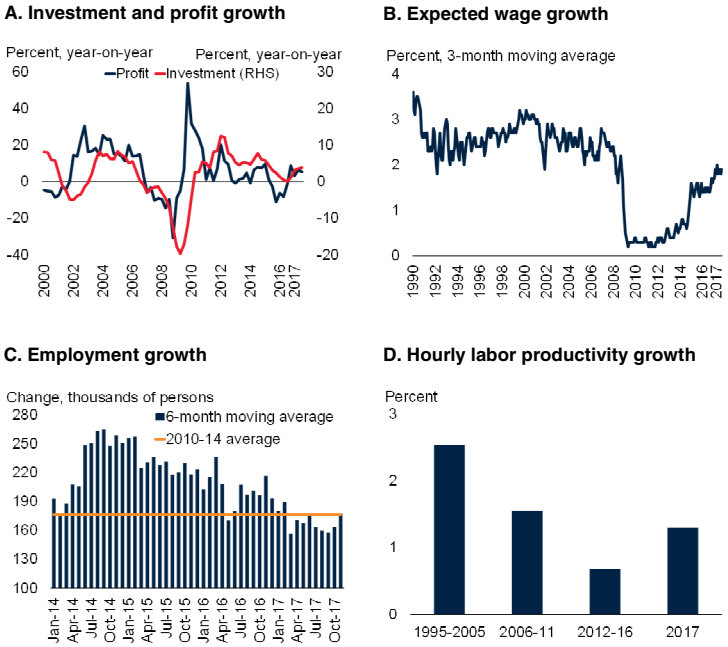
The cyclical upturn is expected to continue in 2018, albeit at a more restrained pace, as domestic demand loses some momentum following strong gains in 2017, and policy stimulus is gradually unwound. GDP growth is expected to be 2.1 percent in 2018, down from the previous year but notably stronger than previously projected. It is then foreseen to average 1.6 percent in 2019-20—around the upper end of estimates of potential output growth—as labor market slack dissipates. Over the longer term, growth prospects remain constrained by the shrinking of the working-age population in the majority of Euro Area economies and persistent productivity and competitiveness gaps among the peripheral members (Díaz del Hoyo et al. 2017).

Japan

Growth picked up in 2017 to an estimated 1.7 percent. Domestic demand firmed, supported by a gradual recovery in consumer spending and investment, as well as the implementation of a fiscal stimulus package (Figure 1.6.). Exports accelerated in response to strengthening global

FIGURE 1.4 United States

Investment growth picked up in 2017, households' wage growth expectations improved, and labor market slack continued to diminish, even as employment growth slowed. Although productivity has improved recently, it is still weak and remains a major constraint to growth.



Sources: Federal Reserve Bank of St. Louis, Haver Analytics, Survey of Consumers University of Michigan, U.S. Bureau of Economic Analysis, World Bank.

A. Real private fixed capital formation and nominal before-tax profit growth. Last observation is 2017Q3.

B. Expected wage growth is the median increase in expected household income during the next year. Last observation is October 2017.

C. Employment is private nonfarm payroll. Last observation is November 2017.

D. Hourly labor productivity measured as output per hour worked in the nonfarm private sector. Data for 2017 estimated by averaging 2017Q1 to 2017Q3. Last observation is 2017Q3.

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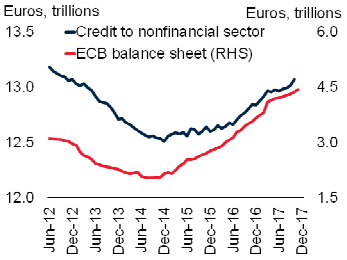
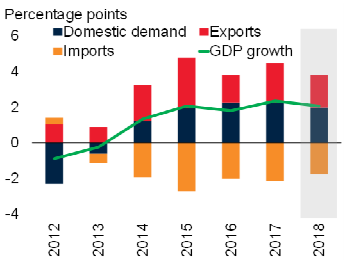
FIGURE 1.5 Euro Area

Credit recovered further in 2017, as the balance sheet of the European Central Bank continued to expand, albeit at a slightly slower pace. Domestic demand, exports, and imports strengthened. Labor shortages have become increasingly prevalent, although wage growth remains subdued. The appreciation of the euro is likely to put downward pressure on import prices and inflation.

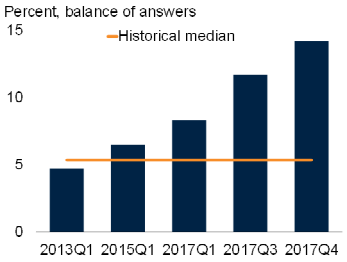
A. Private credit and ECB balance sheet



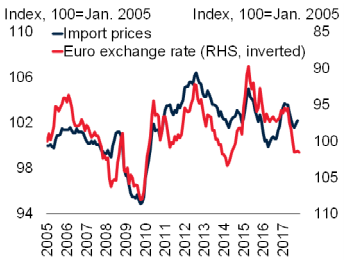
B. Contribution to growth



C. Labor shortages



D. Import prices and euro exchange rate



Sources: European Central Bank, European Commission, Federal Reserve Bank of St. Louis, Haver Analytics, World Bank.

A. Last observation is November 2017 for ECB balance sheet and October 2017 for credit to nonfinancial sector.

B. Shaded area indicates forecast.

C. Factors limiting output growth based on the European Commission business sentiment surveys. Median value is computed over the period from 2000Q1 to 2017Q4.

D. Last observation is November 2017 for the euro exchange rate and October 2017 for import prices.

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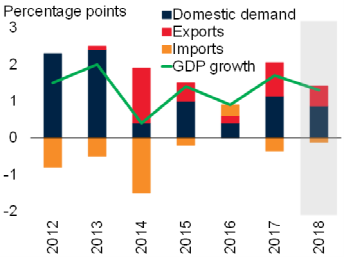
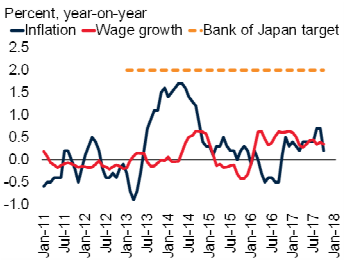
FIGURE 1.6 Japan

Domestic demand strengthened in 2017, but wage growth remained moderate and inflation low despite some increase.

A. Contribution to growth



B. Wage growth and CPI inflation



Sources: Haver Analytics; Japan Ministry of Health, Labor, and Welfare; Japan Ministry of International Affairs and Communications; World Bank.

A. Shaded area indicates forecast.

B. The Bank of Japan's (BoJ) inflation target is 2 percent. CPI inflation is the headline rate adjusted for changes in the consumption tax rate. Last observation is October 2017.

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demand, but the net trade contribution to growth remained unchanged as imports picked up as well.

Labor market conditions continued to tighten, with the unemployment rate at a 22-year low amid growing labor shortages. However, wage growth remained moderate and inflation below 1 percent. In this context, the Bank of Japan left policy rates unchanged in 2017 and continued to calibrate its bond purchases to stabilize long-term bond yields around zero.

Growth is expected to slow to 1.3 percent in 2018, as fiscal stimulus is withdrawn and export growth moderates. In 2019, growth is forecast at 0.8 percent, in line with average potential growth estimates. The planned consumption tax hike in October 2019 is expected to have a negative effect on growth in 2020, which is projected to slow temporarily to 0.5 percent. Population aging and a shrinking labor force continue to weigh on long-term growth prospects (Japan Cabinet Office 2017; Kawamoto et al. 2017).

China

Growth in China is estimated to have reached 6.8 percent in 2017—an upward revision from June forecasts, reflecting continued fiscal support and the effects of reforms, as well as a stronger-than-expected recovery of exports and a slight positive contribution from net trade (World Bank 2017a; Figure 1.7). Domestic rebalancing continued, with drivers of activity shifting away from state-led investment. China's trade flows recovered markedly in 2017, partly reflecting rising commodity imports amid tightly enforced production cuts as well as strengthening foreign demand.

Consumer price inflation increased steadily throughout the year but remained below target, while producer price inflation was stable, supporting a recovery of industrial profits. House price growth continued to slow, reflecting tighter regulations in larger cities. Despite further monetary and regulatory tightening in 2017, the total stock of non-financial sector debt, at about 260 percent of GDP, continued to expand on a year-on-year basis (BIS 2017; World Bank 2017a).

On the external side, the current account surplus continued to narrow but, with a moderation of net capital outflows, foreign exchange reserves recovered in 2017. In the second half of the year, the renminbi reversed some of its previous nominal appreciation following the removal of reserve requirements for foreign currency trading.

Chinese growth is projected to edge down in 2018 to 6.4 percent as policies tighten, and average 6.3 percent in 2019-20. Key downside risks to the outlook stem from financial sector vulnerabilities, the possibility of increased protectionist policies in advanced economies, and rising geopolitical tensions. Long-term fundamental drivers of potential growth point to a further slowdown in China's growth over the next decade, as population aging is expected to depress labor supply.

Global trends

Global trade strengthened significantly in 2017, benefiting from a cyclical recovery in global manufacturing and investment growth. This momentum is expected to diminish in 2018-20, as the upturn in advanced economies moderates and growth in China continues to decelerate. Global financing conditions remain benign, despite prospects of further normalization of monetary policy in major advanced economies, but are likely to tighten going forward. Energy and metals prices recovered in 2017, while agricultural prices remained stable.

Global trade

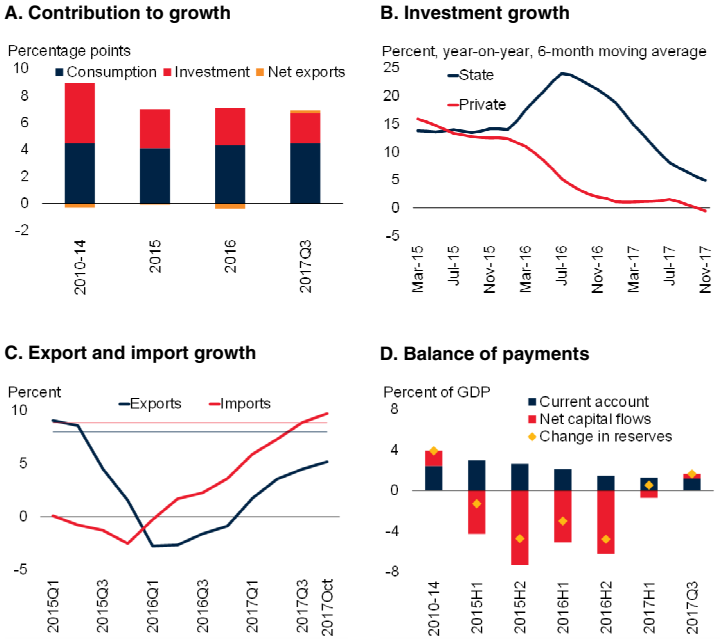
Global goods trade volumes have gathered significant momentum since mid-2016, following two years of pronounced weakness. A cyclical rebound in investment contributed to strong growth of trade in machinery, electronics and, semiconductors (Figure 1.8). Momentum was sustained throughout 2017, and global trade growth is estimated to have reached a stronger-than-expected 4.3 percent, thanks to synchronous recovery in import demand from both advanced economies and EMDEs. Export growth accelerated in most EMDE regions. However, it decelerated in the Middle East and North Africa, partly reflecting cuts in oil production agreed by OPEC members.

The recovery in global trade has been tightly connected to a cyclical upturn in global manufacturing, which in turn was encouraged by stronger capital spending. Services trade also recovered in 2017, albeit at a slower pace than goods trade, as the former is generally less affected by short-term inventory and production cycles (OECD 2017b). Global trade growth is set to moderate somewhat in 2018-19, at an average of 4 percent, in line with the projected deceleration of capital spending in advanced economies and China.

Besides the effects of maturing recoveries, global trade is expected to remain constrained by structural forces, including the slower pace of global value chain integration and trade liberali-

FIGURE 1.7 China

Growth in China remains solid, with drivers of activity shifting away from state-led investment. China's trade flows recovered markedly in 2017. Tighter enforcement of capital flow management measures helped ease capital outflows and exchange rate pressures and reverse a reduction in foreign reserves.



Sources: China National Bureau of Statistics, Haver Analytics, World Bank.
A. Investment refers to gross capital formation, which includes change in inventories. Last observation is 2017Q3.
B. Last observation is November 2017. October 2017 and November 2017 deflators are estimated.
C. Data include only goods and reflect contributions to year-on-year 12-month moving average growth. Horizontal lines indicate 2010-14 averages. Last observation is October 2017.
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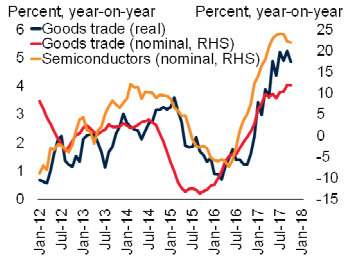
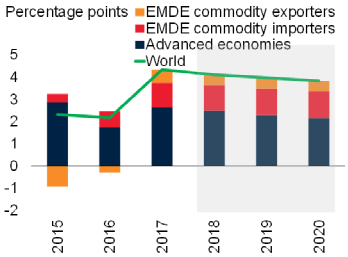
FIGURE 1.8 Global trade

Global trade has gathered momentum, supported by firming capital goods trade. Robust import demand from major advanced economies was a driving force, while export growth accelerated in most EMDE regions. However, structural factors continue to dampen trade, including stalling global value chain integration. The number of newly introduced protectionist measures in the largest economies stabilized in 2017.

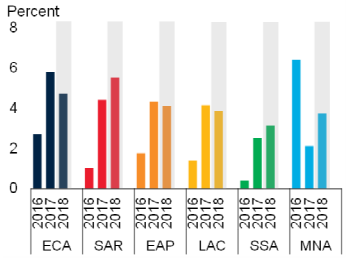
A. Global goods trade growth



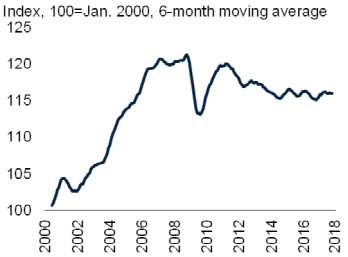
B. Contribution to global import growth



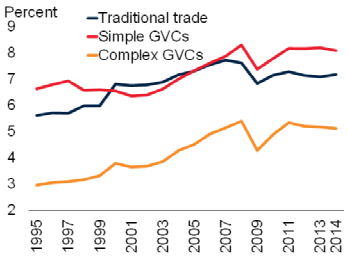
C. Export growth, by EMDE region



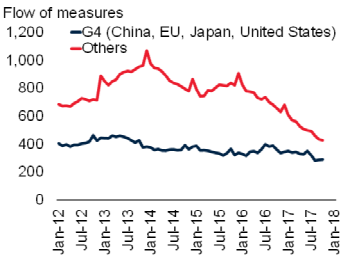
D. Ratio between global goods trade and global industrial production



E. Evolution of global value chains (GVC)



F. New trade restrictions



Sources: CPB Netherlands Bureau for Economic Policy Analysis, Global Trade Alert, Semiconductor Industry Association, Wang et al. (2017), World Bank, World Trade Organization.

A. Goods trade data are 3-month moving averages. Last observation is October 2017.

B. C. Shaded areas indicate forecasts.

C. Exports measured as the volume of goods and services. EAP = East Asia and Pacific, ECA = Europe and Central Asia, LAC = Latin America and the Caribbean, MNA = Middle East and North Africa, SAR = South Asia, and SSA = Sub-Saharan Africa.

D. Last observation is October 2017.

E. Share of total value added. In simple GVCs, value added crosses national borders only once during the production process. In complex GVCs, value added crosses national borders at least twice.

F. Data are 12-month sums. Last observation is October 2017.

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zation. Even during a period of marked acceleration since mid-2016, global goods trade only kept pace with global industrial production levels, prolonging a plateau observed since the mid-2000s. Since 2011, participation in global value chains (GVCs) has stabilized—and even dropped slightly for more complex production processes where value added crosses borders multiple times, which is typical for high-value sectors such as motor vehicles, computers, and machinery. Although simple GVCs (where value added crosses borders only once) are about two times larger than complex GVCs in terms of total value added, the latter contribute disproportionately to trade flows and are particularly sensitive to changes in trade costs and trade policy uncertainty (World Bank et al. 2017).

The number of newly introduced protectionist measures in 2017 stabilized in the largest economies and declined in the rest of the world. However, the stock of these measures continues to grow. It is estimated that close to three-quarters of G20 exports face some type of trade distortion in destination markets (Evenett and Fritz 2017). Anti-dumping duties and other tariffs accounted for close to half of recently introduced protectionist measures, followed by financial grants and public procurement localization measures. Exporters of iron and steel, electrical energy and metal products remain disproportionately affected by trade restrictions (Evenett and Fritz 2017).

Financial markets

Global financing conditions remain benign, benefiting from an improved global growth outlook and historically low interest rates, despite prospects of further monetary policy normalization in major advanced economies. The U.S. Federal Reserve hiked policy interest rates three times in 2017, and by a cumulative 125 basis points since the start of its tightening cycle in December 2015. It also began to gradually reduce the size of its balance sheet in October 2017, although the target level over the medium-term has not been specified yet. In addition, the ECB announced a further reduction of its asset purchase program starting in January 2018. Despite prospects of tighter monetary policy, U.S. and Euro Area bond yields remained at historically low levels throughout 2017 (Figure 1.9), reflecting subdued inflation trends and expectations of structurally low real interest rates (Rachel and Smith 2017). Amid low nominal and real interest

rates, financial market volatility remained subdued despite policy and geopolitical uncertainties. Stronger-than-expected growth in the Euro Area combined with a relatively stable outlook for the U.S. economy has contributed to some weakening of the U.S. dollar, following three years of significant appreciation.

Highly accommodative financing conditions in major advanced economies supported a search for yield and strong demand for EMDE assets in 2017. This was reflected in declining bond spreads, particularly for EMDE investment grade borrowers, and an increase in capital flows, including portfolio and international bond issuances. Among commodity-exporting EMDEs, the waning effect of the terms-of-trade shock, combined with moderating inflation and external imbalances, helped support market sentiment.

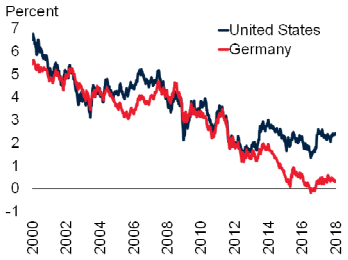
Overall, capital inflows rose as a share of EMDE GDP in 2017, recovering further from their post-crisis low in 2015. The increase was particularly notable in Asia and Eastern Europe and Central Asia, while flows into Latin America remained weak. A rise in portfolio and bank lending flows were the main drivers of the overall improvement. Although foreign direct investment (FDI) flows were broadly stable in aggregate, the experience varied across regions. FDI flows to Asia remained strong, supported by a robust growth outlook and policy efforts to attract foreign investment (e.g., India, Indonesia, Vietnam). FDI flows to Sub-Saharan Africa rose only slightly in the wake of a moderate rise in commodity prices and an increase in non-commodity investments, and FDI inflows to Middle East and North Africa also posted modest growth, supported by privatization plans and improvements in business regulations (e.g., Algeria, the Arab Republic of Egypt, Tunisia).

Although cross-border bank lending to EMDEs recovered, it remained subdued, partly reflecting past de-risking from banks in the Euro Area, United Kingdom, and United States (IFC 2017). Capital inflows to EMDEs are expected to continue to be sustained in 2018, supported by improved growth prospects, but are likely to moderate thereafter as global financing conditions tighten.

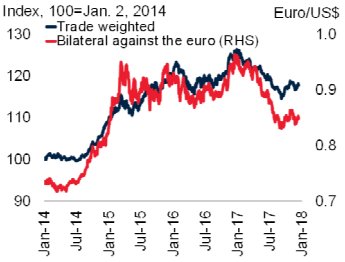
FIGURE 1.9 Global finance

Despite prospects of tighter monetary policy, U.S. and Euro Area bond yields remained low in 2017, while the U.S. dollar generally depreciated. A continued search for yield helped lower bond spreads for EMDEs and spur robust capital inflows.

A. U.S. and German long-term bond yields

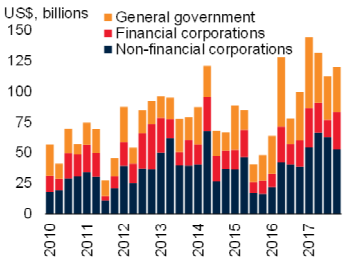


B. U.S. dollar exchange rates

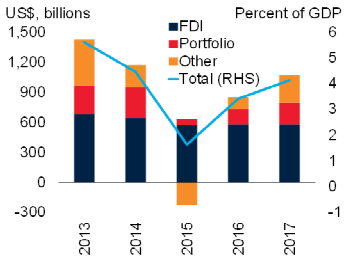


C. EMDE sovereign bond spreads

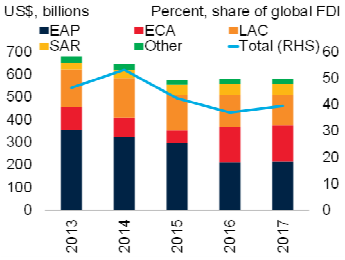
D. International bond issuances



E. Capital inflows to EMDEs



F. FDI inflows to EMDEs



Sources: Bank for International Settlements, Bloomberg, Dealogic, Federal Reserve Bank of St. Louis, Haver Analytics, International Monetary Fund, J.P. Morgan, World Bank.
A. 10-year government bond yields. Last observation is December 19, 2017.
B. An increase indicates an appreciation of the U.S. dollar. Last observation is December 15, 2017.
C. Data exclude Venezuela. Last observation is December 18, 2017.
D. Last observation is 2017Q4.
E. F. Based on top 28 recipients of capital flows. "Other" investment category includes all financial transactions not covered in direct investment, portfolio investments, or reserve assets. Data for 2017 are estimates.
F. EAP = East Asia and Pacific, ECA = Europe and Central Asia, LAC = Latin America and the Caribbean, and SAR = South Asia.
Click here to download data and charts.

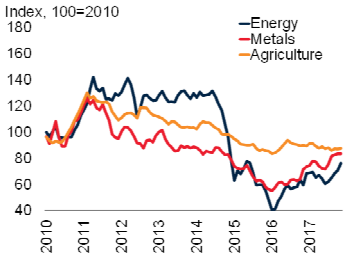
Commodities

Energy and metals prices recovered in 2017 while agricultural prices remained broadly stable, in line with June expectations (Figure 1.10). Oil prices averaged $53 per barrel (bbl) in 2017, up 24 percent from 2016, but were volatile throughout

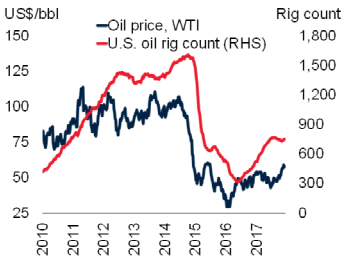
FIGURE 1.10 Commodity markets

Crude oil prices increased in 2017, despite a further rebound in U.S. rig counts and growing efficiency gains in shale oil production. Metals prices rose sharply, on the back of China's strong demand and supply restrictions. Agricultural commodity prices, which stabilized in 2017, are anticipated to make only marginal gains in 2018 as global stocks remain at multi-year highs.

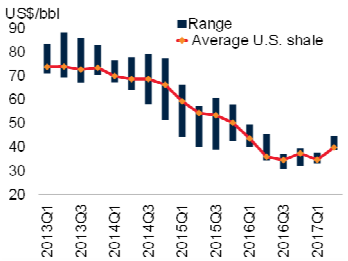
A. Commodity price indexes



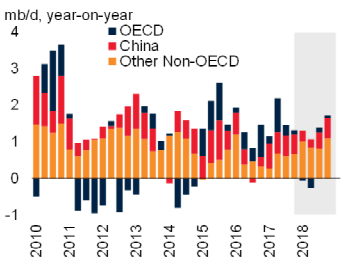
B. U.S. oil rig count and oil prices



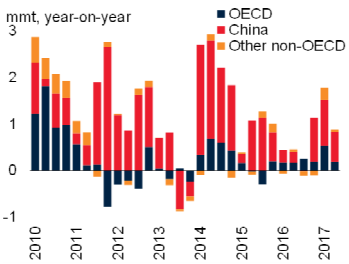
C. U.S. shale break-even oil prices



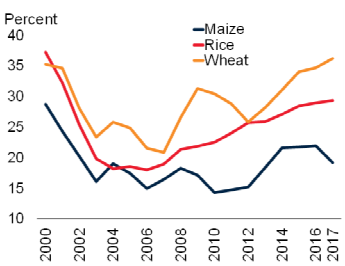
D. Global oil consumption growth



E. Global metals consumption growth



F. Stocks-to-use ratios of main grains



Sources: Baker Hughes, Bloomberg, International Energy Agency, Rystad Energy NASWellCube Premium, U.S. Department of Agriculture, World Bank, World Bureau of Metal Statistics.
A. Index based on nominal U.S. dollars. Last observation is November 2017.
B. Weekly data. Last observation is December 15, 2017.
C. Does not include test activity, where well was shut-down after completion. The average and range are calculated over Bakken, Eagle Ford, Permian Delaware, and Permian Midland basins. Last observation is 2017Q2.
D. Shaded area (2017Q4-2018Q4) represents IEA projections.
E. Last observation is 2017Q2.
F. USDA December 2017 update.
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the year. Despite an agreement by some Organization of Petroleum Exporting Countries (OPEC) and non-OPEC producers to cut production, oil prices dropped to $46 in mid-2017, reflecting a rebound in U.S. crude oil output and rising production from Libya and Nigeria, which were exempted from production targets. The price dip temporarily halted the upturn in U.S. shale drilling. Prices then increased to around $60/bbl toward the end of 2017, amid strengthening demand, falling stocks, and an agreement in late November to extend production cuts until the end of 2018.

Oil prices are projected to average $58/bbl in 2018—a slight upward revision from June forecasts—and edge up to $59/bbl in 2019. These projections reflect expectations of an increase in U.S. production due to continued efficiency gains in the shale oil industry, moderate non-OECD demand growth, and very limited OECD demand growth. Downside risks for oil prices arise mainly from the resilience of the U.S. shale industry and from weak compliance to the agreed production cuts. Conversely, upside risks to prices include the possibility of supply disruptions among politically stressed oil producers (e.g., Iraq, Libya, Nigeria), as well as stronger demand growth.

Metals prices gained 22 percent in 2017 partly due to robust demand from China. Low stocks for some metals, notably aluminum and zinc, and China's efforts to reduce surplus production capacity and limit industrial pollution, also helped lift prices in the second half of 2017. In response to tightening conditions, the base metals price index is expected to edge up in 2018 and 2019. Downside risks to the price forecast include the possibility of slowing demand and less-than-expected production cuts in China. Upside risks include stronger global demand, falling stocks, and a further reduction in Chinese capacity.

Agricultural prices weakened marginally in 2017 and are projected to remain stable in 2018 and 2019. Weighing on prices is the fact that improved growing conditions have pushed stocks-to-use ratios of key grains to multi-year highs. Moreover, fears of supply disruptions (notably, wheat in North America), which temporarily boosted some grain prices, have diminished. Low energy prices have helped reduce grain and oilseeds costs, given that their production is relatively energy-intensive, and have also reduced incentives to divert land to the production of biofuels. Indeed, biofuel production, which grew at 15 percent per annum during the past 10 years,

is expected to grow at 3 percent only in the next 3 years, and stabilize thereafter.

Emerging market and developing economies: Recent developments and outlook

EMDE growth accelerated in 2017 to 4.3 percent, reflecting a recovery in commodity exporters amid continued robust activity in commodity importers. EMDE growth is projected to further strengthen to 4.5 percent in 2018 and to an average of 4.7 percent in 2019-20—close to potential—as headwinds to commodity exporters dissipate. However, potential growth over the next decade is likely to decline, reflecting the lagged effect of recent investment weakness, slowing productivity growth, and unfavorable demographic trends.

Recent developments

EMDE growth accelerated to an estimated 4.3 percent in 2017, in line with June projections (Figure 1.11). A cyclical upturn continued in commodity exporters, raising their contribution to overall EMDE growth. The recovery in commodity exporters reflected an upturn in private consumption and investment amid improved confidence and diminishing drag from earlier policy tightening. The contribution of net exports declined in commodity exporters, as import growth rebounded substantially. In commodity importers, growth remained robust in 2017, supported by solid domestic demand and strong exports. Recent activity data have been solid, and a number of high-frequency indicators—such as industrial production and purchasing managers' indexes (PMIs)—are at multi-year highs, suggesting continued momentum across EMDEs, particularly among commodity exporters.

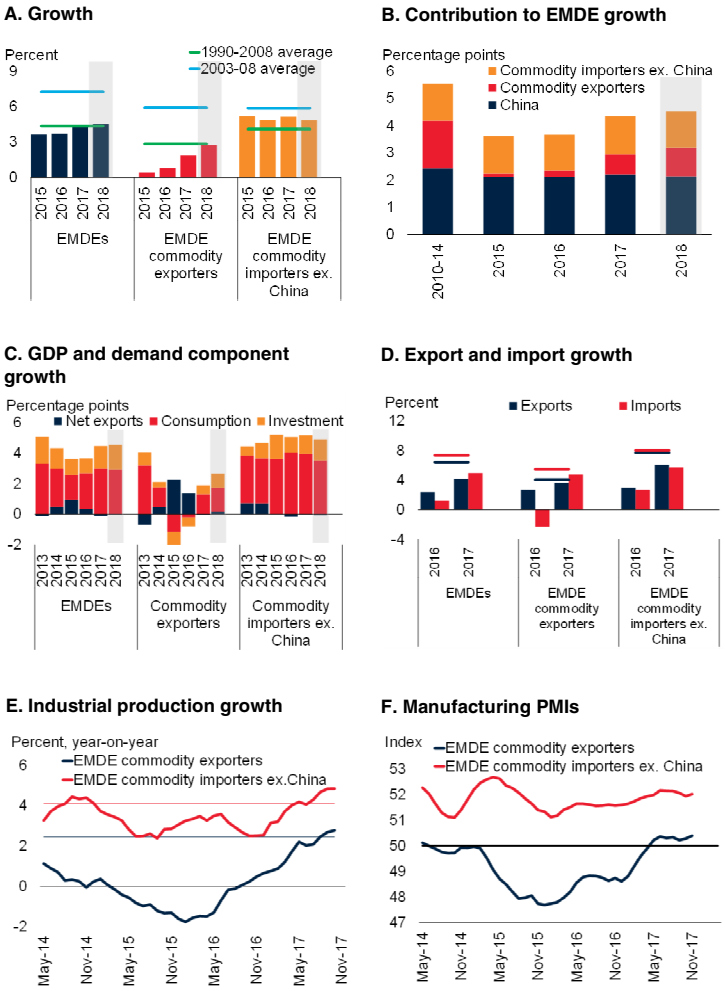
Commodity-exporting EMDEs

Growth in commodity exporters is estimated to have accelerated in 2017 to a still subdued rate of 1.8 percent—broadly in line with previous forecasts and up from 0.8 percent in 2016, as various large economies (e.g., Argentina, Brazil, Nigeria, Russia) emerged from recession (Figure 1.12). Although the recovery was led by a rebound in Brazil and Russia (the largest economies in this group), it was broad-based, and seen in more than 50 percent of commodity exporters.

Domestic demand in 2017 continued to benefit from improved confidence and greater macroeco-

FIGURE 1.11 Activity in EMDEs

EMDE growth strengthened in 2017, as activity recovered in commodity exporters and remained solid in commodity importers. In particular, firming private consumption and investment supported growth in commodity-exporting EMDEs. A number of high-frequency indicators suggest continued momentum across EMDEs.



Sources: Haver Analytics, World Bank.
A. -C. Shaded areas indicate forecasts. Data for 2017 are estimates.
C. Based on sample of 155 EMDEs for which demand components are available and projected. Aggregate GDP growth numbers can differ from those presented in Table 1.1 due to the smaller country sample.
D. Data include goods and services. Blue and red horizontal lines indicate 2006-17 averages. Data for 2017 are estimates.
E. Blue and red horizontal lines indicate January 1995-October 2017 averages. Last observation is October 2017.
F. Values above 50 indicate expansion. Last observation is November 2017, with South Africa data as of May 2017.
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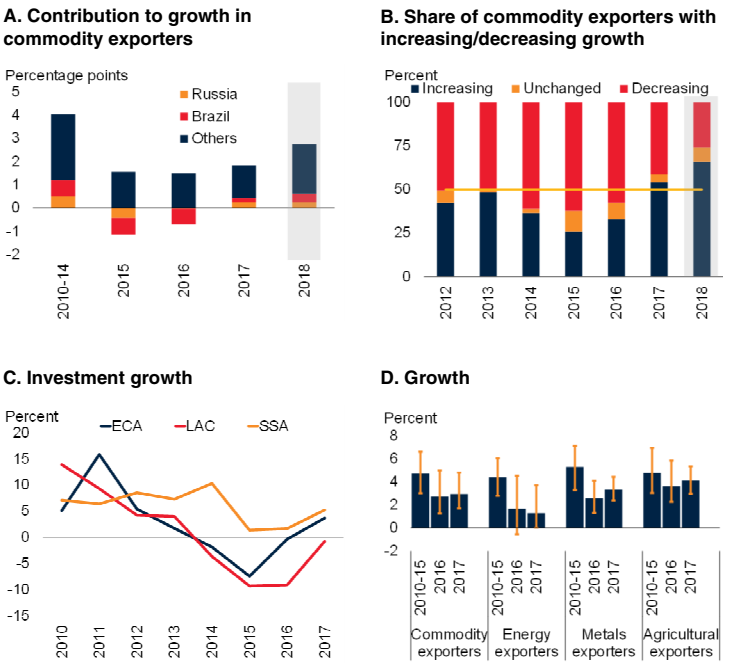
FIGURE 1.12 Activity in EMDE commodity exporters

While the recovery in commodity exporters reflected improvements in Brazil and Russia, it was broad based, with growth increasing in more than 50 percent of countries. Investment in commodity exporters bottomed out, reflecting stabilizing commodity prices, improved confidence, and diminishing drag from past policy tightening. However, energy exporters continued to lag behind.



Source: World Bank.
A. B. Shaded area indicates forecasts. Data for 2017 are estimates.
B. Increasing/decreasing growth are changes of at least 0.1 percentage point from the previous year. Countries with a slower pace of contraction from one year to the next are included in the increasing growth category. Sample includes 85 commodity-exporting EMDEs.
C. ECA = Europe and Central Asia, LAC = Latin America and the Caribbean, and SSA = Sub-Saharan Africa. Data for 2017 are estimates.
D. Simple average of GDP growth. Orange lines indicate interquartile ranges of growth in each group. Data for 2017 are estimates.
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nomic, currency, and price stability. The drag from earlier policy tightening diminished, and declining inflation allowed for more accommodative monetary policy (e.g., Brazil, Chile, Colombia, Kazakhstan, Russia, South Africa, Zambia). Lower inflation and greater monetary policy accommodation supported private consumption growth in large economies (e.g., Brazil, Kazakhstan, Russia, South Africa, Zambia; World Bank 2017b).

Investment recovered in 2017 after a period of contraction (e.g., Argentina, Colombia, the Islamic Republic of Iran, Nigeria, Russia, Zambia). In about 65 percent of commodity exporters investment growth rose. The turnaround reflected a response to the stabilization of global commodity prices and improved domestic conditions, which contributed to a reduction in financing costs and a recovery in capital inflows.

In resource sectors, corporate profits picked up supported by higher commodity prices, stronger currencies, and increased global demand, which helped improve balance sheets. After a substantial decline in 2014-2016, upstream energy investment rebounded modestly across commodity exporters, with gains in large energy producers in the Europe and Central Asia and Middle East and North Africa regions (e.g., Kazakhstan, Libya, Russia) offsetting continued contraction in large producers in the Latin America and Caribbean and Sub-Saharan Africa regions (International Energy Agency 2017). Positive industry-wide trends in mining and metals markets, including rising demand and prices, encouraged investment in metals producers (e.g., Armenia, Mongolia, Zambia; World Bank 2017c).

Trade volume flows in commodity exporters recovered markedly. A significant rebound in import growth reflected strengthening private consumption and investment. Export growth was supported by firming foreign demand; however, it remained moderate, as production cuts in some oil exporters offset accelerating export flows in other commodity exporters. More generally, export growth was modest in countries with undiversified export bases.

Among the largest commodity exporters, growth in Brazil rebounded to an estimated 1 percent in 2017 following two years of contraction—above previous forecasts, reflecting a recovery of domestic demand supported by easier monetary conditions and improved confidence (World Bank 2017d). In Russia, activity in 2017 was stronger than previously expected, with growth reaching an estimated 1.7 percent, in response to higher oil prices, banking sector support, targeted fiscal stimulus, and reduced external imbalances amid exchange rate flexibility (World Bank 2017e). Growth in Nigeria picked up to an estimated 1 percent—below previous forecasts, mainly due to softer-than-expected recovery of oil production (World Bank 2017f).

Activity in 2017 remained solid in a number of more diversified economies and agriculture exporters (e.g., Benin, Burkina Faso, Côte d'Ivoire, Ethiopia, Indonesia, Malaysia, Morocco, Senegal, Tanzania). Growth generally improved among metals exporters (e.g., Armenia, Mongolia, Zambia), reflecting higher metal prices and improved domestic conditions.

In contrast, adjustment to low commodity prices has proven more protracted than initially expected in some energy exporters (Special Focus 1). Countries with sluggish performance in 2017 include those that implemented oil production cuts (e.g., Iraq, Kuwait, Saudi Arabia). They also include countries that began to undertake belated policy adjustment in Sub-Saharan Africa (e.g., Chad, Republic of Congo), Latin America and the Caribbean (e.g., Trinidad and Tobago), Europe and Central Asia (e.g., Azerbaijan), and East Asia and Pacific (e.g., Timor-Leste). In some cases, these difficulties were compounded by country-specific challenges, such as exchange rate misalignments, social tensions, political challenges, and security issues.

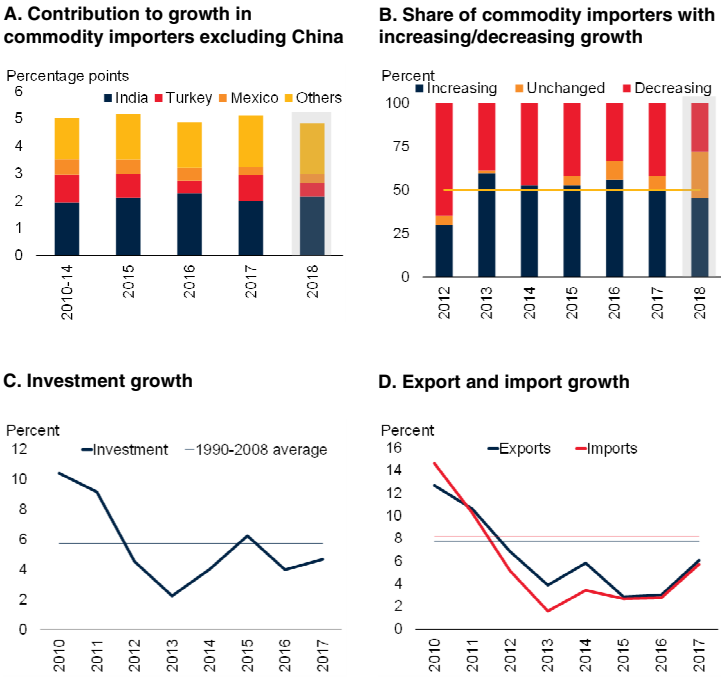
More generally, stronger initial conditions and fundamentals helped some countries recover from the commodity price shock more quickly than others (World Bank 2017g). For example, initial conditions among oil producers accounted for about half of the cross-country variations in the impact of the oil price shock (Grigoli, Herman, and Swiston 2017). More broadly, key determinants of the speed of recovery in commodity exporters included greater macroeconomic policy space and more adequate reserve buffers (e.g., Indonesia, Kazakhstan, Malaysia, Russia); more effective policy frameworks such as flexible exchange rate regimes (e.g., Colombia, Malaysia, Kazakhstan, Russia; Werner, Adler, and Magud 2017), and more diversified export bases (e.g., Albania, Indonesia, Malaysia).

Commodity-importing EMDEs

Growth in commodity importers remained robust at an estimated 6 percent in 2017. Excluding China, estimated growth in 2017 was 5.1 percent, in part reflecting a continued strong contribution from India (Figure 1.13.). About 50 percent of countries in this sub-group experienced increasing GDP growth. Accommodative policies, amid benign global financing conditions and low inflation, supported domestic demand, which offset the diminishing windfalls from the earlier decline in commodity prices. In particular, investment growth in commodity importers generally strengthened, although it varied across regions—picking up sharply in Europe and Central Asia, edging down in South Asia due to ongoing softness in India's private investment, and stagnating in Latin America and the Caribbean amid policy uncertainty. Meanwhile, export and import growth accelerated, reflecting firming global and domestic demand, respectively.

FIGURE 1.13 Activity in EMDE commodity importers excluding China

Growth in commodity importers was solid in 2017, supported by a continued strong contribution from India. About 50 percent of countries experienced increasing output growth. Investment growth in commodity importers generally strengthened, although it varied across regions. Export and import growth accelerated.



Source: World Bank.
A. B. Shaded area indicates forecasts. Data for 2017 are estimates.
B. Increasing/decreasing growth are changes of at least 0.1 percentage point from the previous year. Countries with a slower pace of contraction from one year to the next are included in the increasing growth category. Sample includes 57 commodity-importing EMDEs.
C. Data exclude China and refer to fixed investment. Data for 2017 are estimates.
D. Data exclude China and refer to goods and services. Horizontal lines indicate 1990-2008 averages. Data for 2017 are estimates.
Click here to download data and charts.

Many commodity importers in the Europe and Central Asia and Middle East and North Africa enjoyed positive trade and financial spillovers from strengthening activity in the Euro Area and the recovery in Russia (e.g., Belarus, Georgia, Jordan, Montenegro, Poland, Romania, Tunisia, Turkey). Idiosyncratic factors that had held back growth in several large commodity importers in the ECA region in 2016 diminished in 2017. For instance, absorption of EU structural funds strengthened in some Central European countries (e.g., Hungary, Poland). In addition, fiscal and monetary policy support in Turkey contributed to a much stronger-than-expected rebound in growth. However, geopolitical and domestic challenges in some economies (e.g., FYR Macedonia, Lebanon, Serbia) continued to weigh on activity. In Latin America, growth in Mexico was slightly better than expected, supported by solid services sector activity, despite challenges related to the renegotiation of NAFTA and natural disasters.

Commodity importers across Asia continued to register solid growth, in line with potential rates, supported by robust domestic demand and strengthening exports. Growth in large commodity importers accelerated (e.g., Pakistan, Thailand, Vietnam), or remained strong (e.g., Bangladesh, India, the Philippines), despite some disruptions related to idiosyncratic factors (e.g., adjustment to the new Goods and Services Tax in India, floods in Bangladesh, slower progress in the implementation of public investment projects in the Philippines; World Bank 2017h). Smaller Asian economies continued to benefit from robust growth in China and India, including resurging trade and substantial infrastructure investment (e.g., Afghanistan, Cambodia, Maldives, Sri Lanka). New infrastructure investment supported by China-led Belt and Road projects also benefitted a number of commodity importers in North Africa (e.g., Djibouti).

Low-income countries

Within the broader group of EMDEs, growth in low-income countries (LICs) is estimated to have strengthened to 5.1 percent in 2017, from 4.5 percent in 2016, reflecting an increase in commodity prices and a recovery in agriculture sectors from earlier droughts (Box 1.2). Mining output and investment rebounded in metals-exporting LICs (e.g., Democratic Republic of Congo) as metals prices recovered. The uptick in oil prices helped oil exporters exit recession (e.g., Chad). Non-resource intensive LICs expanded at a solid pace, supported by infrastructure investment and higher crop production. Favorable monsoon rains, a pickup in reconstruction works, and the normalization of trade with India underpinned a strong recovery in Nepal. However, growth was softer than expected in LICs dealing with heightened political uncertainty (e.g., Democratic Republic of Congo), high government debt (e.g., Chad), large external imbalances (e.g., Rwanda), and weak execution of fiscal plans (e.g., Tanzania). Most LICs reported a modest decrease in the poverty headcount in 2017. For almost a third of LICs, per capita growth was negative (e.g., Burundi, Chad, Democratic Republic of Congo, Haiti) or stagnant (e.g., Afghanistan, Comoros, The Gambia, Liberia).

EMDE outlook

EMDE growth is projected to strengthen to 4.5 percent in 2018 and to an average of 4.7 percent in 2019-20, in line with June forecasts (Figure 1.14). This outlook is predicated on improved global manufacturing activity and robust global trade, broadly favorable financing conditions, and firming commodity prices, amid an investment-led recovery in advanced economies.

The projected acceleration for EMDEs as a whole reflects a continued recovery in commodity exporters, whose growth is expected to pick up from 1.8 percent in 2017 to 2.7 percent in 2018, as the cyclical rebound continues, and to an average of 3.1 percent in 2019-20, as output gaps close and labor market slack gradually diminishes. The rebound in commodity exporters is expected to be broad-based, so long as the prices of oil and other commodities continue to rise. Domestic demand is expected to further strengthen, reflecting the positive effects of currency and price stability on consumer and business confidence. As the cyclical recovery continues, large negative output gaps are expected to narrow.

Consequently, growth in most EMDE regions with large numbers of commodity exporters is projected to accelerate (Box 1.3; Chapter 2).

Growth in commodity importers is projected to remain broadly stable in 2018-20, averaging 5.7 percent—in line with its potential rate. Strengthening exports are expected to offset the impact of diminishing policy support in the face of emerging price pressures and waning windfalls from earlier commodity price declines. A gradual slowdown in China is expected to be offset by a modest pickup in the rest of the group during the forecast horizon. Excluding China, growth in commodity importers is foreseen to be 4.8 percent in 2018 and to accelerate to an average of 5.1 percent in 2019-20, reflecting the diminishing role of idiosyncratic factors weighing on activity in some large economies (e.g., India, Mexico).

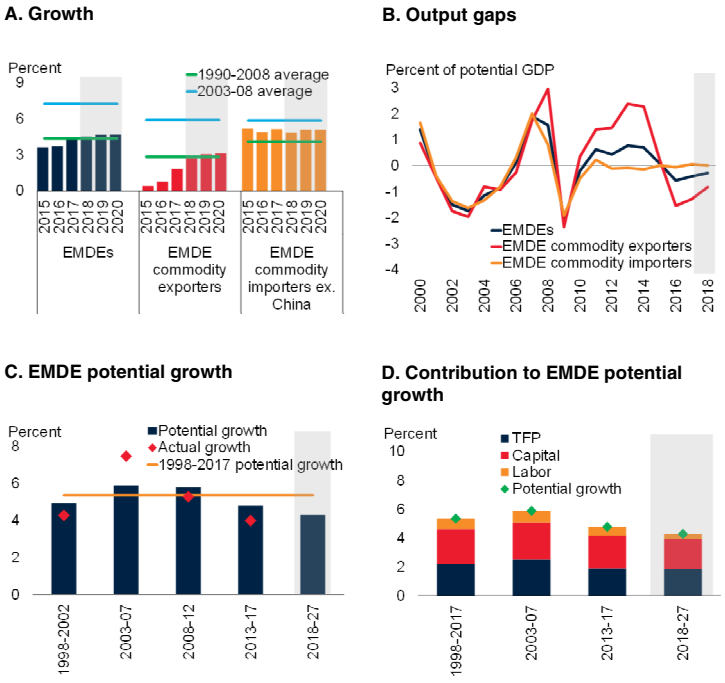
Forecasts for both groups are, on average, broadly in line with June projections. In commodity exporters, an upward revision to the largest economies (e.g., Brazil, Russia) offsets a downgrade to the near-term growth forecast in several large energy-producing economies related to higher-than-expected production cuts. In commodity importers excluding China, a small downgrade to growth projections in 2018 reflects a slight downward revision to India's still-fast pace of expansion due to a softer-than-envisioned recovery in investment and lingering effects of recent policy changes, as well as moderating growth in Turkey following a sharp rebound in 2017.

Growth in low-income countries is projected to rise to 5.4 percent in 2018 and to an average of 5.6 percent in 2019-20, as commodity prices firm. These forecasts are lower than in June, and reflect a reassessment of the pace of recovery in oil—and metals-exporting LICs that experienced sharp slowdowns or recession in 2016-17. Non-resource-intensive LICs in Sub-Saharan Africa are expected to continue to expand at a solid pace, supported by infrastructure investment and exports. However, growth is projected to moderate in countries adjusting to high public debt (e.g., Ethiopia), large external imbalances (e.g., Mali, Rwanda), and rising fiscal deficits (e.g., Zimbabwe). As for the non-resource-intensive LICs in South Asia, activity is expected to expand at a modest pace in Afghanistan, as the security situation continues to weigh on investment. In Nepal, growth is expected to moderate owing to infrastructure bottlenecks and regulatory challenges.

EMDE potential growth has declined considerably over the past two decades, notwithstanding an investment-driven boost during the pre-crisis surge in commodity prices. This slowdown reflected softening total factor productivity (TFP) growth and, to a lesser extent, recent investment weakness as well as less favorable demographic trends (Chapter 3). These factors were compounded by the slow post-crisis recovery and, in commodity

FIGURE 1.14 EMDE growth prospects

In the near term, EMDE growth is projected to pick up, as cyclical headwinds in commodity exporters, where negative output gaps remain large, gradually dissipate. Absent significant policy changes, EMDE potential growth—which has already fallen since the onset of the global financial crisis—is likely to further decline over the next decade, reflecting a more subdued pace of capital accumulation, slowing total factor productivity growth, and population aging.



Source: World Bank.
A. -D. Shaded area indicates forecasts.
B. Output gaps calculated using multivariate filter. Groups output gaps is the GDP-weighted average of individual country output gap estimates using, as weights, real GDP at 2010 prices and market exchange rates. The 23 EMDEs in the sample include Argentina, Bolivia, Brazil, Bulgaria, Chile, China, Colombia, Croatia, Hungary, India, Indonesia, Kazakhstan, Malaysia, Mexico, Peru, Poland, Romania, Russia, Serbia, South Africa, Thailand, Turkey, and Vietnam.
C. D. GDP-weighted averages of production function-based potential growth as described in Chapter 3. Sample includes 49 EMDEs.
D. TFP stands for total factor productivity growth.
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BOX 1.2 Low-income countries: Recent developments and outlook

Economic activity in low-income countries (LICs) strengthened, as commodity prices improved and the agricultural sector recovered. Growth in LICs is estimated to have picked up to 5.1 percent in 2017, and is projected to rise to 5.4 percent in 2018 and 5.6 percent in 2019-20, as commodity prices firm. However, these forecasts are lower than in June, due to a slower-than-previously-anticipated pace of recovery in oil and metals exporters. Risks to the outlook remain skewed to the downside, including the possibility of lower commodity prices, weaker-than-expected implementation of needed policy reforms, and a deterioration in political and security situations. On the upside, stronger-than-expected recoveries in large advanced economies and EMDEs could support stronger LIC growth through higher exports, investment, and remittances.

Recent developments

Growth rebounded. Growth in low-income countries (LICs) is estimated to have picked up to 5.1 percent in 2017 from 4.5 percent in 2016, reflecting gains in commodity prices and a recovery in agricultural sectors from droughts (Figure 1.2.1).[1] Mining output and investment rebounded in some metals-exporting LICs (e.g., Democratic Republic of Congo) as metals prices recovered. The uptick in oil prices helped slow the pace of contraction in some oil exporters (e.g., Chad). Non-resource-intensive LICs expanded at a solid pace, supported by infrastructure investment and higher crop production. Favorable monsoon rains, a pickup in reconstruction works, and the normalization of trade with India underpinned a strong recovery in Nepal. However, growth was softer than expected in LICs dealing with heightened political uncertainty (e.g., Democratic Republic of Congo), high government debt (e.g., Mozambique), large external imbalances (e.g., Rwanda), and weak execution of the capital expenditure budget (e.g., Tanzania).

Currencies stabilized, inflation slowed. The uptick in commodity prices, along with foreign aid inflows and central bank interventions, helped mitigate currency pressures. In some LICs (e.g., Mozambique), currencies strengthened as rising export receipts boosted the supply of foreign exchange. Exchange rate stability and an easing of food price inflation, due to improved rainfalls, helped lower headline inflation across LICs. However, in some metals-exporting LICs (e.g., Democratic Republic of Congo, Liberia), a slow recovery of foreign direct investment and the inability to access other sources of external financing resulted in a rapid depreciation of their currencies, which exacerbated inflationary pressures. Other cases of high inflation reflected rising fuel prices and the effects of natural disasters on domestic food supplies (e.g., Haiti). In LICs where inflation eased, some central banks (e.g., Tanzania) were able to cut interest rates to support domestic demand.

Current account deficits narrowed. The median current account deficit in LICs is estimated to have narrowed by 0.6 percentage points to 8.8 percent of GDP in 2017, reflecting an improvement in their terms of trade. Current account deficits narrowed in oil-exporting LICs (e.g., Chad), as imports decreased amid weak domestic demand, but remained elevated in metals-exporting LICs, as imports of capital equipment for mining projects continued. Deficits widened in non-resource-intensive LICs, due to a rise in capital goods imports for infrastructure development and natural disaster-related reconstruction work (e.g., earthquake in Nepal), and in fuel and food imports (e.g., Haiti). Although some current account deficits could be financed through Eurobond issuance and remittances (e.g., Senegal), capital flows to LICs remained soft and foreign reserves generally declined.

Declining fiscal deficits, still-elevated government debt. The median fiscal deficit in LICs is estimated to have narrowed to 4.3 percent of GDP in 2017 from 4.8 percent in 2016. The fiscal balance in some oil-exporting LICs turned into a surplus, in response to drastic spending cuts, and the fiscal deficits narrowed in non-resource-intensive countries, owing in some cases to delayed public investment spending. However, the fiscal deficits in metals-exporting LICs widened, as they continued to struggle to mobilize domestic revenue, while reconstruction-related spending increased the fiscal deficit in LICs hit by natural disasters (e.g., Nepal, Haiti).

Government debt remained elevated, reflecting the slow progress in reducing fiscal deficits, with the median debt-to-GDP ratio edging down to 53.3 percent from 53.8 percent in 2016. Government debt fell in oil-exporting LICs, but remained high in metals-exporters and the non-resource-intensive countries. Between 2016 and 2017, government debt increased by 5 percentage points to above 50 percent of GDP in some non-resource-intensive

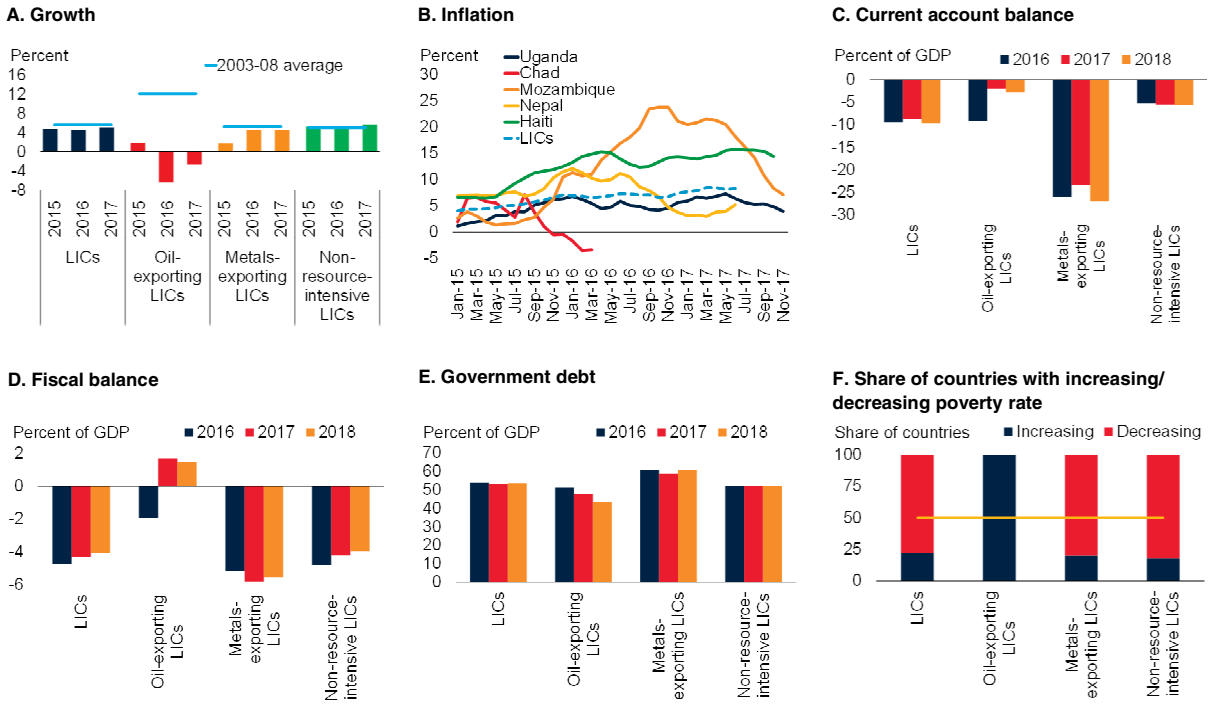
Note: This box was prepared by Gerard Kambou. Research assistance was provided by Xinghao Gong.

[1] For the 2018 fiscal year, low-income economies are defined as those with a gross national income per capita, calculated using the World Bank Atlas method, of $1,005 or less in 2016.

BOX 1.2 Low-income countries: Recent developments and outlook *(continued)*

FIGURE 1.2.1 Recent developments in low-income countries

Growth strengthened in low-income countries in 2017, reflecting a pickup in some metals exporters. Non-resource-intensive LICs continued to expand at a solid pace. Headline inflation slowed across LICs, as food inflation fell. Current account and fiscal deficits narrowed in oil-exporting LICs as they implemented measures to contain spending, but remained elevated in metals exporters and non-resource-intensive countries as investment spending remained high. Government debt remained elevated across LICs, reflecting still-high fiscal deficits. While most LICs reported a decrease in the poverty headcount, it is expected to increase in metals exporters and, particularly, in oil exporters.



Sources: Haver Analytics, International Monetary Fund, World Bank.
Note: Non-resource-intensive countries consist mostly of agricultural exporters.
A. Data for 2017 are estimates.
C. D. E. Data for 2017 are estimates and data for 2018 are forecasts.
F. Based on the international poverty line of $1.90 a day, at 2011 purchasing power parity (PPP) exchange rates.
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LICs (e.g., Burundi) and metals-exporters (e.g., Niger, Sierra Leone). Although government debt increased less in Benin and Ethiopia, it still rose above the median debt ratio, as they continued to borrow to finance ambitious investment plans. Debt servicing costs remained unsustainable in Chad and Mozambique, highlighting the need for governments in these and other LICs to continue their efforts to mobilize domestic revenue and rationalize public spending.

Slow progress in poverty reduction. Most LICs reported a modest decrease in the poverty headcount in 2017, based on the international poverty line ($1.90 in 2011 PPP). Per capita growth improved on average from 1.5 percent in 2016 to 2.1 percent in 2017, but was negative or flat for about a third of LICs. The international headcount poverty rate is estimated to have edged up in oil- and metals-exporting LICs (e.g., Chad, Democratic Republic of Congo), as well as in fragile countries (e.g., Afghanistan, Burundi) as they continued to experience low GDP growth rates.

Outlook

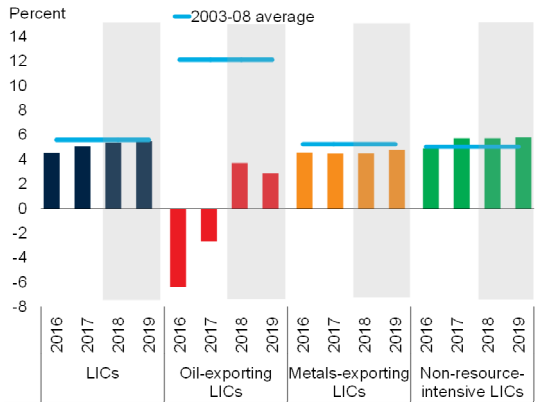
Softer-than-expected outlook. Growth in LICs is projected to pick up further, rising to 5.4 percent in 2018 and to 5.6 percent on average in 2019-20, as commodity prices firm (Figure 1.2.2). These forecasts are lower than in June, reflecting a more gradual pace of recovery in a number of oil and metals-exporting LICs that experienced

BOX 1.2 Low-income countries: Recent developments and outlook *(continued)*

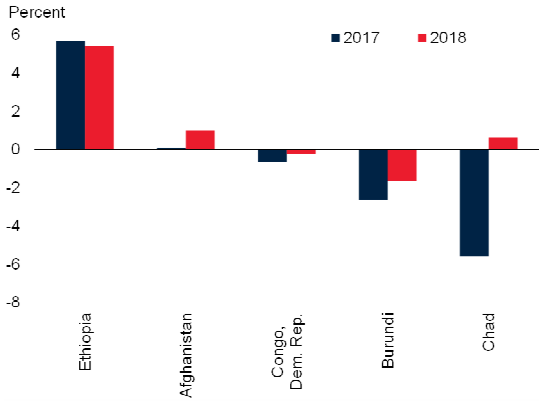
FIGURE 1.2.2 Outlook

Economic activity in LICs is projected to pick up further, with growth rising to 5.4 percent in 2018 and to 5.6 percent on average in 2019-20 as commodity prices firm. However, these forecasts are lower than in June, reflecting a more gradual pace of recovery among oil and metals exporters. While per capita growth will edge up in LICs as a whole, it will remain negative or low in a number of oil and metals exporters and in fragile countries. Growth, including in per capita terms, is expected to remain robust in non-resource-intensive LICs, although it will ease in some countries.

A. Growth forecasts



B. Per capita GDP growth projections for selected LICs



Source: World Bank.
A. Data for 2017 are estimates; data for 2018 and 2019 are forecasts. Shaded areas indicate forecasts.
B. Data for 2017 are estimates; data for 2018 are forecasts.
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a significant slowdown or recession in 2016-17. Moreover, while per capita growth is expected to edge up in LICs as a whole, it will still remain negative or low in several oil and metals-exporters and in fragile countries.

Growth in non-resource-intensive LICs is expected to remain robust. Non-resource-intensive LICs in Sub-Saharan Africa are expected to continue to expand at a solid pace, supported by expanding infrastructure investment. However, growth is projected to moderate in countries adjusting to high public debt (e.g., Ethiopia) and large external imbalances (e.g., Mali, Rwanda).

Among non-resource-intensive LICs in South Asia, activity is expected to expand at a modest pace in Afghanistan, as the security situation limits investment. In Nepal, following the strong recovery in 2017, growth is expected to moderate owing to infrastructure bottlenecks, regulatory challenges, and lower agricultural output. Elsewhere, after a slowdown in 2017, growth in Haiti is expected to rebound, as improving political stability helps lift investment.

Risks

Risks still skewed to the downside. A key downside risk to activity in LICs is the possibility of weaker-than-expected commodity prices, due for instance to softer Chinese demand. Renewed slides in commodity prices would strain fiscal and current account balances in commodity exporters. Foreign direct investment in mining and infrastructure, which is essential for long-term growth, would be curtailed. Metals-exporting LICs in Sub-Saharan Africa are particularly vulnerable to negative terms-of-trade shocks. Other downside risks include the possibility of a sharp reduction in foreign aid or of a large decline in remittances due to stricter immigration policies in advanced economies, which would harm investment and consumption in many LICs. On the upside, stronger-than-expected growth in the Euro Area—a major trading partner for many LICs—could lead to a stronger-than-expected pickup in activity in LICs through trade, investment and remittance channels. Faster-than-expected recoveries in EMDEs could have positive spillover effects on neighboring LICs.

On the domestic front, weak economic and financial policies remain the main risk to the LICs outlook. This risk is especially important among oil- and metals-exporting LICs, where sustained measures are needed to contain fiscal deficits, stabilize government debt, and rebuild buffers. In contrast to oil and metals exporters, the

BOX 1.2 Low-income countries: Recent developments and outlook *(concluded)*

TABLE 1.2.1 Low-income country forecasts[a]

(Real GDP growth at market prices in percent, unless indicated otherwise)

	2015	2016	2017e	2018f	2019f	2020f	Percentage point differences from June 2017 projections: 2017e	2018f	2019f
Low Income Country, GDP[b]	**4.7**	**4.5**	**5.1**	**5.4**	**5.5**	**5.7**	**-0.3**	**-0.4**	**-0.3**
Afghanistan	1.1	2.2	2.6	3.4	3.1	3.1	0.0	0.0	0.0
Benin	2.1	4.0	5.4	6.0	6.3	6.7	-0.1	0.0	0.0
Burkina Faso	4.0	5.9	6.4	6.0	6.0	6.0	0.3	-0.3	-0.3
Burundi	-3.9	-0.6	0.5	1.5	2.5	2.5	-1.0	-0.5	-0.1
Chad	1.8	-6.4	-2.7	3.7	2.9	6.8	-2.9	0.5	-0.2
Comoros	1.0	2.2	2.5	2.7	2.9	2.9	-0.8	-1.3	-1.1
Congo, Dem. Rep.	6.9	2.4	2.6	3.0	3.3	3.3	-2.1	-1.9	-1.6
Ethiopia[c]	9.6	7.5	8.5	8.2	7.8	7.8	0.2	0.2	-0.1
Gambia, The	4.1	2.2	3.0	3.5	4.2	4.2	0.5	-0.3	0.2
Guinea	3.5	6.6	6.7	5.8	5.9	5.9	2.3	1.2	1.3
Guinea-Bissau	6.1	5.8	5.5	5.2	5.4	5.4	0.4	0.1	0.3
Haiti[c]	1.2	1.4	1.1	2.2	2.5	2.5	0.6	0.5	0.2
Liberia	0.0	-1.6	2.5	3.9	5.0	6.0	-0.5	-1.4	-0.7
Madagascar	3.1	4.2	4.1	5.1	5.6	5.4	0.6	-1.3	0.9
Malawi	2.8	2.5	4.5	5.0	5.4	5.4	0.1	0.1	0.1
Mali	5.7	5.8	5.3	5.0	4.7	4.7	0.0	-0.2	-0.4
Mozambique	6.6	3.8	3.1	3.2	3.4	3.4	-1.7	-2.9	-3.3
Nepal[c]	2.7	0.4	7.5	4.6	4.5	4.5	0.0	-0.9	0.0
Niger	4.0	5.0	5.2	5.2	5.4	5.6	0.0	-0.3	-0.1
Rwanda	8.9	5.9	5.2	5.9	6.8	6.8	-0.8	-0.9	-0.2
Senegal	6.5	6.7	6.8	6.9	7.0	7.0	0.1	0.0	0.0
Sierra Leone	-20.6	6.3	5.6	6.3	6.7	6.7	0.2	0.7	0.8
Tanzania	7.0	7.0	6.6	6.8	6.9	6.9	-0.6	-0.4	-0.5
Togo	5.3	5.0	5.0	5.3	5.4	5.4	0.4	-0.2	-0.1
Uganda[c]	5.2	4.7	4.0	5.1	5.7	6.0	-0.6	-0.1	0.1
Zimbabwe	1.4	0.7	2.8	0.9	0.2	0.2	0.5	-0.9	-1.5

Source: World Bank.

Notes: e = estimate; f = forecast. World Bank forecasts are frequently updated based on new information and changing (global) circumstances. Consequently, projections presented here may differ from those contained in other Bank documents, even if basic assessments of countries' prospects do not differ at any given moment in time.

a. Central African Republic, Democratic People's Republic of Korea, Somalia, and South Sudan are not forecast due to data limitations.

b. GDP at market prices and expenditure components are measured in constant 2010 U.S. dollars.

c. GDP growth based on fiscal year data. For Nepal, the year 2017 refers to FY2016/17.

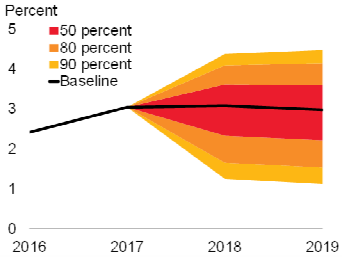
For additional information, please see www.worldbank.org/gep.

non-resource-intensive LICs (e.g., Ethiopia, Senegal)—which are relatively more diversified—have expanded at a robust pace. Their high pace of expansion has, however, been accompanied by a rising debt burden, as they continued to borrow, including on international capital markets, to finance ambitious public infrastructure programs. Excessive external borrowing, in the absence of sound forward-looking budget management, could worsen debt dynamics and cause economic instability. In addition, droughts, heightened policy uncertainty, conflicts, and worsening security conditions could weigh heavily on economic activity in LICs, especially in fragile countries.

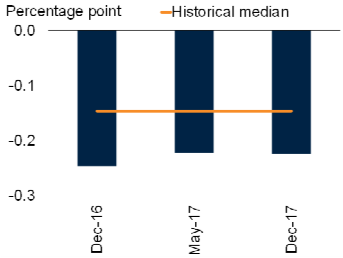
FIGURE 1.15 Global growth forecasts: Uncertainty and the balance of risks

Uncertainty around global growth prospects remains elevated and risks still tilted to the downside, despite the possibility of stronger-than-expected growth in large economies.

A. Probability distribution around global growth forecasts



B. Balance of risks to one-year-ahead global growth forecasts



Source: World Bank.
A. B. The fan chart shows the forecast distribution of global growth using time-varying estimates of the standard deviation and skewness extracted from the forecast distribution of three underlying risk factors (oil price futures, the S&P 500 equity price futures, and term spread forecasts). Each of the risk factor's weight is derived from the model described in Ohnsorge, Stocker, and Some (2016). Values for 2018 are computed from the forecast distribution of 12-month ahead oil price futures, S&P 500 equity price futures, and term spread forecasts. Values for 2019 are based on 24-month-ahead forecast distributions. Last observation is December 2017.
B. Balance of risks to 12-month global growth forecasts measured as the time-varying skewness of global growth forecasts, computed from the forecast distribution of the three underlying risk factors. Dates in horizontal axis correspond to cutoff dates for the January 2017, June 2017, and January 2018 editions of *Global Economic Prospects*. Median value is computed over the period January 2006 to October 2016.
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exporters, the decline in commodity prices. Absent significant policy changes to boost potential growth, long-term fundamental drivers of EMDE growth are expected to continue to weaken over the next decade, including a subdued pace of capital accumulation, slowing productivity, and population aging. Demographic trends are expected to particularly worsen in East Asia and Pacific (e.g., China, Thailand) and Europe and Central Asia (e.g., Poland, Russia), while they will remain especially supportive to potential growth in South Asia.

Risks to the outlook

Risks to global growth have become more balanced, following a stronger-than-expected cyclical upturn in 2017. A further pickup in investment growth in major economies could strengthen the recovery, with positive spillover effects for trading partners. However, risks remain predominantly on the downside, especially over the medium term. With interest rates and financial market volatility at exceptionally low levels, the outlook is vulnerable to sudden changes in market sentiment or unexpected policy shifts that could lead to financial instability. Also, increased trade protectionism and rising geopolitical tensions could weigh on sentiment and disrupt the recovery. Over the longer term, a sharper-than expected slowdown in potential output growth could reduce the resilience of the global economy to adverse shocks and damage prospects for gains in living standards and poverty reduction.

Global growth estimates for 2017 have been revised up to 3 percent, reflecting a broad-based recovery in advanced economies and faster-than-expected growth in some major EMDEs. The pace of global investment and export growth was stronger than previously projected, which benefited in particular more trade-dependent EMDE regions (e.g., Europe and Central Asia, East Asia and Pacific). While global growth is forecast to edge up to 3.1 percent in 2018, it is projected to slightly moderate later in the forecast horizon, given the anticipated normalization of monetary policy in major advanced economies in the face of closing output gaps, an expected slowing of growth in China, and limited medium-term prospects for substantial further acceleration among commodity-exporting EMDEs.

This said, the better-than-expected outcome in 2017 illustrates the possibility of a continued pickup in global investment and GDP growth if financing conditions continue to be benign, policy uncertainty recedes, and confidence improves further. Risks to the outlook have therefore become more balanced in 2018-19, although they remain tilted to the downside (Figure 1.15). Major risks include the possibility of disorderly financial market movements, unexpected policy changes, rising trade protectionism, heightened geopolitical tensions, and, over the longer run, a sharper-than-expected slowdown in potential output growth.

Upside risk: Stronger-than-expected growth in large economies

In the *Euro Area*, the dampening effect on activity of household and firm deleveraging has diminished, and capital spending is recovering (Figure 1.16). With investment rates still well below pre-crisis levels, the recovery could

continue to strengthen in 2018 as monetary policy remains highly accommodative and confidence improves further. The cyclical upturn could be reinforced by targeted structural reforms, which could create additional space for fiscal support measures in the short term (Banerji et al. 2017).

In the *United States*, the real return on business capital recovered from the global financial crisis, reaching historically high levels. Investment rates have rebounded but remain below previous cyclical highs, and they could recover more quickly than expected if rising business confidence or growth-enhancing policies unlock pent-up demand for capital spending. In particular, removing distortions that discourage capital spending could help spur stronger-than-expected activity (Auerbach et al. 2017; Toder 2017; Devereux, Lockwood, and Redoano 2008).

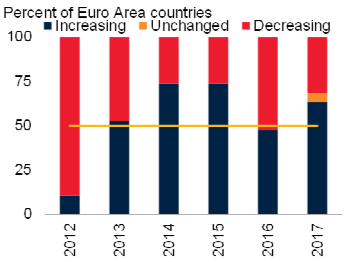
In *commodity-exporting EMDEs*, a stabilization of commodity prices and policy adjustments have generally helped restore confidence. Investment bottomed out in 2017, and diminished currency pressures allowed monetary policy to be eased. A faster pickup in commodity prices amid strengthening global growth could contribute to a more rapid revival in near-term activity and investment than currently expected, particularly in some of the largest commodity exporters (e.g., Brazil, Russia). Faster growth in these economies would have positive spillover effects on neighboring countries (World Bank 2016b).

More generally, a further strengthening of investment in the largest advanced economies and EMDEs could stimulate global trade and manufacturing activity, benefiting in particular more trade-dependent EMDEs (Freund 2016). Developments in major advanced economies continue to generate the largest international spillovers, but systemically important EMDEs are playing an increasing role as well. In addition, a stronger-than-expected cyclical recovery, in these large economies and elsewhere, could generate its own momentum, encouraging greater investment and boosting productivity. Consequently, if this growth spurt were to materialize and be sustained, it could in turn support potential growth (Chapter 3).

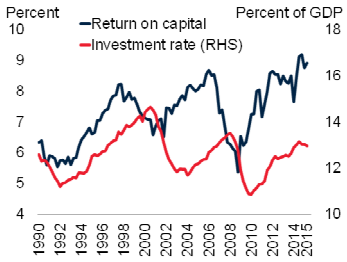
FIGURE 1.16 Upside risks of stronger-than-expected growth in large economies

Investment has been recovering across the Euro Area and the return on capital is at historically high levels in the United States. A stronger-than-expected recovery in these and other major economies, including the largest commodity-exporting EMDEs, could provide a boost to trading partners.

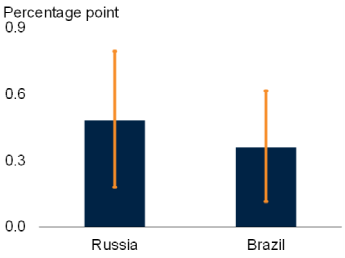
A. Share of Euro Area countries with increasing/decreasing investment growth



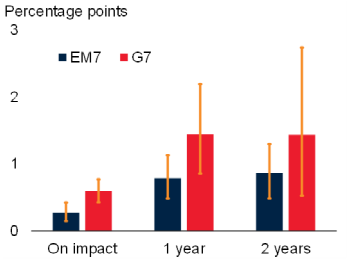
B. U.S. business investment rate and return on capital



C. Average impact of 1-percentage-point growth increase on neighboring economies



D. Impact of 1-percentage-point increase in EM7 and G7 growth on global growth



Sources: Federal Reserve Bank of St. Louis; Gomme, Ravikumar, and Rupert (2011); World Bank.

A. Increasing/decreasing investment growth are changes of at least 0.1 percentage point from the previous year. Countries with a slower pace of contraction from one year to the next are included in the increasing investment growth category.

B. Business capital data are calculated using constant U.S. dollars, following the methodology from Gomme, Ravikumar, and Rupert (2011). Investment as a share of GDP measured in current U.S. dollars.

C. Based on estimates of a structural VAR. Average cumulative impact response after two years of neighboring country's real GDP growth to a 1-percentage-point decline in Russia's or Brazil's growth. Orange bars reflect the 16th-84th percentile confidence bands. For Russia, the list of affected neighboring countries is Armenia, Kazakhstan, Poland, Romania, Slovak Republic, Turkey, and Ukraine. For Brazil, it is Argentina, Chile, Colombia, Ecuador, Paraguay, and Peru. For each country, the variables included in the model are: G7 growth, EMBI, growth of source country, trade-weighted average commodity prices, growth of the affected countries, the real effective exchange rate of the affected countries. The model includes a dummy that captures the global financial crisis of 2008-09.

D. EM7 includes Brazil, China, India, Indonesia, Mexico, Russia, and Turkey. Cumulative impulse responses of a 1-percentage-point increase in EM7 and G7 growth on global growth. The impact is the GDP-weighted average of the responses of EM7, other EMDEs, and G7 countries. Solid bars represent medians, and error bars represent 16-84 percent confidence intervals.

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Downside risk: Disorderly adjustment of financial market conditions

A disorderly adjustment of financial market conditions could be triggered by several factors, including a sudden correction in asset valuation, a market reassessment of the pace of monetary policy normalization in advanced economies, or financial stress in major EMDEs such as China.

BOX 1.3 Regional perspectives: Recent developments and outlook

Growth in most EMDE regions with large numbers of commodity exporters recovered in 2017, with the notable exception of the Middle East and North Africa mostly due to oil production cuts. These regions are generally expected to see faster growth during the forecast horizon, as commodity prices rise and the impact of the earlier collapse in those prices dissipates. The robust pace of expansion in EMDE regions with a substantial number of commodity importers is expected to continue. Risks to the outlook have become more balanced in some regions, but continue to tilt down in all of them.

East Asia and Pacific. Regional growth in 2017 edged up to an estimated 6.4 percent in 2017, up 0.2 percentage point from previous forecasts, reflecting an improving external environment. Notwithstanding this cyclical upturn, growth is projected to moderate to 6.2 percent in 2018 and to an average of 6.1 percent in 2019-20, as a structural slowdown in China offsets a modest pickup in the rest of the region. Risks to the forecast have become more balanced, as near-term growth in advanced-economy trading partners may be stronger than expected. However, downside risks still predominate, including rising geopolitical pressures, an abrupt tightening of global financing conditions, increased global protectionism, and a steeper-than-envisaged slowdown in China or other major economies.

Europe and Central Asia. Growth in the region is estimated to have accelerated to 3.8 percent in 2017, 1.3 percentage points above June projections, reflecting a stronger-than-envisioned recovery across the region—including in Poland, Russia, and particularly Turkey—mainly due to firming domestic demand. Growth is projected to decelerate to 2.9 percent in 2018, as the recovery in Turkey moderates, and settle at 3 percent in 2019-20. This stable outlook reflects continued recovery in the eastern part of the region, driven by commodity exporters, which is offset by a gradual slowdown in the western part of the region amid moderating activity in the Euro Area toward the end of the forecast horizon. Risks are more balanced than in previous forecasts, with stronger-than-expected growth in advanced economies in the upside and increased policy uncertainty and a renewed slide in oil prices in the downside.

Latin America and the Caribbean. The region emerged from a two-year contraction in 2017, growing by an estimated 0.9 percent, slightly up from the June forecast. Growth in the Caribbean sub-region was significantly lower than projected in mid-2017, however, reflecting the impact of two major hurricanes in September. The pickup in overall regional activity was supported by private consumption and, to a lesser degree, by net exports. Growth is expected to accelerate during the forecast period, reaching 2.7 percent in 2020, as conditions in commodity exporters improve further. However, the materialization of several downside risks could derail the recovery. They include economic spillovers from domestic policy uncertainty, additional disruptions from natural disasters, negative spillovers from international financial market disruptions or a rise in U.S. trade protectionism, and a further deterioration in fiscal conditions.

Middle East and North Africa. Growth in the region is estimated to have slowed markedly to 1.8 percent in 2017, 0.3 percentage point below previous projections. OPEC oil production cuts and heightened geopolitical tensions led to deterioration in growth of oil exporters, more than offsetting improving growth in oil importers. Regional growth is forecast to pick up over the medium term, as reforms across the region gain momentum and as fiscal adjustments ease amid a projected rise in oil prices. Improved competitiveness and external conditions are expected to further support growth in oil importers. Key risks to the regional outlook are tilted to the downside, including continued geopolitical conflicts and weakness in oil prices.

South Asia. Regional growth decelerated but remained strong in 2017, at an estimated 6.5 percent—below June forecasts, mainly due to temporary disruptions associated with the adjustment in India to the new Goods and Services Tax. Growth is expected to pick up to 6.9 percent in 2018 and stabilize around 7.2 percent, on average, in 2019-20, as consumption remains strong, exports recover, and investment revives with ongoing policy reforms and infrastructure improvements. Main downside risks to the outlook include fiscal slippages (e.g., Bangladesh, Maldives, Pakistan), a setback in

Note: This box was prepared by Carlos Arteta with contributions from Gerard Kambou, Lei Ye, Yoki Okawa, Temel Taskin, Ekaterine Vashakmadze, and Dana Vorisek. Research assistance was provided by Jinxin Wu.

BOX 1.3 Regional perspectives: Recent developments and outlook *(concluded)*

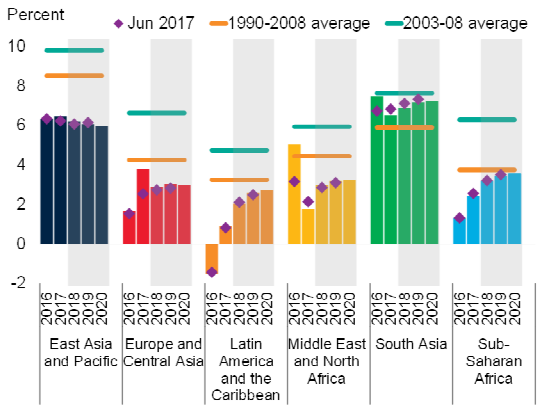
implementation of reforms to improve corporate and financial sector balance sheets (e.g., Bangladesh, India), an abrupt rise in global financial market volatility, and disruptions due to natural disasters. On the other hand, stronger-than-expected global growth in the near term could result in positive spillovers to the more open economies in the region.

Sub-Saharan Africa. Regional growth is estimated to have strengthened to 2.4 percent in 2017, 0.2 percentage point below the June forecast, partly reflecting a softer-than-expected recovery in Nigeria. An uptick in metals prices, along with a recovery in the agricultural sector, supported a modest rebound in metals exporters, while growth was stable in non-resource-intensive countries as infrastructure investment continued. Despite these improvements, regional growth remained negative in per capita terms in 2017. The region is projected to see a moderate pickup in activity, with growth rising to 3.2 percent in 2018 and an average of 3.6 percent in 2019-20, turning slightly positive in per capita terms. These forecasts assume that commodity prices will firm and reforms to address economic imbalances will be implemented. Downside risks include lower commodity prices, inadequate fiscal adjustment, and a faster tightening of global financing conditions.

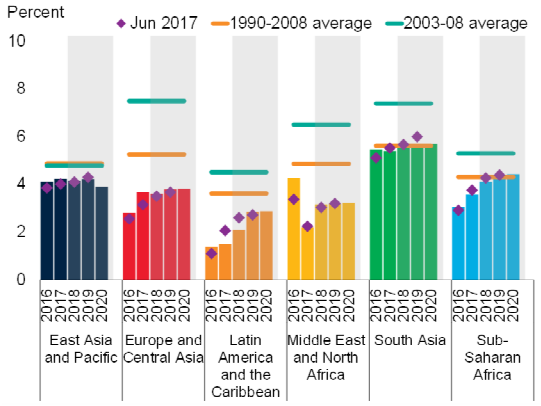
FIGURE 1.3.1 Regional growth

Growth in most EMDE regions with substantial numbers of commodity exporters is expected to accelerate as commodity prices rise and the impact of the earlier collapse in those prices dissipates. The robust pace of expansion in EMDE regions with a large number of commodity importers is expected to continue.

A. Regional growth, weighted average



B. Regional growth, unweighted average



Source: World Bank.

A. B. Bars denote latest estimates and forecasts; diamonds correspond to *Global Economic Prospects* June 2017 forecasts. Average for 1990-2008 is constructed depending on data availability. For Europe and Central Asia, the long-term average uses data for 1995-2008 to exclude the immediate aftermath of the collapse of the Soviet Union. Shaded areas indicate forecasts.

A. Since the largest economies account for almost 50 percent of regional GDP in some regions, the weighted average predominantly reflects the development in the largest economies in each region.

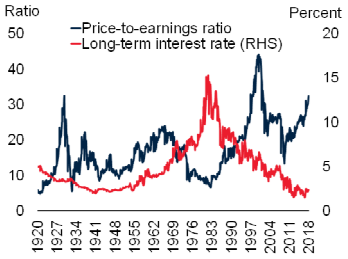
B. Unweighted average regional growth is used to ensure broad reflection of regional trends across all countries in the region.

Click here to download data and charts.

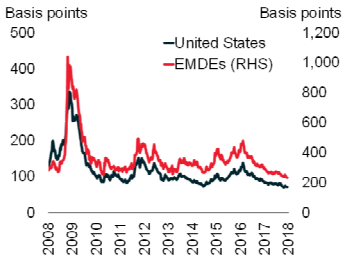
FIGURE 1.17 Financial market risks

Asset valuations are elevated and compensation for credit risks is at low historical levels. A market reassessment of policies by major central banks or financial stress in systemically large EMDEs such as China, could cause a sudden increase in financial market volatility and borrowing costs for EMDEs. The impact of a sharp reversal in capital inflows could be amplified by elevated corporate sector vulnerabilities and growing debt redemptions in coming years.

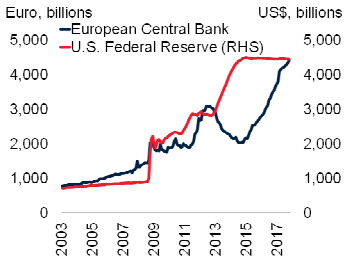
A. U.S. equity prices and long-term interest rates



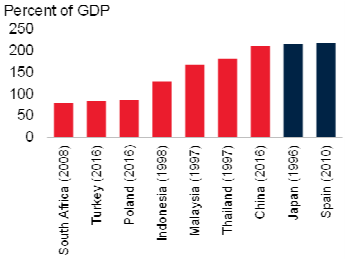
B. Risk-adjusted bond spreads



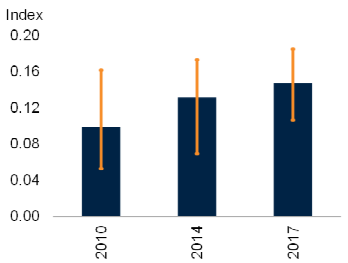
C. Asset holdings by the U.S. Federal Reserve and the European Central Bank



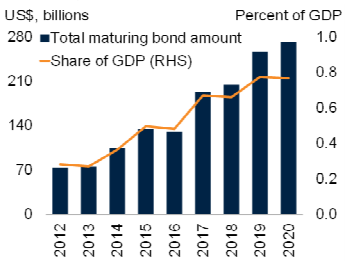
D. Corporate credit-to-GDP ratios during past credit boom episodes



E. EMDE corporate vulnerability



F. Value of international EMDE bonds maturing



Sources: Bank for International Settlements, Bloomberg, Dealogic, Federal Reserve Bank of St. Louis, Feyen et al. (2017), Shiller (2015), World Bank.

A. Price-to-earnings ratio is the cyclically-adjusted ratio as described in Shiller (2015). Long-term interest rates are the nominal 10-year Treasury constant maturity rates. Last observation is December 2017. Data for December 2017 are estimates.

B. Based on option-adjusted spreads calculated from early redemptions of government and corporate bonds. The option-adjusted spreads are used as a measure of credit risk compensation. Last observation is December 18, 2017.

C. Last observation is November 2017.

D. Ranges shows the highest private non-financial debt to GDP ratios across advanced economies and EMDEs over the period 1996Q1-2016Q4. Red bars denote EMDEs and blue bars are advanced economies.

E. The Corporate Vulnerability Index (CVI) tracks financial conditions of the non-financial corporate sector in 69 EMDEs. The CVI uses firms' balance sheet information covering seven indicators: interest coverage ratio, leverage ratio, net debt-to-EBIT ratio, current-to-long term liabilities ratio, quick ratio, return to assets, and market-to-book ratio. The CVI ranges from 0 (i.e., firms in a particular country are not financially vulnerable in any of the 7 indicators) to 1 (i.e., all firms in a particular country are financially vulnerable in all 7 indicators). The CVI is calculated using data from 14,207 firms. For more details, see Feyen et al. (2017). The 2017 numbers are an average of the first two quarters.

F. Horizontal axis shows maturity date.

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Asset valuations have continued to rise amid persistently low interest rates and improved growth prospects (Lansing 2017). Equity prices are elevated and compensation for credit risks for lower-graded borrowers has reached historical lows in both advanced economies and EMDEs (Figure 1.17). While they could help support the recovery in the short term, stretched asset valuations and compressed risk premiums raise the risk of destabilizing corrections. The combination of deteriorated credit quality, corporate balance sheet leverage, and diminished compensation for credit risks make corporate bond markets susceptible to sudden reversals (IMF 2017a).

Both the U.S. Federal Reserve and the ECB have announced measures to unwind or cap the size of their balance sheets in the short term. During the post crisis period, the expansion of these central banks' balance sheets helped compress global long-term interest rates and volatility (Gagnon 2016; Christensen and Rudebusch 2016; Altavilla, Carboni, and Motto 2015). This spurred demand for riskier assets, supporting capital inflows in EMDEs (Arteta et al. 2015). While a gradual and well-anticipated reversal of balance sheet policies should be manageable, unexpected changes, or market reassessment of these policies and of underlying inflation dynamics, could lead to an abrupt rise in global bond yields and risk premiums. In addition, uncertainty surrounding the outlook for inflation and equilibrium interest rates has contributed to diverging views between market participants and monetary authorities on the path for policy rates, particularly in the United States. A sudden market reassessment of this path could generate financial stress.

China continues to face vulnerabilities associated with high corporate indebtedness, particularly in sectors with overcapacity and deteriorating profitability (IMF 2017b). Credit growth still outpaces nominal GDP growth, despite monetary and regulatory tightening. The total stock of non-financial sector debt is above levels observed at the peak of previous credit booms in other major EMDEs, although still below those of advanced economies. The materialization of financial stress could have significant adverse repercussions on activity, with negative effects on other EMDEs,

particularly commodity exporters (Huidrom, Kose, and Ohnsorge 2017). However, policy buffers remain substantial in China and are likely to provide space to support growth if risks materialize.

EMDEs would be particularly susceptible to the materialization of these and other financial risks, which can result in a sudden increase in external financing conditions, a reversal of capital flows and slowing activity. These reversals could exacerbate default risks, which have so far been mitigated by a long period of exceptionally low global interest rates (Reinhart, Reinhart, and Trebesch 2017). The adverse effects would be most acute for countries with large external financing needs, fragile corporate balance sheets, and significant fiscal sustainability gaps. During the post-crisis period, corporate vulnerability has increased substantially in a number of EMDEs, driven by a rise in leverage ratios and a deterioration in profitability and debt service capacity (Feyen et al. 2017). Credit-to-GDP ratios have continued to increase in recent years in commodity exporters, while they remain elevated, albeit stable or declining, in commodity importers (World Bank 2016b).

Although profitability of banks in EMDEs is generally solid, credit losses could continue to erode capital buffers (e.g., India, Russia, South Africa). A large volume of international debt redemptions scheduled in 2019-20 could also make some EMDEs vulnerable to a sudden increase in borrowing costs around that period. Rising public-sector risks are an important source of concern across EMDEs, affecting in particular a substantial number of low-income countries (World Bank 2017g).

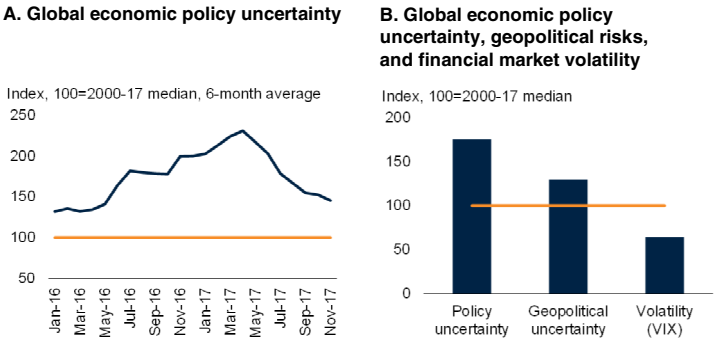
Downside risk: Policy uncertainty and geopolitical risks

Global policy uncertainty moderated in the course of 2017, reflecting diminished risks from key electoral outcomes in Europe and perceptions of a reduced likelihood of major policy shifts in the United States. However, uncertainty remains elevated and could intensify again, potentially weighing on confidence and growth (Figure 1.18). Negotiation around the exit of the United Kingdom from the European Union, calls for greater regional autonomy, or governance challenges for the Euro Area could impact investment decisions in Europe and beyond. In the United States, there remains substantial uncertainty about possible changes to trade, immigration, and other policies, and there are concerns that fiscal brinkmanship could contribute to market turmoil, as it did in 2011 (U.S. Treasury 2013).

Similarly, geopolitical risks spiked during 2017 and remain above historical averages, mainly reflecting tensions on the Korean peninsula, border disputes and territorial claims in Asia, and strains in the Middle East. A renewed and sustained rise in geopolitical tensions, especially those involving systemically large economies, could dampen confidence and lead to bouts of financial market volatility, both in the affected countries and their major trading partners. If these tensions escalate into high-intensity interstate conflict, the result could be a significant loss of lives, assets, and productive capacity, particularly in more vulnerable countries. In the Middle East, they could also result in rising migrant flows

FIGURE 1.18 Policy uncertainty and geopolitical risks

Global policy uncertainty moderated in the course of 2017, but remains elevated. Geopolitical risks spiked during 2017, mainly reflecting tensions on the Korean peninsula, and is also above historical norms. Despite these concerns, financial market volatility reached new lows.



Sources: Baker, Bloom, and Davis (2015); Bloomberg; Caldara and Iacoviello (2017); World Bank.

A. B. Policy uncertainty is the Economic Policy Uncertainty index computed by Baker, Bloom, and Davis (2015) and is based on the frequency of articles in domestic newspapers mentioning economic policy uncertainty. The index is normalized to equal 100 at its 2000-17 median. Orange horizontal line denotes 2000-17 median.

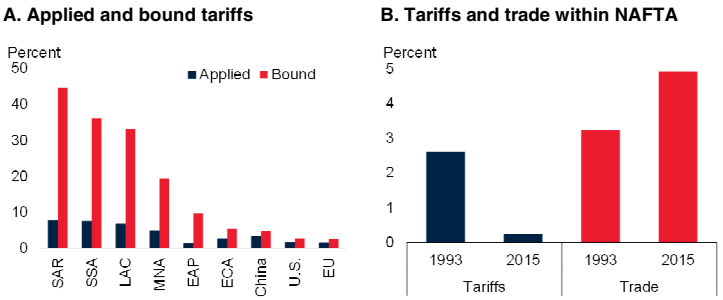
A. Last observation is November 2017.

B. Geopolitical uncertainty is the Geopolitical Risk Index computed by Caldara and Iacoviello (2017) and is based on the frequency of words related to geopolitical tensions in international newspapers. Volatility is measured by the VIX. All indexes are normalized to equal 100 at their 2000-17 medians. Blue bars denote 2017 averages. The last observation is December 2017 for geopolitical uncertainty and volatility (VIX), and November 2017 for policy uncertainty.

Click here to download data and charts.

FIGURE 1.19 Trade protectionism

An increase in tariffs up to WTO bound rates could significantly raise costs and reduce trade volumes, particularly for some EMDE regions. The reduction of tariff and non-tariff barriers between NAFTA countries has been associated with rising trade, which could reverse if the agreement is undone.



Sources: U.S. Bureau of Economic Analysis, World Bank.
A. Bound tariffs are maximum tariffs under WTO rules. Data as of 2015. EAP = East Asia and Pacific excluding China, ECA = Europe and Central Asia, LAC = Latin America and the Caribbean, MNA = Middle East and North Africa, SAR = South Asia, and SSA = Sub-Saharan Africa.
B. Trade between NAFTA countries in percent of their combined GDP.
Click here to download data and charts.

across the region (World Bank 2017i). This could be further amplified by regional instability, displacement, and violence (Rodrik 1999, Polachek and Sevastianova 2012, Institute for Economics and Peace 2017).

Downside risk: Increased restrictions to trade

Despite the recent stabilization in the number of newly introduced barriers to trade, the threat of protectionism is still a major concern. This was highlighted by the failure of G20 economies to renew their long-standing commitment to free trade and pledge to resist all forms of protectionism.

Even isolated attempts to resort to beggar-thy-neighbor policy measures by large economies could be met with retaliatory responses and translate into wide-ranging negative effects for participating countries as well as the rest of the world (Bouët and Laborde 2017). While a withdrawal of commitments from unilateral preferential schemes and trade agreements could have a significant negative impact on trade, a trade war that would result in a worldwide increase in tariffs up to legally allowed WTO bound rates would have much larger effects (Figure 1.19). Due to their reliance on trade flows, an increase in barriers to trade would likely impact low-income countries (LICs) substantially. Measures that negatively affect the economic interest of LICs subsided in recent years, but that trend could reverse, as was observed in the immediate post-crisis period.

Apart from potential upticks in protectionist measures, the renegotiation of several free trade agreements—notably, NAFTA—casts uncertainty over trade and investment flows between major trading partners. NAFTA was accompanied by a significant deepening of trade relationships between the United States, Canada, and Mexico. Given the depth of the agreement, the undoing of NAFTA could result in an appreciable decline in trade among member countries. Due to the interconnectedness of NAFTA countries with the global economy, major changes in their trade policies could affect the rest of world (Bergsten and de Bolle 2017).

Downside risk: Sharper-than-expected slowdown in potential growth

There is considerable uncertainty regarding underlying rates of potential growth. The risk remains for both advanced economies and EMDEs of a more pronounced weakness in productivity growth and investment. This would amplify a broad-based further deterioration of potential growth expected in coming years amid demographic pressures (Figure 1.20). In both advanced economies and EMDEs, demographic trends will become an increasing headwind to potential growth. More than 84 percent of global GDP is currently produced by countries whose working age population shares are expected to shrink by 2030. Population aging is expected to dampen global potential growth by around 0.2 percentage point over 2018-27 on average compared to the average of 2013-17, as it depresses labor supply and total factor productivity growth.

A sharper-than-expected slowdown in potential growth could reduce the resilience of the global economy to adverse shocks and, in the longer term, damage prospects for gains in living standards and poverty reduction. Slowing long-term growth in large economies—particularly in advanced economies, which are the destination for

about 60 percent of EMDE exports, and China, which has substantial trade and commodity linkages with other EMDEs—would have important negative spillovers (World Bank 2016b).

In EMDEs, past investment busts have generally been associated with subsequent slowdowns in potential growth (Chapter 3). The post-crisis slowdown in investment growth has had lingering effects on EMDEs, and renewed weakness in investment would further damped potential growth. Adjustments in commodity-exporting EMDEs caused by a slump in commodity prices could leave a particularly long legacy for this group of countries. More generally, there is a risk that the anticipation of lower future growth may have a larger-than expected effect on current investment, leading to a negative feedback loop that further amplifies the slowdown.

Region-specific downside risks

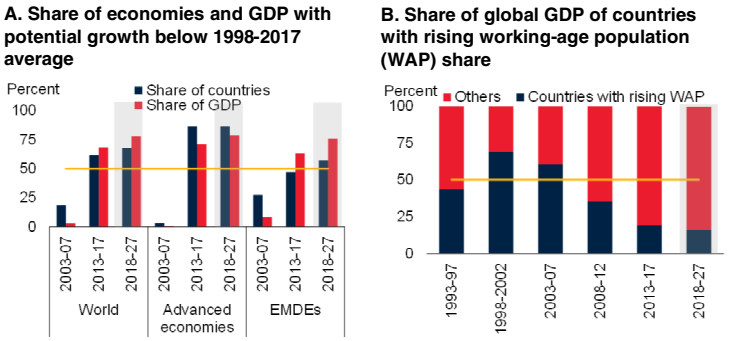
In addition to global risks, there are various region-specific downside risks (Box 1.3; Chapter 2). For instance, heightened domestic policy uncertainty within EMDE regions may compound the effects of uncertainty emanating from major economies, as discussed above, and adversely affect confidence and investment. EMDE regions where policy uncertainty remains elevated in some large economies include Europe and Central Asia, Latin America and the Caribbean, and Sub-Saharan Africa.

A worsening of security conditions and conflict, and the associated displacement of people, could weigh substantially on growth in some economies in Europe and Central Asia, the Middle East and North Africa, South Asia, and Sub-Saharan Africa. A greater incidence of natural disasters and extreme weather events—such as hurricanes, earthquakes, droughts, or floods—could exert further economic disruption in regions such as Latin America and the Caribbean (particularly in the Caribbean sub-region), South Asia, and Sub-Saharan Africa.

Finally, a renewed weakness in the price of oil and other commodities could derail the recovery in regions with large numbers of commodity exporters—Europe and Central Asia, Latin America and the Caribbean, the Middle East and North Africa, and Sub-Saharan Africa. In particular, oil exporters in these regions remain vulnerable to a renewed slide in oil prices (Special Focus 1).

FIGURE 1.20 Slowing potential growth

A large number of advanced economies and EMDEs have experienced a deterioration in potential growth in recent years. More than 84 percent of global GDP is currently produced by countries whose working-age population shares are expected to shrink in the coming decade.



Source: World Bank.
A. B. Shaded areas indicate forecasts.
A. Number of economies and their share of global GDP among 80 advanced economies and EMDEs with potential growth in each period below its long-term average (1998-2017).
B. Period averages are simple averages of the shares. Sample includes 37 advanced economies and 148 EMDEs.
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Policy challenges

Challenges in major economies

In advanced economies, monetary policy is gradually normalizing but still faces important challenges, including stubbornly low inflation. Fiscal policy has become generally more supportive to growth, but fiscal space remains limited in many advanced economies. Amid rising demographic pressures, productivity-enhancing reforms are urgently needed. In China, further reforms could help reallocate factors of production toward more productive sectors.

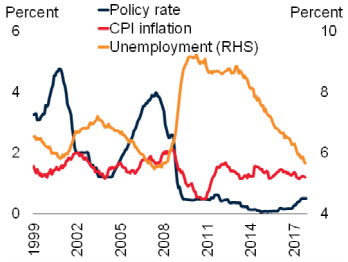
Monetary and financial policies in advanced economies

Monetary policy normalization is underway in the United States and, to a lesser extent, in the Euro Area, as the recovery continues. However, despite

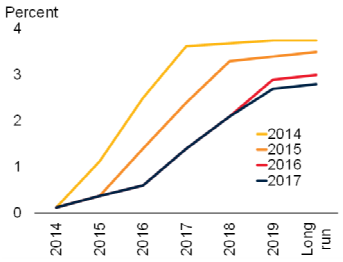
FIGURE 1.21 Monetary and fiscal policies in advanced economies

Challenges for monetary policy normalization include continued low inflation despite declining unemployment. The U.S. Federal Reserve has repeatedly revised down its medium-term policy rate expectations. Expansionary fiscal policies were undertaken in a growing number of countries in 2016-17, while fiscal sustainability gaps have narrowed.

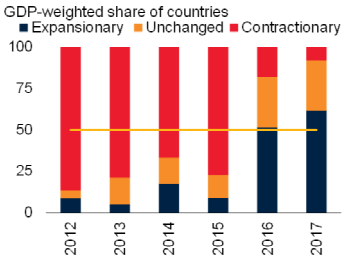
A. Policy rate, inflation, and unemployment in major advanced economies



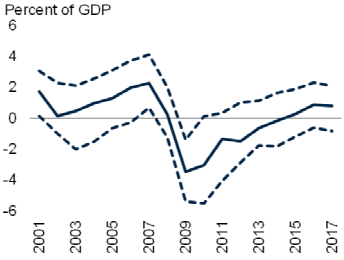
B. Median forecast of U.S. federal funds rate by FOMC members



C. Share of advanced-economy GDP with expansionary/contractionary fiscal policy



D. Fiscal sustainability gaps



Sources: Federal Reserve Board, Haver Analytics, International Monetary Fund, World Bank.
A. Weighted averages for Euro Area, Japan, and the United States. Last observation is November 2017 for policy rates and October 2017 for CPI inflation and unemployment.
B. Forecasts for each year correspond to the December FOMC meeting.
C. Expansionary fiscal policy defined as a decline in the cyclically-adjusted primary balance of more than 0.2 percentage point of potential GDP. Contractionary fiscal policy is defined as an increase in the cyclically-adjusted primary balance of more than 0.2 percentage point of potential GDP.
D. Sustainability gap is measured as the difference between the primary balance and the debt-stabilizing primary balance, assuming historical median (1990–2016) interest rates and growth rates. A negative gap indicates that government debt is on a rising trajectory; a positive gap indicates government debt is on a falling trajectory. Figure shows median in advanced economies. Dashed blue lines denote the interquartile range, while solid blue line is the median. Sample includes 34 advanced economies.
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strengthening activity, inflation remains below central banks' objectives (Blanchard, Cerutti, and Summers 2015; Ciccarelli and Osbat 2017; Figure 1.21). Both transitory and structural factors appear to be at play, making central banks' tasks particularly difficult as uncertainty about the trajectory of inflation and real equilibrium interest rates remains elevated (Carney 2017; Bobeica et al. 2017; Miles et al. 2017). The U.S. Federal Reserve has continued to revise down its medium- to long-run policy interest rate expectations, while the ECB continues to highlight the need for policy accommodation despite diminishing economic slack.

The extraordinary monetary stimulus of recent years has raised concern that it may have encouraged excessive financial risk-taking. For this reason, it will be important that central banks carefully manage the unwinding of policy accommodation, including the normalization of balance sheets. Financial market reforms and measures to improve the loss-absorbing capacity of major financial institutions have improved the resilience of the financial system (Yellen 2017; Firestone, Lorenc, and Ranish 2017). However, there still are risks to financial stability, including possible asset price overvaluation, rising leverage, and a concentration of risks in non-bank financial institutions. Financial regulation and supervision should continue to be reinforced, including further improvements in bank resolution frameworks and improved supervision of non-banks. Macroprudential policies could play a more active role to curb leverage cycles and mitigate risks associated with low interest rates (European Systemic Risk Board 2016; Rubio and Yao 2017; Claessens 2015).

Fiscal policy in advanced economies

In recent years, the role of counter-cyclical fiscal policy has regained prominence in the policy debate, especially when monetary policy is constrained (Auerbach and Gorodnichenko 2017; Jordà and Taylor 2016; Christiano, Eichenbaum, and Rebelo 2011). Marking a significant shift from previous years, expansionary fiscal policies were undertaken in countries representing more than 50 percent of advanced-economy GDP in 2016, and more than 25 percent in 2017. The share of countries implementing contractionary fiscal policies dropped drastically, from more than 70 percent in 2015 to 12 percent in 2017. However, fiscal space is limited in some economies, notwithstanding some improvements (Kose et al. 2017b). Since the need for fiscal stimulus has become less urgent as economic slack diminishes in most advanced economies, growth-enhancing tax and expenditure reforms should play a more prominent role in policy discussions (Barbiero and Cournède 2013; IMF 2017c).

In the Euro Area, closer fiscal coordination could further enhance resilience to domestic and external shocks (Dabrowski 2015). Stricter compliance with common fiscal and macroeconomic surveillance rules could help make a central fiscal authority more acceptable to all (Juncker et al. 2015). In the United States, public infrastructure programs and comprehensive tax reforms could deliver growth dividends over time.

Structural policies in advanced economies

Persistently weak productivity gains in coming years could lead to a further slowdown in potential growth amid rising demographic pressures. This would further constrain wage growth, and make it more difficult to reduce inequality and sustain social safety nets.

The slowdown in productivity growth across advanced economies pre-dated the global financial crisis. It was most visible in the United States, where the benefits of the information and technology revolution had been the largest from the mid-1990s to mid-2000s (Foda 2016). However, the deceleration in productivity has also been noticeable in other major economies, including the Euro Area after the global financial crisis.

To offset the impact of population aging on potential growth in coming years, reforms will need to be geared toward boosting productivity growth and labor participation. Policies that raise the quality of education and training; further improve female, youth, and senior labor market attachment; and match changing labor market needs would be particularly beneficial (Figure 1.22). In addition, investment needs could be filled through high-quality public infrastructure, better regulation, and well-designed R&D incentives. Encouragingly, reform spurts can reinforce growth prospects. In some advanced economies, most notably in the Euro Area, facilitating debt restructuring and strengthening bank balance sheets could help facilitate private investment and encourage the relocation of capital toward higher-productivity firms.

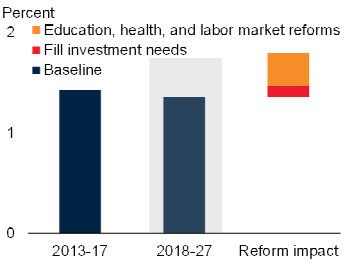
Policy challenges in China

China has initiated a wide range of reforms in recent years. Efforts have focused on excess capacity reduction (Figure 1.23), as well as fiscal and financial reforms to contain financial sector vulnerabilities. Fiscal policy remained expansionary in 2017, supporting growth but contributing to rising public debt. Tighter enforcement of capital flow management measures has helped ease capital outflow pressures. Regulatory efforts have gained momentum since the October Party Congress, as new rules were announced to lift caps on foreign ownership of financial institutions and

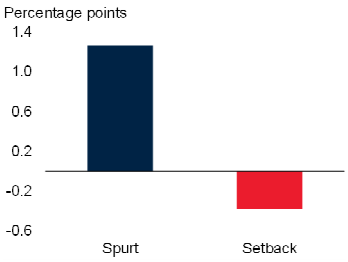
FIGURE 1.22 Structural policy in advanced economies

Structural reforms could offset the impact of demographic aging on potential output growth. Reform spurts tend to be followed by improvements in productivity growth.

A. Potential growth and reform scenarios



B. TFP growth during reform episodes



Source: World Bank estimates.
A. GDP-weighted averages of production function-based potential growth under different policy scenarios as described in Chapter 3. Shaded area indicates forecast.
B. Simple averages of TFP (total factor productivity) growth. TFP growth refers to potential TFP growth, as estimated in Chapter 3. Data use Worldwide Governance Indicators (WGI): Based on an event study of 26 statistically significant events for 38 advanced economies during 1996-2015. A detailed methodology is available in Chapter 3.
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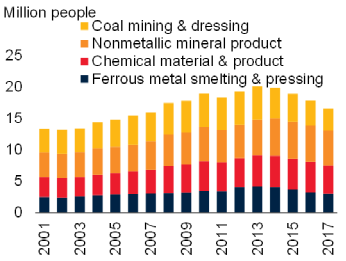
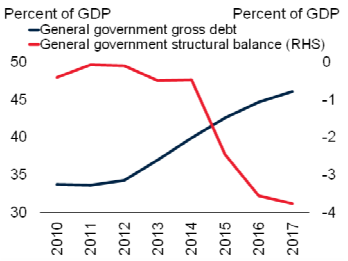
FIGURE 1.23 Policy challenges in China

In China, efforts have focused on excess capacity reduction, as well as fiscal and financial reforms. Fiscal policy remained expansionary in 2017, supporting growth but contributing to rising public debt.

A. Employment in overcapacity sectors



B. General government debt and structural balance



Sources: CEIC, China National Bureau of Statistics, International Monetary Fund.
A. Data for 2017 are as of October 2017.
B. Gross debt is as a percent of GDP; structural balance is the cyclically-adjusted fiscal balance as a percent of potential GDP. General government gross debt ratios in 2016 and 2017 are estimates.
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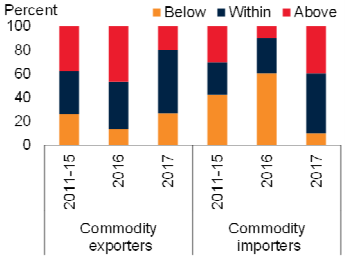
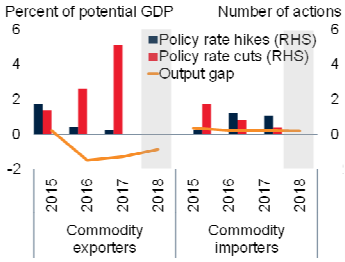
FIGURE 1.24 EMDE monetary policy

Inflation in EMDEs generally eased in 2017, most notably in some large commodity exporters, and is within target bands in most EMDEs with inflation targets. Policy interest rate actions in commodity exporters and importers were reflective of cyclical positions. Continued monetary policy accommodation among commodity exporters would be consistent with still negative output gaps in 2018.

A. Inflation versus target range



B. Output gaps and policy interest rates



Sources: Haver Analytics, National Bureau of Statistics of the Republic of Moldova, World Bank.
A. Sample includes 15 commodity exporters and 10 commodity importers. Bars for 2017 consider actual versus target range (year-on-year) inflation in November. Bars for other years consider actual versus target inflation in December of the respective years. Bars for 2011-15 are simple averages.
B. Sample includes 11 commodity exporters and 11 commodity importers. Commodity importers aggregate excludes China. Output gaps and policy interest rates are GDP-weighted averages. Policy rate data are year-to-date as of December 19, 2017. Shaded areas indicate forecasts.
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tighten oversight of commercial banks. Deleveraging measures need to be intensified to address vulnerabilities and improve fiscal sustainability of subnational governments. Further financial and corporate sector reforms could also help reallocate capital and labor toward more productive firms and sectors. This could increase the contribution of productivity to potential growth by about 1 percentage point over the long term (Chapter 2; IMF 2017b). Efforts to build human capital through better education and training, and reforms that improve the institutions and business environment, could also provide a further boost to productivity and potential output (World Bank 2017j).

Challenges in emerging market and developing economies

Inflation in EMDEs generally eased through most of 2017, most notably in commodity exporters, allowing the latter to pursue a more accommodative monetary policy stance. Rising debt and rapid credit growth in some EMDEs highlight the importance of strengthening financial stability. Fiscal space remains constrained across EMDEs, particularly in commodity exporters, which limits their ability to undertake countercyclical policy, even in the face of sizable negative output gaps. In the longer term, structural policies—such as improvements in education and health systems, as well as labor market, governance, and business climate reforms—may help stem the expected further decline in potential growth. Reforms that boost education may also reduce inequality. In addition to these challenges, oil-exporting EMDEs need to pursue policies that bolster diversification and resilience to oil price fluctuations.

Monetary and financial policies

Headline inflation in EMDEs generally eased through the second half 2017, most notably in some large commodity exporters (e.g., Brazil, Russia). Inflation is now within target bands in the majority of EMDEs that have adopted targets, including in some large commodity importers where it was previously below target (Figure 1.24). Policy interest rate adjustments during 2017—mostly hikes by commodity importers, and nearly all cuts by commodity exporters—were reflective of their cyclical positions. Continued monetary policy accommodation among commodity exporters would be consistent with still-negative output gaps expected for 2018.

Benign global financing conditions and low financial market volatility may have lessened pressures to reform and modernize financial sector regulations in EMDEs. However, with debt building and credit growth accelerating in some EMDEs, strengthened macroprudential policy frameworks could play an important role in assuring financial stability, especially given the potential unexpected effects from the unwinding of monetary accommodation in major advanced economies, as well as higher-than-expected volatility in capital flows.

Macroprudential policies, such as caps on bank loan-to-value and debt-to-income ratios, have been found to be particularly effective when credit growth is high (Cerutti, Claessens, and Laeven 2015), while both prudential and targeted capital inflow management tools can reduce the riskiness of external liabilities (Cardarelli, Elekdag, and Kose 2010). The rapid increase of portfolio and other investment flows in 2017, including cross-

border bank loans, may warrant particular attention, given that their volatility has historically been much higher than that of foreign direct investment flows (Pagliari and Hannan 2017). Macroprudential tools may be particularly useful for EMDEs with pegged exchange rates, where the transmission of global financial shocks to domestic banking sectors and through capital flows appears to be greater (Obstfeld, Ostry, and Qureshi 2017).

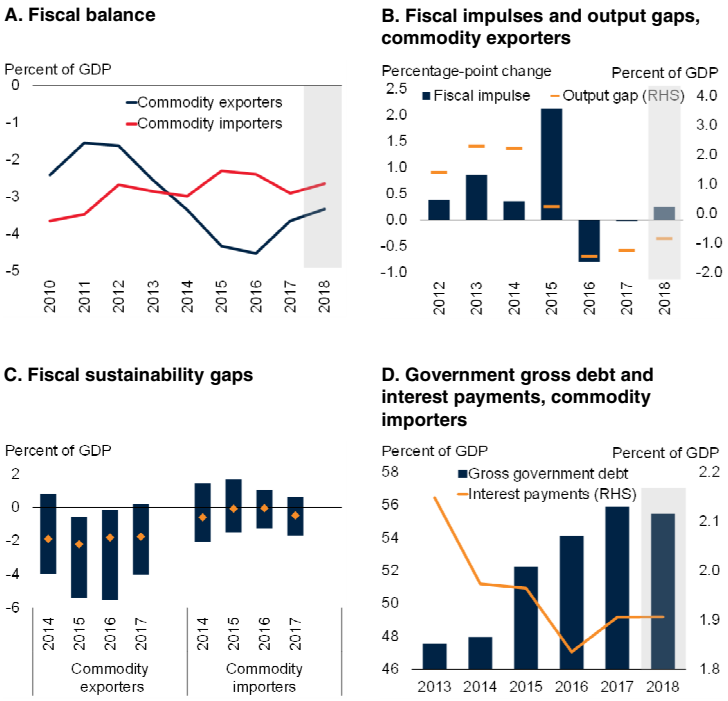
Fiscal policy

Among commodity exporters, government revenues are recovering from the earlier terms-of-trade shock and fiscal deficits are narrowing (Figure 1.25). Fiscal policy in commodity exporters is becoming less procyclical, with negative output gaps no longer accompanied by fiscal consolidation. Steps are being taken, or are contemplated, to place their fiscal position on a more sustainable footing. These include reductions in energy subsidies (e.g., Argentina, Indonesia, Malaysia, Mexico, Saudi Arabia, the United Arab Emirates), cuts in expenditures (e.g., the Islamic Republic of Iran, Malaysia, Russia, Saudi Arabia), and the introduction of value-added taxes (e.g., GCC countries; Boersma and Griffiths 2016; World Bank 2016a). Despite these efforts, fiscal sustainability gaps are still large, which is contributing to growing debt-to-GDP ratios. While a more accommodative policy stance would help close negative output gaps in commodity exporters, the necessary fiscal space is limited and debt dynamics continue to be a critical challenge, including for low-income countries (World Bank 2017g).

In commodity importers, fiscal sustainability gaps are much smaller. However, rapid expenditure growth in 2016-17 resulted in protracted deficits and continued increases in public debt, which is likely to have exceeded 55 percent of GDP in 2017. Although interest payments have been declining despite growing debt, they could rise markedly if global financing conditions were to tighten abruptly. In both commodity exporters and importers, a substantial share of external debt (private and public) is denominated in foreign currency, pointing to vulnerabilities to global capital market turbulence and currency depreciation (Burger, Warnock, and Warnock 2017). Indeed, the rapid increase in private-sector debt across EMDEs suggests the possibility of growing contingent liabilities for the public sector, given the potential call for bailouts if balance sheet stresses become systemic (World Bank 2017g). If realized, contingent liabilities—particularly those stemming from the financial sector—can lead to substantial fiscal costs (Bova et al. 2016).

FIGURE 1.25 EMDE fiscal policy

As revenue growth catches up with expenditure growth across EMDEs, fiscal deficits are anticipated to narrow. Fiscal policy in commodity exporters is becoming less procyclical. However, fiscal sustainability gaps remain large in these economies. Although such gaps are much smaller in commodity importers, government debt as a share of GDP has been rising for this group. As a result, both commodity exporters and importers face debt-related vulnerabilities.



Sources: International Monetary Fund, Kose et al. (2017), World Bank.

A. Figure shows median in each country group. Shaded area indicates forecasts. Sample includes 61 commodity importers and 93 commodity exporters.

B. Fiscal impulse is defined as the change in the structural fiscal deficit from the previous year. A decline in structural deficit (a negative fiscal impulse) is a fiscal consolidation—countercyclical if implemented while output gaps are positive—while an increase in the structural deficit (positive fiscal impulse) is a fiscal stimulus—countercyclical if implemented while output gaps are negative. Sample includes 11 commodity exporters.

C. Sustainability gap is measured as the difference between the primary balance and the debt-stabilizing primary balance, assuming historical median (1990–2016) interest rates and growth rates. A negative gap indicates that government debt is on a rising trajectory; a positive gap indicates government debt is on a falling trajectory. Blue bars denote the interquartile range, while orange diamonds denote the median for each country group. Sample includes 44 commodity exporters and 28 commodity importers.

D. Interest payments reflect general government expenses paid on interest. Sample includes 51 commodity-importing EMDEs.

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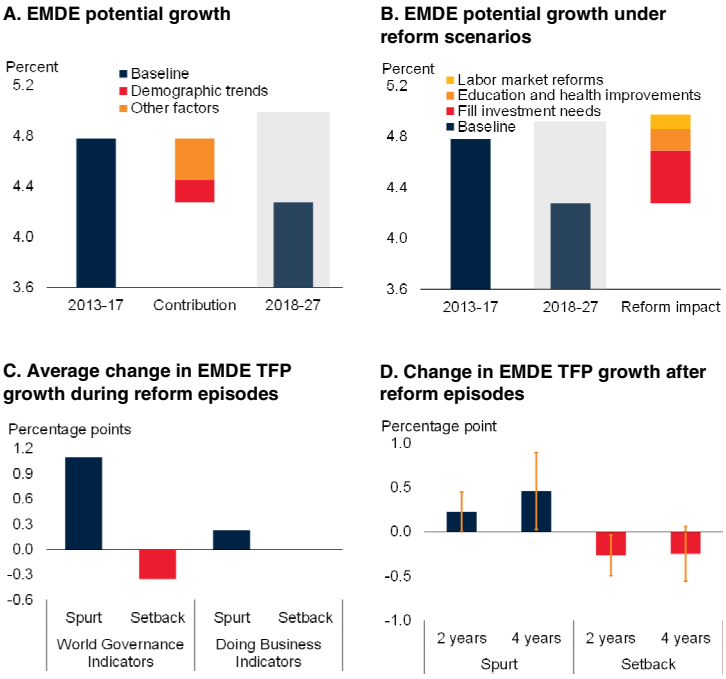
FIGURE 1.26 EMDE structural policy

Education and health improvements and labor market reforms could reverse the expected decline in EMDE potential growth over 2018-27 compared with 2013-17. Around reform episodes, EMDE total factor productivity growth tends to improve.



Source: World Bank estimates.
A. B. Shaded areas indicate forecasts.
A. GDP-weighted averages of production function-based potential growth as described in Chapter 3.
B. GDP-weighted averages of production function-based potential growth under different policy scenarios as described in Chapter 3.
C. Simple averages of TFP (total factor productivity) growth. TFP growth refers to potential TFP growth, as estimated in Chapter 3. Worldwide Governance Indicators (WGI): Based on an event study of 110 statistically significant events for 77 EMDEs during 1996-2015. Doing Business Indicators (DB): Based on an event study of 29 statistically significant events for 77 EMDEs during 2002-17. A detailed methodology is available in Chapter 3.
D. TFP growth refers to potential TFP growth, as estimated in Chapter 3. Regression coefficients on dummies for structural reform spurts and setbacks from local projections model for lags of four years, for a sample of 77 EMDEs during 1996-2015. Data use Worldwide Governance Indicators. Vertical bars show 90 percent confidence interval. A detailed methodology is available in Chapter 3.
Click here to download data and charts.

There is still considerable scope for growth-enhancing fiscal reforms among EMDEs. Most notably, tax reforms can be implemented to mobilize revenues and create the fiscal space to fund needed development priorities, as carried out in a number of countries in recent years (e.g., Colombia, India, Kazakhstan, Malaysia, the Philippines, Russia, Vietnam). Such reforms may include broadening the tax base, eliminating loopholes and unnecessary preferences (e.g., avoiding base erosion and profit shifting), and strengthening tax administration and collection to reduce avoidance (OECD 2017c). Moreover, expenditure reforms could enhance the quality of public spending, by having mechanisms in place to prioritize and evaluate the efficacy of public projects, as well as strengthening institutions to foster growth given fiscal constraints.

In addition, introducing fiscal rules, stabilization funds, and medium-term expenditure frameworks can foster institutional credibility and help restore fiscal space (Huidrom, Kose, and Ohnsorge 2016). These types of reforms can also help discourage procyclical, asymmetric fiscal responses to cyclical shocks—that is, increasing current expenditures during booms but reducing investment expenditures during busts—that can threaten fiscal sustainability and undermine growth (Ardanaz and Izquierdo 2017). Finally, the unusually benign state of global financing conditions favor debt management operations to reduce the vulnerability of the public sector to shocks, including by lengthening the maturity of public debt and shifting debt into local currency.

Structural policies

Long-term trends point to a decline in EMDE potential growth to 4.3 percent on average over 2018-27, 0.5 percentage point below the 2013-17 average (Figure 1.26). Per capita potential growth is expected to weaken accordingly. A boost to public and private investment, if implemented efficiently, can help stem this decline; however, it will also need to be supplemented by measures to raise labor productivity and labor force participation (Chapter 3).

Reforms to improve education and health outcomes, as well as labor market policies to expand female labor force participation, could lift potential growth by raising labor supply and fostering total factor productivity growth. While education and health outcomes have strengthened in EMDEs in recent years, there is still room for substantial improvement. School enrolment rates and secondary school completion rates are near advanced-economy levels in many EMDEs; however, tertiary school completion rates are, at 13 percent on average in 2013-17, about one-half of the advanced-economy average. At 74 years on average in 2013-17, life expectancy in EMDEs is well below that in advanced economies (82 years). Similarly, global female labor force participation,

at 58 percent on average in 2013-17, remains three-quarters below that of men (74 percent), and even less in EMDEs.

Improvements in education and health could also generate gains in EMDE potential growth. Stylized scenarios suggest that, of the expected 0.5-percentage-point slowdown in EMDE potential growth in 2018-27, about 0.2 percentage point could be reversed if education and health outcomes were improved substantially, and 0.1 percentage point if female labor force participation were increased through labor market policies. In regions with large room for improvement and a solid track record of implementing reforms, these growth dividends could be larger.

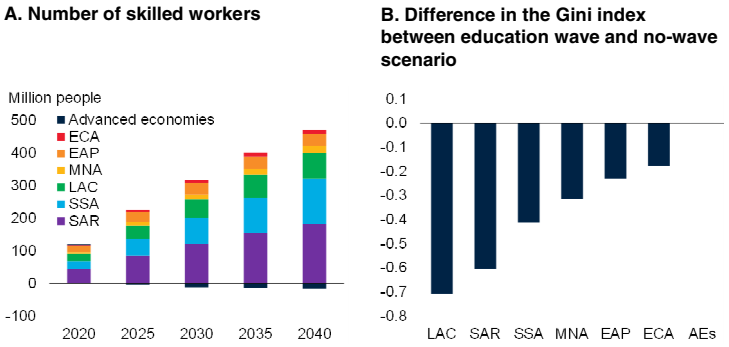
Furthermore, reforms to improve the business environment and promote good governance—e.g., to increase government effectiveness, reduce corruption, and enhance the rule of law and regulatory quality—could help reverse the slowdown in potential growth. Past experience illustrates that major governance and business reforms were associated with higher output, TFP, and investment growth (Chapter 3; Hodge et al. 2011; Acemoglu, Johnson, and Robinson 2001; Divanbeigi and Ramalho 2015). Reform spurts were, on average, associated with higher EMDE TFP and investment growth during the two to four years following such events.[1] Conversely, a typical reform setback was accompanied by lower TFP and investment growth. Improvements in political institutions can also help overcome a status quo bias that block reform progress (Stuti 2017; World Bank 2017j). Naturally, reform priorities differ across countries. Depending on the country context, pre-existing conditions and interactions between reforms would warrant careful sequencing to ensure synergies and avoid possibly politically destabilizing reforms.

In addition to these structural challenges, oil-exporting EMDEs—which suffered large losses in actual and potential output due to the 2014-16 oil price plunge—need to pursue policies that bolster diversification and resilience to oil price fluctuations, given that prices are unlikely to recover substantially in coming years (Special Focus 1). Some have started undertaking reforms to limit their reliance on the energy sector, but progress has been mixed so far. Both vertical diversification in oil, gas, and petrochemical sectors, as well as horizontal diversification beyond these sectors, should be pursued, with an emphasis on technological upgrades and competitiveness (Cherif, Hasanov, and Zhu 2016; Gill et al. 2014; World Bank 2016c).

[1] TFP growth refers to potential TFP growth to capture the long-term impact of reforms.

FIGURE 1.27 Education and inequality

New entrants of educated workers to the global labor market will come entirely from EMDEs, contributing to a decline of global inequality by 2030, largely reflecting income convergence among countries. Although within-country inequality will rise in importance at the global level, the education wave—the increase in skilled EMDE workers—will nudge down within-country inequality in EMDEs, albeit with regional differences.



Source: Ahmed et al. (2017).
A. B. EAP = East Asia and Pacific, ECA = Europe and Central Asia, LAC = Latin America and the Caribbean, MNA = Middle East and North Africa, SAR = South Asia, and SSA = Sub-Saharan Africa.
A. Skilled is defined as workers with more than nine years of education. Population projections are based on UN (2015). Education information is from harmonized household and labor surveys for 117 countries, keeping present rates of education attainment in the calculation of the supply of skilled workers.
B. The population weighted average difference in the Gini index is negative if there is an improvement in the within-country inequality between the education wave relative to the no-wave scenario. AEs = advanced economies.
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Education and inequality

Structural reforms that improve education will have substantial long-term impacts not only on potential growth, and thus on poverty reduction, but also on shared prosperity. In the next two decades, new cohorts of workers from EMDEs will enter the global workforce with better skills from more education (Figure 1.27). As the supply of skilled workers rises in EMDEs, an expected shift in the skill composition of the global labor

force will have important consequences on global and within-country income inequality.

The number of skilled workers in global labor markets is likely to rise from 1.66 billion in 2011 to 2.22 billion by the middle of this century—an increase of about 33 percent (Ahmed et al. 2017). Importantly, EMDEs will be wholly responsible for this increase, since the absolute number of skilled workers in advanced economies will be declining due to population aging. This means that the ratio of skilled workers from advanced economies to those from EMDEs will fall from one-to-two to one-to-three by 2030.

Since better skills lead to higher income, this trend is expected to help lower global income inequality, largely reflecting income convergence among countries amid a higher supply of skilled workers in EMDEs—particularly in populous countries such as China and India. Consequently, as the average income across countries becomes more equal, the relative contribution of within-country inequality to global inequality is expected to raise, continuing a trend observed in the last two decades (Special Focus 2). Critically, this assumes that job creation keeps pace to absorb the rising supply of skilled workers across countries.

Although within-country inequality is expected to rise in importance at the global level, the "education wave"—i.e., the expected increase in the supply of skilled workers—will likely mitigate increases in inequality in EMDEs, driven by reductions in the wage gap between skilled and unskilled workers. The benefits of the education wave are likely to be highest in Latin America and the Caribbean, South Asia, and Sub-Saharan Africa. Yet, it is critical that the expected improvements in years of schooling in the labor force of EMDEs be accompanied with better learning outcomes, as new technologies may disproportionally benefit more skilled workers. More generally, improving learning outcomes in EMDEs to increase productivity, employment, earnings, and economic growth will require a systemic change in the educational approach and the removal of political and technical barriers that prevent a focus on learning (World Bank 2018). With better skills from education, the promises of reduced global inequality can also be realized (Special Focus 2).

TABLE 1.2 List of emerging market and developing economies[1]

Commodity exporters[2]		Commodity importers[3]	
Albania*	Madagascar	Afghanistan	Philippines
Algeria*	Malawi	Antigua and Barbuda	Poland
Angola*	Malaysia*	Bahamas, The	Romania
Argentina	Mali	Bangladesh	Samoa
Armenia	Mauritania	Barbados	Serbia
Azerbaijan*	Mongolia	Belarus	Seychelles
Bahrain*	Morocco	Bhutan	Solomon Islands
Belize	Mozambique	Bosnia and Herzegovina	Sri Lanka
Benin	Myanmar*	Bulgaria	St. Kitts and Nevis
Bolivia*	Namibia	Cabo Verde	St. Lucia
Botswana	Nicaragua	Cambodia	St. Vincent and the Grenadines
Brazil	Niger	China	Swaziland
Burkina Faso	Nigeria*	Comoros	Thailand
Burundi	Oman*	Croatia	Tunisia
Cameroon*	Papua New Guinea	Djibouti	Turkey
Chad*	Paraguay	Dominica	Tuvalu
Chile	Peru	Dominican Republic	Vanuatu
Colombia*	Qatar*	Egypt, Arab Rep.	Vietnam
Congo, Dem. Rep.	Russia*	El Salvador	
Congo, Rep.*	Rwanda	Eritrea	
Costa Rica	Saudi Arabia*	Fiji	
Côte d'Ivoire	Senegal	Georgia	
Ecuador*	Sierra Leone	Grenada	
Equatorial Guinea*	South Africa	Haiti	
Ethiopia	Sudan*	Hungary	
Gabon*	Suriname	India	
Gambia, The	Tajikistan	Jamaica	
Ghana*	Tanzania	Jordan	
Guatemala	Timor-Leste*	Kiribati	
Guinea	Togo	Lebanon	
Guinea-Bissau	Tonga	Lesotho	
Guyana	Trinidad and Tobago*	Macedonia, FYR	
Honduras	Turkmenistan*	Maldives	
Indonesia*	Uganda	Marshall Islands	
Iran, Islamic Rep.*	Ukraine	Mauritius	
Iraq*	United Arab Emirates*	Mexico	
Kazakhstan*	Uruguay	Micronesia, Fed. Sts.	
Kenya	Uzbekistan	Moldova, Rep.	
Kosovo	Venezuela, RB*	Montenegro	
Kuwait*	West Bank and Gaza	Nepal	
Kyrgyz Republic	Zambia	Pakistan	
Lao PDR	Zimbabwe	Palau	
Liberia		Panama	

*Energy exporters.

1. Emerging market and developing economies (EMDEs) include all those that are not classified as advanced economies. Advanced economies include Australia; Austria; Belgium; Canada; Cyprus; the Czech Republic; Denmark; Estonia; Finland; France; Germany; Greece; Hong Kong SAR, China; Iceland; Ireland; Israel; Italy; Japan; the Republic of Korea; Latvia; Lithuania; Luxembourg; Malta; Netherlands; New Zealand; Norway; Portugal; Singapore; the Slovak Republic; Slovenia; Spain; Sweden; Switzerland; the United Kingdom; and the United States.

2. An economy is defined as commodity exporter when, on average in 2012-14, either (i) total commodities exports accounted for 30 percent or more of total goods exports or (ii) exports of any single commodity accounted for 20 percent or more of total goods exports. Economies for which these thresholds were met as a result of re-exports were excluded. When data were not available, judgment was used. This taxonomy results in the classification of some well-diversified economies as importers, even if they are exporters of certain commodities (e.g., Mexico).

3. Commodity importers are all EMDEs that are not classified as commodity exporters.

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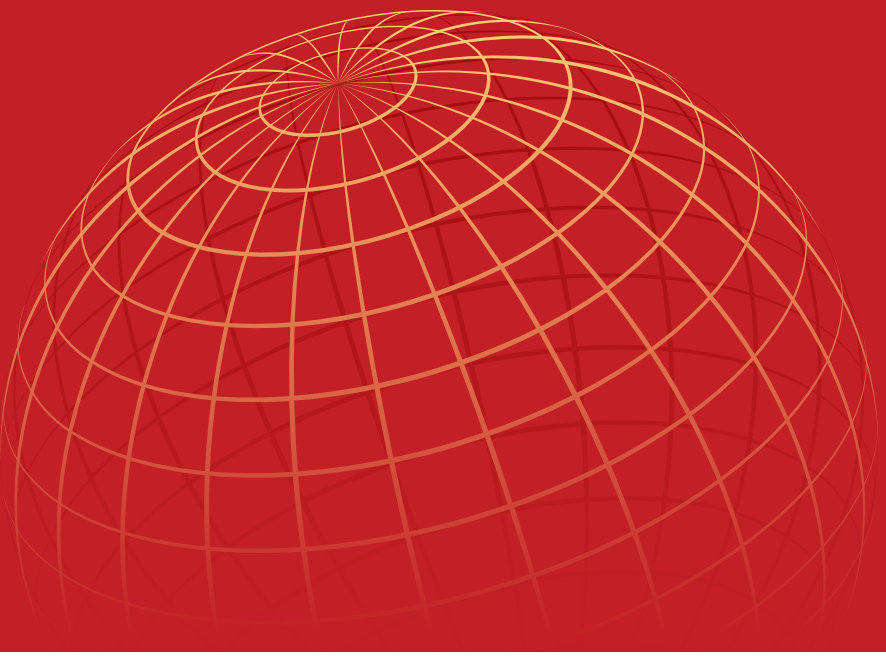


SPECIAL FOCUS 1

With the Benefit of Hindsight: The Impact of the 2014-16 Oil Price Collapse

With the Benefit of Hindsight: The Impact of the 2014-16 Oil Price Collapse

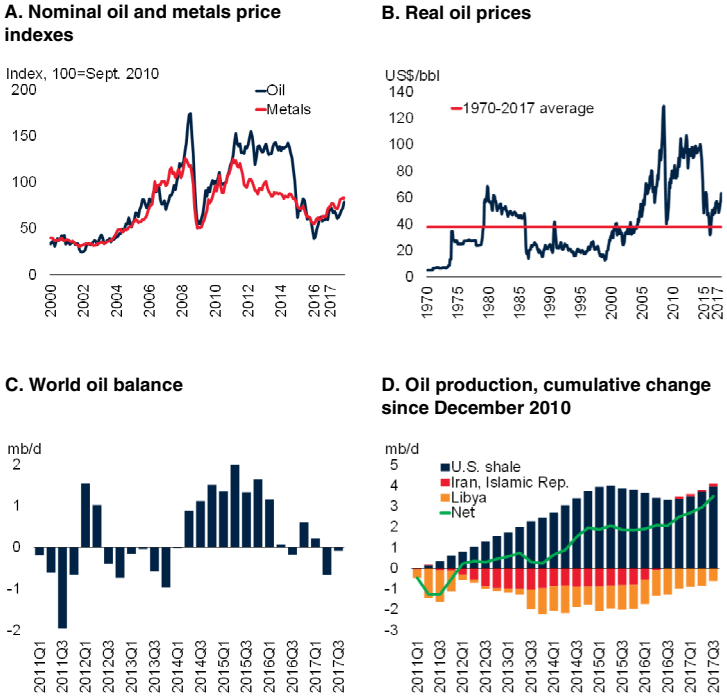
The 2014-16 collapse in oil prices was one of the largest in modern history, but failed to provide an expected boost to global growth and was a missed opportunity for reforms in a number of countries. The decline in oil prices was caused by a boom and rapid efficiency gains in U.S. shale oil production, a diminished effect of geopolitical risks, the inability of OPEC to regulate global oil supply, and softening demand prospects. The short-term benefits of falling oil prices to global growth were muted by several factors. These include the low responsiveness of activity in key oil-importing emerging markets, ongoing economic rebalancing in China, and the dampening impact of a sharp contraction in energy investment and a rapid appreciation of the U.S. dollar on growth in the United States. Among oil-exporting countries, those with flexible exchange rates, more diversified economies, and larger fiscal buffers fared better than others. Since 2014, many countries have taken advantage of lower prices to reduce energy subsidies, and some have implemented broader structural reforms. Limited prospects of a substantial recovery in oil prices from current levels could have lasting implications for potential growth in oil exporters. This calls for accelerated reforms to increase diversification.

Introduction

Between mid-2014 and early 2016, the global economy faced one of the largest oil-price shocks in modern history. The 70 percent price drop over that period was one of the three largest declines since World War II, and the most persistent since the supply-driven collapse of 1986. The decline—triggered by a combination of surging U.S. shale oil production, receding geopolitical risks involving some key producers, shifts in policies by the Organization of Petroleum Exporting Countries (OPEC), and weakening global growth prospects—brought oil prices in line with other industrial commodities and ended a prolonged period of historically elevated prices that started in 2003 (Figure SF1.1). International prices have rebounded since their early 2016 trough, reaching nearly $60 per barrel at the end of 2017, in part due to prospects of strengthening demand and extensions of production cuts agreed by OPEC and non-OPEC producers. In constant U.S. dollar terms, oil prices are still somewhat above their long-term (1970–2017) historical average. The oil price decline followed a broad-based commodity price boom that started in the early 2000s and lasted more than a decade. The boom, which

FIGURE SF1.1 The oil price plunge of 2014-16 in perspective

The 2014-16 plunge brought oil prices in line with other industrial commodity prices, and closer to long-term historical averages. It followed a mounting supply glut, supported by surging U.S. shale oil output and later by the recovery of production in Libya and the Islamic Republic of Iran.



Sources: Energy Information Administration, International Energy Agency, World Bank.
A. Last observation is November 2017.
B. Real oil prices are calculated as the nominal price deflated by the international manufacturers unit value index, in which 100=2010. World Bank crude oil average. Last observation is November 2017.
C. Oil supply balance is the difference between global oil production and consumption, in million barrels per day (mb/d). Last observation is 2017Q3.
D. Last observation is 2017Q3.
Click here to download data and charts.

Note: This Special Focus was prepared by Marc Stocker, John Baffes, and Dana Vorisek, with contributions from Carlos Arteta, Raju Huidrom, Atsushi Kawamoto, Seong Tae Kim, Yirbehogre Modeste Some, Shane S. Streifel, and Collette M. Wheeler. Research assistance was provided by Anh Mai Bui and Xinghao Gong.

unfolded after two decades of relatively low and stable prices, was mainly driven by surging demand prospects from emerging market and developing economies (EMDEs), especially China.[1]

The individual factors contributing to the oil price plunge have been extensively analyzed, but their respective roles remain subject to debate. Moreover, lower oil prices did not provide the expected boost to global activity, and policy responses and outcomes have varied considerably across countries. To shed light on these issues, this Special Focus addresses three questions:

- What were the main drivers of the oil price plunge from mid-2014 to early 2016?
- How did the recent oil price collapse impact the global economy?
- What was the policy response in oil exporters and oil importers?

The Special Focus concludes with an assessment of the outlook for oil prices and its implications for oil-exporting economies.[2]

What were the main drivers of the oil price plunge?

Several key developments in the global oil market occurred prior to and during the plunge in prices that began in mid-2014: A growing role of the U.S. shale oil industry as the marginal cost producer, a shift in OPEC policy, a reassessment of geopolitical risks, and deteriorating global growth prospects. Although supply factors appear to have been the dominant force in the sudden price collapse in 2014, weakening demand prospects were also an important contributor, particularly in 2015–16. The latter could partly explain why the oil price plunge failed to provide the anticipated boost to global activity.

U.S. shale oil production

A surge in U.S. shale oil production was one of the main drivers of the global oil supply glut in the period leading up to the price collapse in the second half of 2014. While U.S. shale oil represents less than 6 percent of world oil output, it accounted for nearly half of the growth in global oil production from 2010 to 2014. This rapid expansion was initially underestimated, as reflected in repeated upward revisions to the outlook for U.S. oil production by the International Energy Agency (IEA).[3] It was also overshadowed by a series of supply disruptions in the Middle East, which held back global oil output. These disruptions included conflict in Libya, the impact of sanctions on the Islamic Republic of Iran, and fears of supply outages in Iraq. Concurrent with the dissipation of some of these geopolitical concerns during 2014, shale oil production continued to grow rapidly, reaching a peak of more than 5 million barrels per day (mb/d) in late 2014. That year, gains in U.S. oil production alone exceeded those of global oil demand.

The technology to extract natural gas and oil from shale formations (hydraulic fracturing and horizontal drilling) has existed for decades, but its application became widespread in the oil sector only in the late 2000s, as oil prices peaked (Wang and Krupnick 2013). Such an endogenous supply response to elevated oil prices was observed in the past. In particular, during the early 1980s, high prices led to a similar expansion of oil extraction from Alaska, Mexico, and the North Sea, which contributed to a subsequent supply glut and price collapse in 1986. During the recent oil price plunge, however, shale technology proved more flexible and resilient (Bjørnland, Nordvik, and Rohrer 2017). Production from existing U.S. shale oil wells was sustained during the price collapse

[1] China's share of global oil consumption increased from 6 percent in 2000 to 12 percent in 2014. The increase in China's metal and coal consumption share was even larger: increasing from less than 10 percent to almost 50 percent of global consumption during the same period.

[2] A country is classified as an oil exporter when, on average in 2012-14, exports of crude oil accounted for 20 percent or more of total exports. Countries for which this threshold is met as a result of re-exports are excluded. When data are not available, judgment is used. The list of oil-exporting emerging market and developing economies is presented in Annex Table SF1.1.

[3] From a total of 72 updates, IEA undertook 66 upward revisions to U.S. production over that period, implying that the organization was underestimating the importance of U.S. shale.

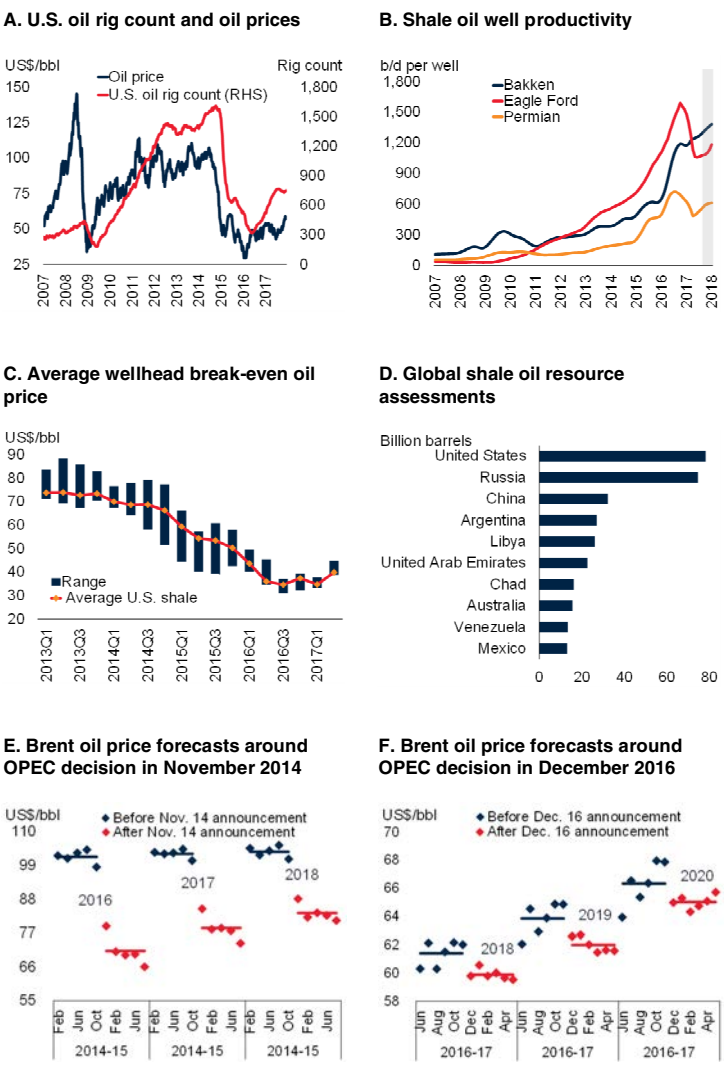
from mid-2014 to early 2016, but drilling fell nearly 80 percent, about five times more than the estimated response of conventional oil drilling to price fluctuations (Newell and Prest 2017; Anderson, Kellogg, and Salant forthcoming; Figure SF1.2).

The resilience of the shale oil industry to lower oil prices was also echoed in rapid efficiency gains that became increasingly evident after mid-2014. Production costs fell considerably, dropping by around 25 percent since the start of the oil price decline, reflecting the improved design of wells, shorter drilling and completion times, and higher initial production rates (Curtis 2015). Overall, efficiency gains and technological innovation helped spur a near tripling of output per well in the Eagle Ford and Bakken basins (Curtis 2016). The combined impact of lower production costs and efficiency gains caused average break-even prices for the shale oil industry to fall from more than $70 per barrel (bbl) in 2012 to less than $50/bbl in 2016–17 (Rystad Energy 2017). The resilience also reflects the decline in input costs (especially labor and rental equipment), as well as the ability of shale producers to hedge their entire production, as the shale oil cycle spans only a few years (as opposed to conventional oil, which spans decades).

The U.S. shale oil industry is likely to remain the marginal cost producer in coming years, and thus will continue to cap global oil prices (IEA 2017). Even if oil prices were at $30/bbl, about 50 percent of technically recoverable U.S. shale reserves would be economically viable (Smith and Lee 2017). U.S. shale oil reserves are assessed to be approximately 80 billion barrels (Bbbl), or around 20 percent of global shale reserves (EIA 2015; BP 2017). Technological improvements achieved in the United States could also stimulate faster production elsewhere. Shale reserves in the Russian Federation are close to those in the United States, at an estimated 75 Bbbl. China and Argentina follow, with 32 and 27 Bbbl of reserves, respectively. Although shale oil reserves represent a relatively small share of global reserves (around 10 percent), greater flexibility in production implies that shale oil will continue to have a major effect on prices.

FIGURE SF1.2 U.S. shale oil activity and OPEC policy

Advancement in U.S. shale oil played a significant role in the oil price plunge from mid-2014 to early 2016. Oil drilling responded flexibly to changes in oil prices, but production was resilient and efficiency gains lowered break-even prices considerably in recent years. OPEC's decision to abandon price controls in November 2014 led to a significant drop in current and expected oil prices. Prices also fell following OPEC's agreement to reinstate production targets amid ample supply, suggesting OPEC's diminishing capacity to stabilize prices.

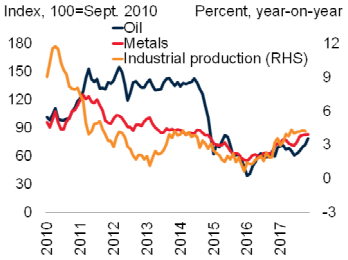


Sources: Baker Hughes, Bloomberg, Consensus Economics, Energy Information Administration, Rystad Energy NASWellCube Premium.
A. Weekly data. Last observation is December 15, 2017. WTI is West Texas Intermediate.
B. Shaded area indicates forecasts. Data for December 2017 are estimates.
C. Does not include test activity, where well was shut-down after completion. Last observation is 2017Q2.
D. Technically recoverable oil from low permeability tight formations, which includes shale.
E. Median Brent oil price forecasts reported from February 2014 through August 2015.
F. Median Brent oil price forecasts reported from June 2016 through May 2017.
Click here to download data and charts.

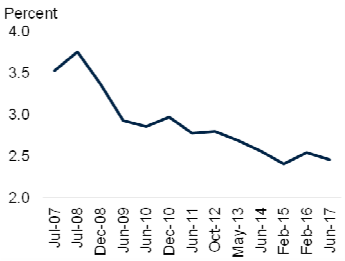
FIGURE SF1.3 Oil demand trends

Evidence of slowing demand prospects became visible around 2011, as global industrial production growth and major industrial commodity prices started trending down, and long-term projections for non-OECD oil consumption continued to be downgraded. The declining oil intensity of global GDP and increased uptake of technologies that consume less fossil fuels were also underlying trends.

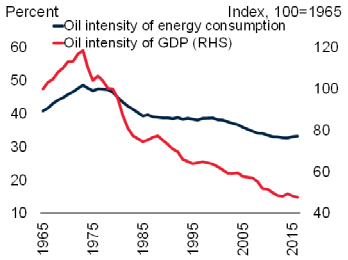
A. Commodity price indexes and industrial production growth



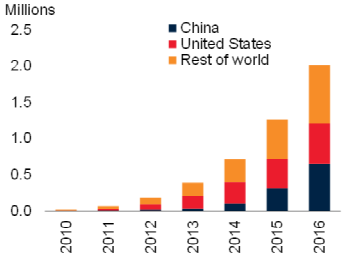
B. Non-OECD oil consumption growth forecast, 5 years ahead



C. Oil intensity of GDP and energy consumption



D. Global stock of electric cars



Sources: BP Statistical Review of World Energy, International Energy Agency Global EV Outlook, World Bank.

A. Oil and metals prices are nominal. Last observation is November 2017 for oil and metals and October 2017 for industrial production.

B. Last observation is June 2017.

C. Oil intensity of energy consumption measured as oil consumption in percent of total primary energy consumption. Oil intensity of real GDP measured as oil consumption relative to real GDP. Last observation is 2016.

D. Electric car stock includes battery-electric vehicles and plug-in hybrid electric vehicles.

Click here to download data and charts.

The role of OPEC policies

Despite the shale oil boom, oil prices remained high over the period 2011–14, supported by supply disruptions and heightened geopolitical concerns involving some key producers, as well as expectations that OPEC members would continue to adjust production to stabilize prices. Following the beginning of the price collapse in mid-2014, however, OPEC decided against reducing output, as it had done in the past, including during the price plunge in 2009. Instead, it announced in November 2014 that its objective was to retain its market share; a policy shift that reflected the increasing clout of shale oil and reduced cohesiveness within the cartel (Behar and Ritz 2016). That decision, which defined OPEC's strategy throughout 2015 and 2016, was followed by a large and sustained decline in oil prices.[4]

Amid mounting fiscal pressures and in view of shale oil's resilience, several OPEC members, along with 10 non-OPEC countries led by Russia, agreed to revert to production cuts to shore up prices (World Bank 2016a). The initial six-month agreement, which went into effect in January 2017, was subsequently extended twice: first to March 2018 and then to December 2018. Relatively high compliance with the agreed cuts, especially by Saudi Arabia (the dominant OPEC member) and Russia (the most important non-OPEC oil producer) contributed to some rebalancing of oil markets during 2017. However, actual and expected prices did not rise following policy announcements, illustrating the reduced ability of OPEC to influence market conditions as U.S. shale oil has effectively become the new marginal cost producer.[5]

The role of demand conditions

Changing demand conditions for oil, including short-run movements in market sentiment and expectations, play an important role in driving oil price fluctuations (Lippi and Nobili 2012; Alquist and Coibion 2014; Jacks and Stürmer 2016). This was particularly visible during the boom years from 2003–08, when a positive reassessment of demand prospects from EMDEs contributed to a near doubling of the real price of oil (Baumeister and Peersman 2013; Kilian and Hicks 2013). That process reversed after the global financial crisis, as long-term prospects for advanced economies and, later, for EMDEs began to be downgraded.

Evidence of the slowdown became more visible around 2011, as global industrial production, goods trade, shipping freight, and major industrial commodity prices all trended down (Figure SF1.3; Kilian and Zhou 2017). Deteriorating growth

[4] This was comparable to OPEC's decision to reclaim market shares in 1986, which contributed to a collapse in prices after unsuccessful attempts to support prices through production cuts (McNally 2017).

[5] OPEC's reduced ability to influence the oil market is also consistent with the lower price volatility experienced during and after the 2014 collapse (World Bank 2015a; Baffes and Kshirsagar 2015).

prospects for EMDEs led to a continued decline in oil consumption expectations for these economies. Concerns about global growth prospects intensified during 2015 and early 2016, amid signs of a simultaneous slowdown in China, major commodity-exporting EMDEs, and the United States. In January 2016, oil prices reached a 15-year low of $31/bbl.

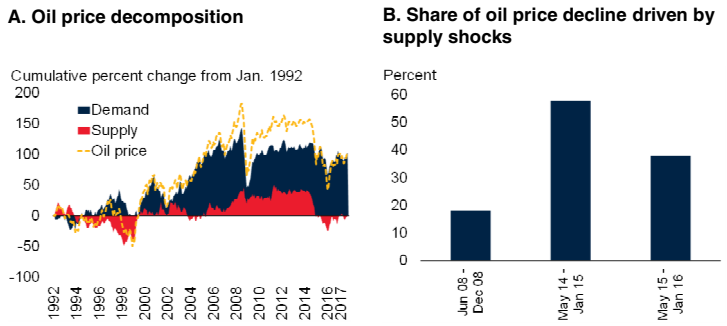
A decline in the average oil intensity of global GDP, which has nearly halved since the 1970s, also explains an undercurrent of weakening long-term demand. By 2016, the level of oil consumption in advanced economies, which had begun to fall prior to the global financial crisis, was nearly 7 percent below its 2005 peak. Technological improvements and substitution away from oil have been significant driving factors underlying the slowdown in oil consumption since 2005.[6] In non-OECD countries, technology and environmental policies have also started to influence crude oil demand patterns. For example, China became the world's largest user of energy-efficient vehicles in 2015, reflecting in part policies to reduce air pollution (Ma, Fan, and Feng 2017). Electric vehicles continue to account for a low share of global transportation, but could become an important force affecting oil demand prospects over time (Cherif, Hasanov, and Pande 2017). From a long-term perspective, technological improvements on the consumption side, along with policies to limit fossil fuel usage and increase energy efficiency, are likely to constrain demand growth, thus preventing oil prices from reverting to levels seen during the boom years (IEA 2017).

The oil price collapse: The relative importance of supply and demand

While changes in underlying supply and demand conditions pre-dated the start of the oil price plunge in mid-2014, a convergence of geopolitical factors triggered a sudden and abrupt price realignment, later amplified by OPEC's policy shift and signs of a further weakening of global growth.

FIGURE SF1.4 Oil supply and demand shock decomposition

Empirical results suggest that the initial drop in oil prices from mid-2014 to early 2015 was primarily driven by supply factors. However, demand factors played an increasing role during the second stage of the plunge from mid-2015 to early 2016.



Source: World Bank.
A. B. Based on the decomposition of oil price changes from a structural vector autoregressive (SVAR) model including global industrial production, global oil production, oil and metals prices. The identification scheme is comparable to that suggested in Caldara, Cavallo, and Iacoviello (2016), putting restrictions on short-term oil supply and demand elasticities based on a survey of the literature.
A. Last observation is October 2017.
Click here to download data and charts.

To help disentangle the contribution of supply and demand shocks around the 2014–16 collapse, a Bayesian structural vector autoregressive model was estimated (see Annex SF1.1 for a description). The model explores interactions between international oil prices; global oil output; and common demand indicators such as global industrial production and metals prices, the latter of which co-move with oil prices in the presence of demand-driven shocks.[7]

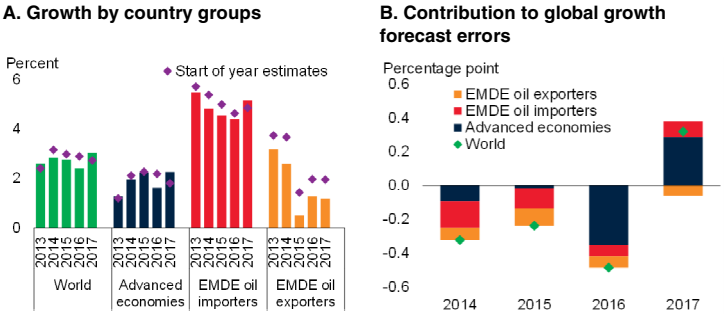
Results confirm that changing supply conditions played a dominant role in triggering the initial oil price decline from mid-2014 to early 2015, explaining about 60 percent of the drop (Figure SF1.4). These results are consistent with previous analyses (Baffes et al. 2015; Arezki and Blanchard 2015). The role of oil demand shocks, however, strengthened in the second half of 2015 and early 2016, when global activity showed signs of deceleration and metals prices continued to slide. Around that period, changes in supply conditions are estimated to have accounted for about 40 percent of the price drop. Various other indicators

[6] For example, in the context of identifying the sources of the decline in CO_2 emissions in the U.S. during 1997–2013, Feng et al. (2015) concluded that the change in fuel mix and productivity improvements played a key role in the lower use of oil.

[7] The selected identification method uses a combination of sign restrictions and bound estimates of short-term elasticities of oil supply and oil demand (Baumeister and Hamilton 2015; Caldara, Cavallo, and Iacoviello 2016).

FIGURE SF1.5 Global activity

In contrast with initial expectations, the oil price plunge was followed by a slowdown in global growth in 2015 and 2016. The disappointing pace of global growth during those years was mostly accounted for by a failed recovery in oil-importing EMDEs and advanced economies.



Source: World Bank.
A. B. Aggregate growth rates calculated using constant 2010 U.S. dollar GDP weights. Country classification is presented in Annex Table SF1.1.
A. Purple diamonds correspond to growth forecasts at beginning of each calendar year from *Global Economic Prospects*. Bars represent actual data up to 2016 and estimates for 2017.
B. Forecast errors computed as the difference between actual global growth and forecasts at the beginning of each calendar year. Sample includes the 153 countries with forecast data available in 2014.
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used to proxy demand shifts in commodity markets also point to downward demand pressures on oil prices (Kilian and Zhou 2017).

How did the recent oil price collapse impact the global economy?

The plunge in oil prices that began in mid-2014 led to expectations of global growth windfalls (Baffes et al. 2015). Estimates produced at the time suggested that a 50 percent supply-driven decline in oil prices could lift global GDP by around 0.8 percent over the medium term. Such a boost to global aggregate demand was expected to result from a transfer of income and wealth from oil-exporting economies, which tend to have a high aggregate savings rate, to oil-importing economies, where the propensity to spend is higher. And while lower oil prices were anticipated to negatively impact investment in the oil industry, this was expected to have been more than offset by lower energy costs for consumers and for energy-intensive sectors, including transportation, manufacturing, and agricultural sectors.

Rather than lifting activity, however, the oil price plunge was accompanied by a global slowdown (Figure SF1.5). Global growth moderated from 2.8 percent in 2014 and 2015, to a post-crisis low of 2.4 percent in 2016, amid weakening global trade, subdued capital flows to EMDEs, and broad-based weakness in commodity prices. A sudden contraction in government spending, domestic demand, and imports in oil-exporting economies had some dampening effects, but the most important factor behind disappointing global growth during and after the oil price plunge was a failed recovery in oil-importing EMDEs and advanced economies, particularly the United States. Growth disappointments among oil importers were partially reversed in 2017, as a broad-based cyclical recovery got underway (Chapter 1). However, forecast downgrades continued among a number of oil-exporting EMDEs. Overall, global growth was overestimated by an average of 0.2 percentage point per year over the period 2014-17, with 40 percent explained by oil-exporting EMDEs, 34 percent by oil-importing EMDEs, and the remainder by advanced economies.

While the impact of low oil prices on growth in oil-importing EMDEs was less than expected, lower oil prices have helped reduce vulnerabilities in some of these countries, as reflected in improved current account positions and lower inflation. In turn, reduced vulnerabilities supported investor confidence and allowed monetary policy authorities to regain some space for policy easing (World Bank 2016b).

Impact on oil exporters

The oil price plunge from mid-2014 to early 2016 had broad-based and long-lasting effects on economic activity in oil exporters. More than 70 percent of oil-exporting EMDEs registered slowing growth in 2015 and 2016, with many facing a collapse in consumption (e.g., Nigeria, Russia, the United Arab Emirates, República Bolivariana de Venezuela) and investment (e.g., Angola, Russia, Venezuela; Figure SF1.6). Terms-of-trade shocks can impact both actual and potential output growth, particularly for oil-exporting countries, which are generally less diversified than other commodity exporters (Aslam et al. 2016). Investment growth tends to respond particularly strongly to a deterioration in terms of trade, which can in turn negatively affect

capital deepening and total factor productivity growth (World Bank 2017a).

The oil price plunge quickly depleted oil revenues, forcing abrupt cuts in government spending that accentuated the slowdown in private sector activity in many regions (World Bank 2016b, 2016c, 2017a; Danforth, Medas, and Salins 2016). This effect was amplified in countries that entered the most recent oil price decline with weaker fiscal positions and higher private sector debt than in previous episodes. This contributed to a more pronounced slowdown in aggregate demand, particularly in investment, in the Middle East, Sub-Saharan Africa, and Eastern Europe (BIS 2016; Chapter 2).

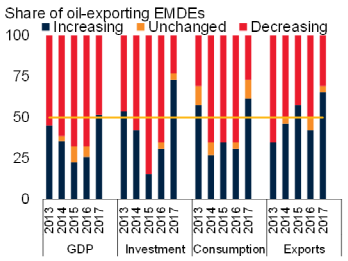
The effects of the price shock were also exacerbated by idiosyncratic factors, including sanctions on Russia, and conflict and geopolitical tensions in the Middle East and North Africa region. Headwinds in Russia and the Gulf Cooperation Council (GCC) economies also had adverse spillovers through reduced within-region flows of trade, remittances, foreign direct investment, and grants (World Bank 2015b, 2016d). Oil-exporting low-income countries (e.g., Chad, South Sudan) were hit particularly hard, as the effect of the oil price shock was exacerbated by conflict and deteriorating security conditions. Delayed adjustments contributed to a depletion of reserves and a sharp increase in public debt.

In general, activity in oil exporters with floating exchange rate regimes (e.g., Albania, Russia) and a relatively high degree of economic diversification (e.g., Bahrain, Ghana, Malaysia, Qatar) recovered more quickly from the fall in oil prices than those with fixed exchange rates and low diversification.[8] Oil exporters with relatively large foreign reserves and low historical inflation volatility also showed greater resilience (Grigoli, Herman, and Swiston 2017; World Bank 2016b). High income inequality and political instability also weakened the ability of oil-exporting economies to weather low oil prices (Ianchovichina and Onder 2017).

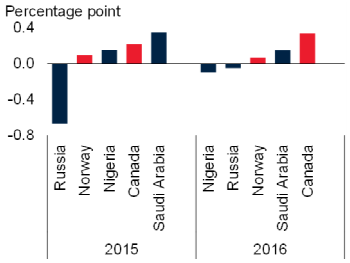
FIGURE SF1.6 Activity in oil-exporting EMDEs

More than 70 percent of oil-exporting EMDEs registered slowing growth in 2015 and 2016. The impact of the slowdown or recession in a few large economies was particularly significant. Activity was generally more resilient in countries with more flexible exchange rate regimes and more diversified economies.

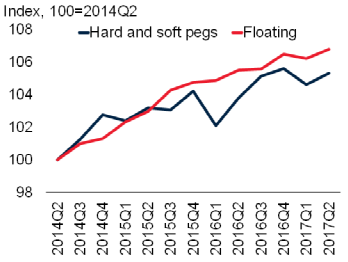
A. Share of oil-exporting EMDEs with increasing/decreasing growth



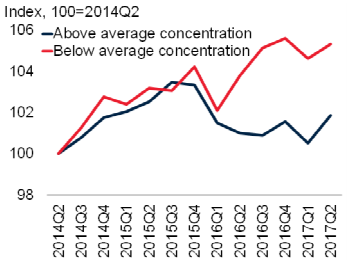
B. Contribution to oil exporter growth



C. GDP levels for oil-exporting EMDEs, by exchange rate classification



D. GDP levels for oil-exporting EMDEs, by export concentration



Sources: International Monetary Fund, United Nations Conference on Trade and Development (UNCTAD), World Bank.

A. Aggregate growth rates calculated using constant 2010 U.S. dollar GDP weights. Increasing/decreasing growth are changes of at least 0.1 percentage point from the previous year. Countries with a slower pace of contraction from one year to the next are included in the increasing growth category.

B. Blue bars indicate EMDEs, red bars indicate advanced economies.

C. D. Sample includes 11 oil-exporting EMDEs (Albania, Bahrain, Bolivia, Colombia, Ecuador, Kazakhstan, Malaysia, Nigeria, Qatar, Russia, and Saudi Arabia) for which quarterly GDP data is available, and excludes the Islamic Republic of Iran due to the large effect of sanctions. Figures show median for the separate categories.

C. Exchange rate classification is based on the IMF's Annual Report on Exchange Arrangements and Exchange Restrictions database, in which countries are ranked 0 (no separate legal tender) to 10 (free float). "Hard and soft pegs" refers to countries with a ranking of 1 to 6, while "floating" denotes those with rankings of 7 to 10 and includes countries with horizontal bands and other managed arrangements.

D. "Above average concentration" and "below average concentration" groups are defined by countries above or below the sample average for export concentration in 2014. Concentration index measures the degree of product concentration, where values closer to 1 indicate a country's exports are highly concentrated on a few products. The average for the sample is 0.6, where 1 is the most concentrated.

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Impact on oil importers

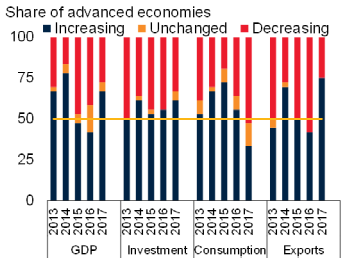
Contrary to expectations in 2014–15, the collapse in world oil prices did not provide a boost to activity among oil-importing economies, most of which experienced slowing growth in 2015–16 (Figure SF1.7). Growth disappointments were concentrated in EMDE oil importers, but an

[8] Although Qatar is primarily a liquefied natural gas (LNG) exporter, it is classified here as an oil exporter because the natural gas market is tightly connected to the crude oil market. From 2013 to 2015, the years before and after the oil price collapse, oil prices (World Bank average) declined 51 percent, while LNG dropped 36 percent.

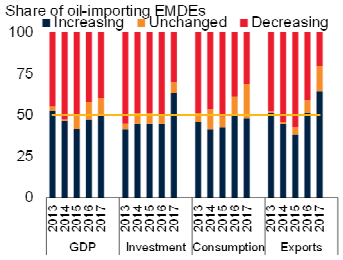
FIGURE SF1.7 Activity in oil-importing economies

A majority of advanced economies and oil-importing EMDEs experienced slowing growth in 2015-16, driven by weakening investment and export growth. In China, the positive effect was muted by a low share of oil in the energy consumption mix. A sharp contraction in U.S. mining investment dragged U.S. GDP growth down.

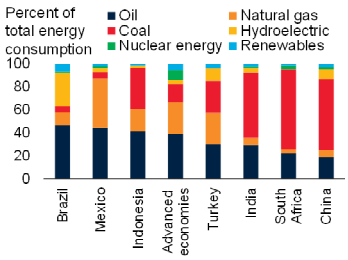
A. Share of advanced economies with increasing/decreasing growth



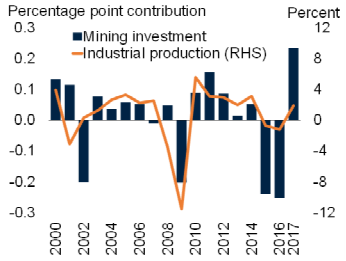
B. Share of oil-importing EMDEs with increasing/decreasing growth



C. Consumption by fuel type, 2016



D. Contribution of mining investment to U.S. GDP growth and U.S. industrial production growth



Sources: BP Statistical Review, Federal Reserve Bank of St. Louis, World Bank.
A. B. Aggregate growth rates calculated using constant 2010 U.S. dollar GDP weights. Increasing/decreasing growth are changes of at least 0.1 percentage point from the previous year. Countries with a slower pace of contraction from one year to the next are included in the increasing growth category.
C. Oil consumption is measured in million tonnes; other fuels in million tonnes of oil equivalent. Renewables are based on gross generation from renewable sources including wind, geothermal, solar, biomass, and waste, but not accounting for cross-border electricity supply.
D. Mining investment is real private fixed investment of nonresidential structures for mining exploration, shafts, and wells. Data for 2017 are estimated.
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unexpected slowdown in the United States in 2016 also had an outsized effect. Adjustments costs and uncertainty associated with large oil price changes could have disrupted activity and investment in the short term (Hamilton 2011; Jo 2014). The most important factors behind the lack of a positive growth response to lower oil prices are assessed to be the following:

China's energy mix and rebalancing needs. China is the second-largest oil importer in the world, but the share of oil in its overall energy consumption is the lowest among G20 economies. Instead, China relies heavily on coal, which accounted for 65 percent of energy consumption in 2016. Regulated fuel costs and a low energy and transportation weight in consumer baskets also mean that lower oil prices lead to limited real income gains for consumers (World Bank 2015c). Thus, the direct impact of the oil price plunge on China was relatively modest. Meanwhile, a near halving of investment growth since 2012 has weighed significantly on activity, and is estimated to have accounted for 40 to 50 percent of the import deceleration in 2014–15, with significant knock-on effects for trading partners (Kang and Liao 2016). Since much of investment is resource-intensive, the impact of slower investment growth was particularly significant for industrial commodity prices and activity in commodity-exporting EMDEs (World Bank 2016b; Huidrom, Kose, and Ohnsorge 2017).

Lower sensitivity of other oil-importing EMDEs to oil shocks. A number of recent empirical studies suggest that activity in oil-importing EMDEs is less responsive to oil supply shocks than that in major advanced economies (Aastveit, Bjørnland, and Thorsrud 2014; Caldara, Cavallo, and Iacoviello 2016). These studies explore several factors, including different energy mixes, consumption patterns, and energy price controls that limit the pass-through of world prices to domestic retail prices. Since many oil-importing EMDEs took advantage of lower world prices to reduce energy subsidies, real income gains from declining oil prices for consumers were more limited, even if it created potential fiscal savings. For non-oil commodity exporters, which represent approximately half of oil-importing EMDEs, adjustments to past terms-of-trade shocks continued to weigh heavily on activity in 2014–16.[9] Because investment has responded strongly to deteriorating terms of trade since 2011, both actual and potential output growth may have been negatively affected (World Bank 2017b). Some oil-importing EMDEs had also made significant investments in new oil production capacity and biofuels during the period of high oil prices,

[9] A country is classified as "non-oil commodity exporter" when, on average in 2012–14, either (i) total commodities exports accounted for 30 percent or more of total exports; or (ii) exports of any single commodity other than energy accounted for 20 percent or more of total exports. The classification of EMDEs into energy exporters, non-energy commodity exporters, and commodity importers is presented in Annex Table SF1.1.

including in a number of low-income countries (World Bank 2015d). The reduced profitability of these projects as prices collapsed led to a sharp contraction in capital expenditures in those sectors. The fact that oil-importing EMDEs have become a major source of global growth and international spillovers could help explain the lack of a global stimulus effect from falling oil prices (Huidrom, Kose, and Ohnsorge 2017).

The impact of low oil prices on investment in the United States. In the United States, the boost to private consumption from lower oil prices was partly offset by a sharper-than-expected contraction in capital spending in the energy sector (Baumeister and Kilian 2016). Mining investment was cut in half in the two years that followed the mid-2014 oil price plunge. This dragged private investment down, curtailing GDP growth by 0.2 percentage point in both 2015 and 2016. The collapse of energy investment reflected both the magnitude of oil price changes and the specific nature of shale oil production, where capital expenditures are more price elastic than conventional production (Bjørnland, Nordvik, and Rohrer 2017; Newell and Prest 2017). U.S. business activity was also dampened by the sharp appreciation of the U.S. dollar, which adversely affected manufacturing exports and profits.

Monetary policy constraints in the Euro Area and Japan. Declining oil prices coincided with a drop in long-term inflation expectations in a number of advanced economies, raising particular concerns about persistent deflationary pressures in the Euro Area and Japan (Arteta et al. 2016). With these economies experiencing interest rates close to their lower bounds before the oil price collapse, reduced inflation expectations could have resulted in upward pressures on real interest rates. Central banks in both the Euro Area and Japan responded to these deflationary risks by pursuing more aggressive monetary policy accommodation, including negative interest rate policies and expanded asset purchase programs. Coupled with more supportive fiscal policies, these steps helped to support an acceleration of activity. Hence, there is little evidence that monetary policy constraints were a key factor explaining the muted response of global demand to lower oil prices since 2014.

What was the policy response in oil exporters and oil importers?

The sharp oil price decline elicited widely different monetary, fiscal, and structural policy responses in oil-exporting and oil-importing economies. Monetary policy and fiscal policy was nearly universally tightened among oil-exporting EMDEs, while the policy response in oil importers was varied. Among oil-exporting EMDEs, those with flexible exchange rates or lower-than-average reliance on oil for government revenue experienced less abrupt deterioration in fiscal balances than those with fixed exchange rates or higher-than-average reliance on oil revenues. For some major oil-exporting EMDEs, the oil price plunge triggered structural reforms, including subsidy reforms, which may in turn support the longstanding need for economic diversification, but more sustained efforts are required. Although some oil-importing EMDEs took advantage of the period of depressed oil prices to reform energy subsidies, there has been no noticeable improvement in fiscal sustainability since 2014.

Policy response in oil exporters

Monetary policy

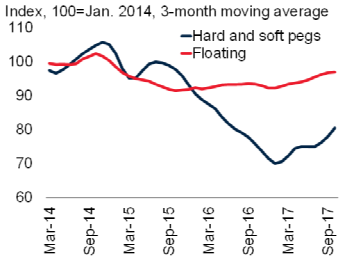
Many oil-exporting EMDEs experienced sharp currency depreciation or rapid declines in foreign exchange reserves in 2014–16. Countries with floating exchange rates were better able to stabilize reserves, but generally suffered sharper initial depreciations (Figure SF1.8). Monetary authorities in several countries intervened in foreign exchange markets to support their currencies (e.g., Angola, Azerbaijan, Bolivia, Kazakhstan, Malaysia, Nigeria, Russia, Sudan, Turkmenistan), and many hiked policy interest rates in response to rising inflation (e.g., Angola, Azerbaijan, Colombia, Ghana, Kazakhstan, Nigeria, Russia, Trinidad and Tobago) or to support currency pegs (e.g., Bahrain, Kuwait, the United Arab Emirates).

The erosion of foreign reserves contributed to the welcome adoption of more flexible exchange rate regimes in Azerbaijan, Nigeria, and Russia as part

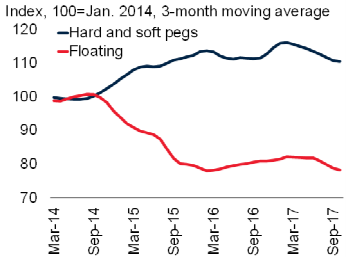
FIGURE SF1.8 Policy response in oil-exporting EMDEs

Many oil-exporting EMDEs experienced a rapid decline in foreign exchange reserves or sharp currency depreciation during 2015 and 2016; countries with floating and pegged exchange rates were impacted differently. Fiscal sustainability deteriorated more significantly during the recent oil price plunge than in past episodes, particularly in countries with high reliance on oil-related revenue and pegged exchange rates.

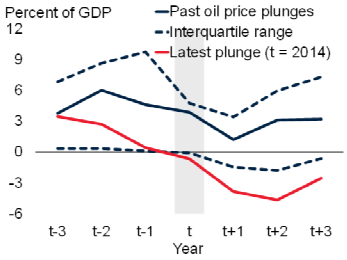
A. Foreign exchange reserves, by exchange rate classification



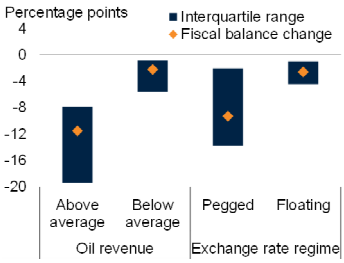
B. Nominal effective exchange rate, by exchange rate classification



C. Fiscal sustainability gaps around oil price plunges



D. Change in overall fiscal balance in oil-exporting EMDE sub-groups



Sources: Bank for International Settlements, Haver Analytics, International Monetary Fund, World Bank.

A. B. D. Exchange rate classification is based on the IMF's Annual Report on Exchange Arrangements and Exchange Restrictions database, in which countries are ranked 0 (no separate legal tender) to 10 (free float). "Pegged" denotes countries ranked 1 to 6. "Floating" denotes countries ranked 7 to 10.

A. Sample includes 9 oil-exporting EMDEs for which data is available (Albania, Angola, Bolivia, Colombia, Kazakhstan, Malaysia, Nigeria, Qatar, and Russia). Last observation is October 2017.

B. Sample includes 7 oil-exporting EMDEs for which data is available (Algeria, Colombia, Malaysia, Nigeria, Russia, Saudi Arabia, and the United Arab Emirates). Last observation is October 2017.

C. Sustainability gap is measured as the difference between the primary balance and the debt-stabilizing primary balance, assuming historical median (1990–2016) interest rates and growth rates. A negative gap indicates that government debt is on a rising trajectory; a positive gap indicates government debt is on a falling trajectory. Year *t* refers to the year of oil price plunges. Past oil price plunges include collapses in global oil prices in 1991, 1998, 2001, and 2008 (World Bank 2015b). The blue line represents the simple averages of 35 EMDE oil exporters in all episodes. The red line indicates the latest plunge starting in 2014. Blue dashed lines are the interquartile range for the past episodes.

D. Sample includes 27 oil-exporting EMDEs (excludes Albania, Bolivia, Brunei Darussalam, Ghana, Libya, Myanmar, South Sudan, and Turkmenistan). Change in overall fiscal balance is measured from 2014-16. Above average and below average oil revenue groups are defined by countries above or below the sample average of oil revenues as a share of GDP based on 2014 data.

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of the adjustment to low oil prices. In contrast, GCC countries, with larger reserves before the oil price decline, were able to use their reserves to maintain their currency pegs, despite intermittent periods of pressure on exchange rates (World Bank 2016c).

Central banks in oil-exporting EMDEs also took steps to mitigate tightening banking sector liquidity as oil prices declined. In a small number of countries where liquidity pressure was severe, the monetary authorities responded with unconventional measures, such as placing deposits from sovereign wealth funds (SWFs; e.g., Azerbaijan) and pension funds (e.g., Kazakhstan) in commercial banks (Sommer et al. 2016).

In oil-exporting advanced economies, Canada and Norway, inflation remained better anchored than in EMDEs. In light of weakened growth prospects, monetary authorities in these countries were able to pursue accommodative monetary policy—each lowered policy rates two times during 2015—as a complement to an easing fiscal stance.

Fiscal policy

Many EMDE oil exporters, which rely heavily on hydrocarbon revenues, undertook severe fiscal consolidation to realign spending with revenues despite rising economic slack and diminishing long-term growth prospects (e.g., Algeria, Angola, Azerbaijan, Iraq, the Islamic Republic of Iran, Kuwait, Nigeria, Russia, Saudi Arabia, the United Arab Emirates; Danforth, Medas, and Salins 2016). Compared with previous episodes of declining oil prices, the impact on public finances in EMDE oil exporters was compounded by weaker initial fiscal positions. Fiscal sustainability gaps continued to widen in 2015 and 2016, and government debt ratios rose on average by 11.4 percentage points, compared with an average of only 0.9 percentage point in past episodes (IMF 2017a; World Bank 2017a).

The need for fiscal adjustment was greater in oil-exporting EMDEs that lacked the necessary buffers (Husain et al. 2015; World Bank 2015d). Oil-exporting EMDEs with higher reliance on oil-related revenues faced a more pronounced deterioration in fiscal balances than in those economies that managed to diversify government revenue away from oil before 2014. Fiscal balances also fared better in oil-exporting EMDEs with more flexible exchange rate regimes, in part because real exchange rate depreciation mitigated revenue declines and spurred needed adjustment within the private sector.

A number of oil exporters that had previously built up buffers in SWFs—approximately 60 percent of oil-exporting EMDEs have at least one SWF—appropriately used these resources to alleviate fiscal and exchange rate pressures (e.g., Algeria, Azerbaijan, Kazakhstan, Kuwait, Saudi Arabia, the United Arab Emirates; World Bank 2015c). However, policymakers continue to face tradeoffs in their choices between drawing down assets—in particular, from SWFs—and issuing sovereign debt to finance budget deficits. Given benign global financing conditions, many have chosen to issue debt (Lopez-Martin, Leal, and Martinez 2016; Alberola-Ila et al. forthcoming).

Expenditure cuts have helped lower the fiscal break-even oil price in most oil-exporting EMDEs since 2015, although they remain higher than the current oil price in some countries (e.g., Bahrain, Saudi Arabia, Oman, Libya, the United Arab Emirates; Baffes et al. 2015; World Bank 2017b; World Bank 2017c). Absent a stronger-than-expected rebound in oil prices, further fiscal reforms in many oil-exporting EMDEs will be necessary. Contingent liabilities associated with potential bailouts of stated-owned oil companies and banks also remain a source of fiscal vulnerability, highlighting the importance of strengthening fiscal frameworks to mitigate such risks (Bova et al. 2016).

For some oil-exporting EMDEs, the fall in oil prices has helped spur longer-term fiscal reforms, including the introduction or planned introduction of additional indirect taxes (Malaysia, GCC countries). However, only one-fourth of oil-exporting EMDEs have fiscal rules to act as buffers to smooth the impact of oil price cycles on activity and public finances. Moreover, some countries failed to satisfy their existing fiscal rules (e.g., Nigeria), or subsequently modified them (e.g., Russia). This suggests the need for stronger fiscal frameworks to help reduce the procyclicality of fiscal policy and to establish a firmer foundation for long-term fiscal sustainability (Mendes and Pennings 2017). Oil price hedging and indexation of government bonds to oil prices could also help reduce exposure to short-term fluctuations in oil prices (Frankel 2017).

In oil-exporting advanced economies (e.g., Canada and Norway), the availability of fiscal buffers provided space to loosen fiscal stances, as measured by changes in the structural budget balance (i.e., the budget balance adjusted for the gap between actual and potential output levels). For example, Norway's fiscal rule of allowing up to 4 percent of its SWF to be drawn down to fund fiscal deficits provided a countercyclical policy tool to support growth.

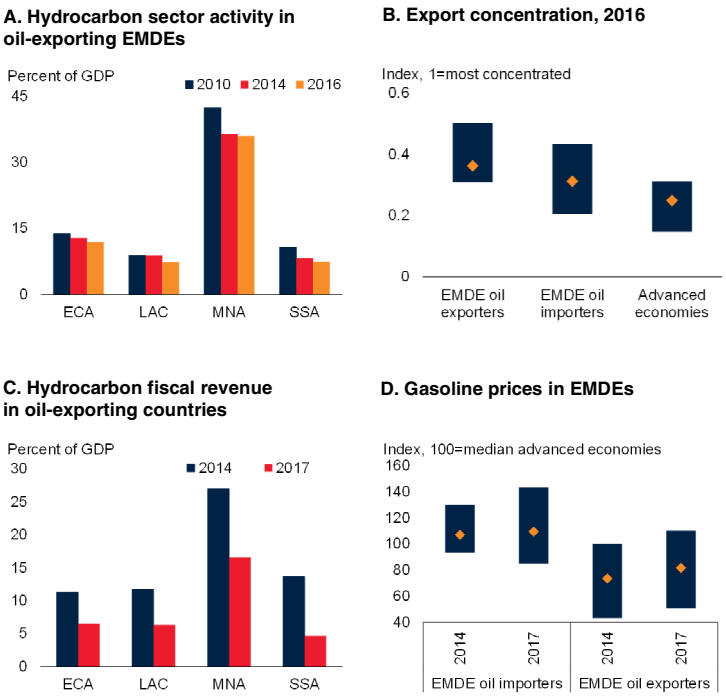
Structural policy

Many oil-exporting EMDEs entered the 2014 oil price bust still heavily reliant on oil (Figure SF1.9). Hydrocarbon sector activity represented more than one-third of GDP in a number of countries in Central Asia, Sub-Saharan Africa, and, in particular, the Middle East. Oil production represented the majority of government revenue and exports in most oil-exporting EMDEs in 2013. Cross-country studies underscore that greater diversification of exports and government revenues can bolster long-term growth prospects and resilience to external shocks and increase per-capita income growth (Lederman and Maloney 2007; Hesse 2008; IMF 2016). In oil-exporting EMDEs that have previously successfully diversified, a combination of measures to stimulate non-energy exports and broad reforms to improve the business environment, education, and skills acquisition have been vital (e.g., Malaysia, Mexico; Callen et al. 2014). Efforts to attract capital flows to non-resource sectors may also encourage diversification.

Following the recent oil price collapse, several large oil-exporting EMDEs have laid out medium- to long-term plans to reshape their economies by reducing reliance on the energy sector. For instance, Saudi Arabia's 2016 National Transformation Program targets an increase in non-oil commodity exports of 62 percent and non-oil government revenues of almost 225 percent by 2020 (Kingdom of Saudi Arabia 2016; World Bank 2016d). A GCC-wide implementation of a 5 percent value-added tax, expected to become effective in 2018, is intended to boost non-oil revenues in these countries. Nigeria has identified several sectors to promote greater diversification of

FIGURE SF1.9 Oil dependency in oil-exporting EMDEs

Oil exporters still have among the lowest levels of export diversification in EMDEs, and oil tax revenues still account for a large share of government revenues, particularly in the Middle East and North Africa. Despite subsidy reforms, gasoline prices are still significantly lower in oil-exporting EMDEs than in oil-importing ones.



Sources: GlobalPetrolPrices, Haver Analytics, International Monetary Fund, United Nations Conference on Trade and Development (UNCTAD), World Bank.

A. C. ECA = Europe and Central Asia, LAC = Latin America and the Caribbean, MNA = Middle East and North Africa, and SSA = Sub-Saharan Africa.

A. Regional aggregates are medians. Sample includes 19 oil-exporting EMDEs (Algeria, Angola, Azerbaijan, Bahrain, Bolivia, Cameroon, Colombia, Ecuador, Ghana, the Islamic Republic of Iran, Kazakhstan, Kuwait, Nigeria, Oman, Qatar, Russia, Saudi Arabia, the United Arab Emirates, and Venezuela). For Angola and Venezuela, 2016 reflects 2015 data.

B. Orange diamonds denote the median and blue bars represent the interquartile range of individual country groups. Sample includes 34 oil-exporting EMDEs (excludes South Sudan), 116 oil-importing EMDEs, and 36 advanced economies. Concentration index measures the degree of product concentration, where values closer to 1 indicate a country's exports are highly concentrated on a few products.

C. Regional aggregates are medians. Sample includes 24 oil-exporting EMDEs (Algeria, Angola, Azerbaijan, Bahrain, Bolivia, Cameroon, Chad, Colombia, Republic of Congo, Ecuador, Equatorial Guinea, Gabon, the Islamic Republic of Iran, Iraq, Kazakhstan, Kuwait, Nigeria, Oman, Qatar, Russia, Saudi Arabia, Sudan, Trinidad and Tobago, and the United Arab Emirates).

D. Retail gasoline prices benchmarked against the median for advanced economies. Local prices converted using 2014 exchange rates against the U.S. dollar. Sample includes 6 oil-exporting EMDEs (Bolivia, Colombia, Ghana, Kuwait, Malaysia, and Russia) and 45 oil-importing EMDEs. Last observation is November 2017.

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export earnings and government revenues.[10] Kazakhstan's "100 Concrete Steps" program, adopted in 2015, aims to diversify the economy and improve competitiveness and transparency.

Other recent examples of efforts to encourage diversification include: reducing labor market rigidities (e.g., Saudi Arabia, Oman), supporting foreign investment (e.g., Saudi Arabia), expanding infrastructure investment (e.g., Malaysia), and broadly improving the business environment (e.g., Algeria, Bahrain, Brunei Darussalam, Kazakhstan, Nigeria, the United Arab Emirates; Figure SF1.10). Reforms have also been encouraged by multilateral initiatives, including the World Bank's assistance to diversification efforts in some countries (e.g., the Republic of Congo, Nigeria, Qatar, and members of the Central African Economic and Monetary Community). However, in some cases, the structural reform agenda has faced legislative or implementation delays (e.g., Algeria, Kazakhstan) or has been scaled back as fiscal pressures recede (e.g., privatization efforts in Russia).

The sharp reduction in government revenues among oil-exporting EMDEs has also led to an increased emphasis on energy subsidy reforms. These have been aimed at restoring fiscal space, discouraging wasteful energy consumption, and generating capacity for programs that better target the poor (IMF 2017b). Between mid-2014 and end-2016, more than half of oil-exporting EMDEs reformed energy subsidies, including a geographically diverse set of countries in the Middle East and North Africa, Sub-Saharan Africa, East Asia, Latin America, and Central Asia.[11] A number of oil exporters have reduced utility subsidies as well.

In some cases—for instance, in GCC countries—subsidy reform was a significant break from past policy (Krane and Hung 2016; World Bank 2017c). Yet the need for reforms in this area is underscored by the fact that energy subsidies represented an average of nearly 6 percent of GDP as of 2014 among those oil-exporting EMDEs where subsidy reform occurred between 2014 and 2016. Encouragingly, the design and implementation of recently-implemented energy

[10] Nigeria aims to raise manufacturing sector growth to an average of 8.5 percent in 2018–20 and agricultural sector growth to 6.9 percent in 2017–20 (Nigeria Ministry of Budget and National Planning 2017).

[11] Energy subsidies were reformed between mid-2014 and late 2017 in Algeria, Bahrain, Cameroon, Ecuador, Gabon, Ghana, the Islamic Republic of Iran, Iraq, Kazakhstan, Kuwait, Malaysia, Nigeria, Oman, Qatar, Saudi Arabia, Sudan, Trinidad and Tobago, Turkmenistan, the United Arab Emirates, and Yemen.

subsidy reforms has been superior to past efforts, which were poorly phased and hampered by insufficient communication to the public about the rationale for reform (Clements et al. 2013; Asamoah, Hanedar, and Shang 2017). In many cases, recent reforms have also helpfully included measures to mitigate the impact on the poor and to strengthen social safety nets (e.g., Algeria, Angola, Saudi Arabia). Available data suggests that fuel price reforms since mid-2014 have succeeded in raising gasoline and diesel prices in oil-exporting EMDEs closer to international prices.

Policy response in oil importers

Monetary policy

The plunge in oil prices, coupled with a weak global growth environment, exacerbated the existing disinflation trend in many oil-importing EMDEs. In this context, several central banks cut interest rates, or otherwise pursued accommodative monetary policy during 2015–16 (e.g., China, Croatia, Dominican Republic, Hungary, India, Pakistan, Poland, Romania, Thailand). Yet, a number of non-oil commodity exporters raised rates during part of the 2015–16 period because they experienced significant currency depreciation, in part due to increasing concerns about external vulnerability (e.g., Brazil, Kenya, Mongolia, Peru, South Africa, Uganda, Ukraine, Zambia) and above-target inflation (e.g., Brazil, Mexico, Peru, Sri Lanka, Ukraine).

For major advanced economies, the fall in oil prices put significant downward pressure on inflation in 2015 and 2016. Several central banks responded by further cutting policy rates or expanding unconventional measures after reaching the zero lower bound of policy rates. In particular, the European Central Bank and Bank of Japan introduced negative interest rate policies and expanded their asset purchase programs.

Fiscal policy

Depressed oil prices were expected to provide oil importers an opportunity to rebuild fiscal space, but fiscal positions instead worsened in a number of these countries over the period 2014-16 (e.g., Argentina, Brazil, Turkey). In fact, cyclically-adjusted fiscal balances of oil-importing EMDEs deteriorated significantly, and government debt ratios increased (Figure SF1.11). In some cases, this reflected the effects of the broader decline in commodity prices, which reduced government revenues and necessitated spending cuts (e.g., Mongolia, Mozambique, Namibia, Rwanda, Ukraine). But even in countries where growth remained relatively robust and output gaps positive, governments missed the opportunity of lower energy prices to rebuild necessary fiscal space (Kose et al. 2017).

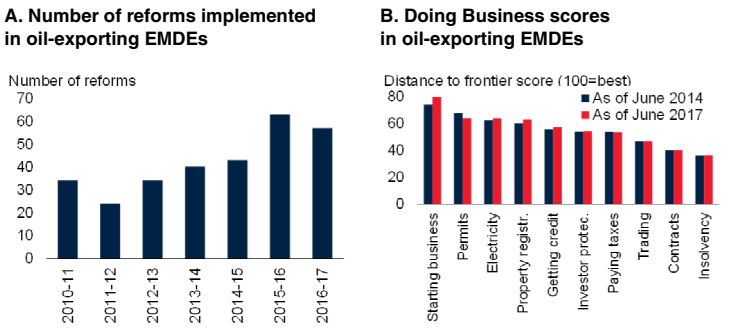
For advanced economies, fiscal stances continued to tighten in 2014-15, on average, but then became slightly expansionary in 2016, amid concerns about persistently weak growth and increasingly constrained monetary policies (IMF 2017a). Lower oil prices implied smaller direct fiscal windfalls in advanced economies compared to EMDEs given the smaller prevalence of subsidies (Coady et al. 2017; IEA 2016).

Structural policy

Like oil-exporting EMDEs, oil-importing EMDEs have taken advantage of declining oil prices to begin dismantling energy subsidies, which tend to benefit high-income earners, can crowd out public investment, and encourage more intensive use of fossil fuels (Arze del Granado, Coady, and Gillingham 2012). Since mid-2014, a number of

FIGURE SF1.10 Reforms and Doing Business scores

Oil-exporting EMDEs have accelerated reforms to improve the business environment since the oil price plunge, but more reforms will be needed to improve the environment in many areas.



Source: World Bank Doing Business.
A. B. Sample includes 35 oil-exporting EMDEs.
B. The full names of the reform areas given on the x-axis are: making it easier to start a business, making it easier to deal with construction permits, making it easier to get electricity, making it easier to register property, making it easier to get credit, making it easier to protect minority investors, making it easier to pay taxes, making it easier to trade across borders, making it easier to enforce contracts, and making it easier to resolve insolvency.
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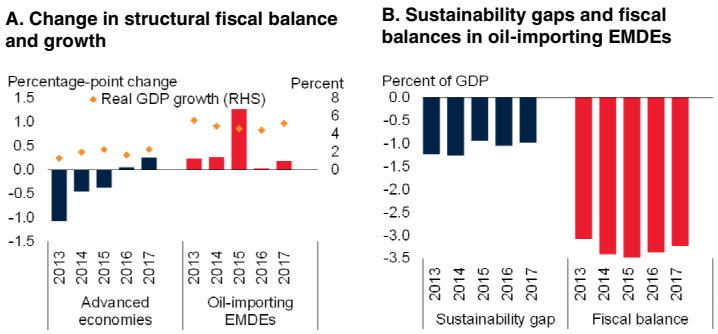
FIGURE SF1.11 Policy response in oil-importing economies

In oil-importing EMDEs, fiscal balances worsened as expenditure growth outpaced revenues, despite the reduction or removal of energy subsidies in some countries, while little progress was made in closing sustainability gaps.



Sources: International Monetary Fund, World Bank.

A. Structural balance is the fiscal balance adjusted for the economic cycle and for one-off effects. Positive values indicate fiscal expansion, while negative values indicate contraction. Figure shows GDP-weighted average in each country group. Sample includes 34 advanced-economy oil importers and 30 EMDE oil importers. Aggregate growth rates calculated using constant 2010 U.S. dollar GDP weights.

B. Sustainability gap is measured as the difference between the primary balance and the debt-stabilizing primary balance, assuming historical average (1990 to 2016) interest rates and growth rates. A negative gap indicates that government debt is on a rising trajectory; a positive gap indicates government debt is on a falling trajectory. Figure shows median for EMDE oil importers. Sample includes 54 oil-importing EMDEs.

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countries have implemented such reform (e.g., China, the Arab Republic of Egypt, Mexico, Morocco, Tunisia), while others have raised energy taxes (e.g., China, Rwanda, South Africa, Vietnam; IEA 2015; IMF 2016; Kojima 2016). These steps have also included measures to avoid energy subsidies re-emerging if oil prices rebound—automatic pricing mechanisms or full energy price liberalization have been common (e.g., China, Côte d'Ivoire, India, Jordan, Madagascar, Mexico, Thailand, Ukraine; Asamoah, Hanedar, and Shang 2017; Beylis and Cunha 2017).

Concluding remarks and implications for the future

The plunge in oil prices from June 2014 to January 2016, one of the three largest declines since World War II, was accompanied by an unexpected slowdown in global growth and a host of policy responses in oil-exporting and oil-importing economies. The key takeaways are as follows:

What were the main drivers of the price plunge from mid-2014 to early 2016? Supply factors appear to have played a predominant role, particularly during the initial drop from mid-2014 to early 2015. Rising production and efficiency gains in U.S. shale oil, diminishing supply disruptions in the Middle East, and OPEC's decision in November 2014 to abandon price controls amplified market perception of a significant supply glut. However, disappointing global growth, particularly from mid-2015 to early 2016, played a significant role as well, underpinning expectations of weakening demand.

How did the recent oil price shock impact the global economy? In contrast to earlier expectations, the oil price plunge did not provide a noticeable boost to global activity, and was instead accompanied by slowing growth from 2014 to 2016. Despite a significant upturn in 2017, global growth was overestimated by an average of 0.2 percentage point per year over the period 2014-17, with 40 percent explained by oil-exporting EMDEs, another 34 percent by oil-importing EMDEs, and the remainder by advanced economies. In oil importers, the shortfall reflected the low responsiveness of activity to falling oil prices, ongoing economic rebalancing in China, and the dampening impact of a sharp contraction in U.S. energy investment and a rapid appreciation of the U.S. dollar on growth in the United States. Growth slowdowns in oil exporters were sharper and longer-lasting than expected, contributing to global growth shortfalls despite the limited size of these economies.

What was the policy response in oil exporters and importers? The collapse in oil prices provided a new impetus to implement policy reforms in oil-exporting EMDEs. Some have adopted more flexible currency regimes, which appear to have buffered the negative fiscal impact of falling oil prices in countries where they were already in place in 2014, while a large number of these countries have reduced or eliminated fiscally costly energy subsidies. Some oil exporters have started reducing or are planning to reduce their reliance on the energy sector. A number of oil-importing EMDEs have also lowered energy subsidies.

What are long-term prospects for oil prices and for oil-exporting EMDEs? Looking forward, oil prices are likely to remain markedly below levels prevailing before 2014. In particular, shale oil has altered long-term price expectations, increasing global recoverable oil reserves, and turning an energy scarcity challenge in the late 2000s into a "supply glut." Forecasts in 2014, which envisioned the Canadian oil sands as the world's marginal oil supplier, projected a nominal oil price of $100/bbl in 2025 (Figure SF1.12). Yet technological advancements and rising productivity in the U.S. shale oil industry, coupled with efficiency improvements on the consumption side and substitution away from oil, have brought the 2025 nominal oil forecast down to $65/bbl.

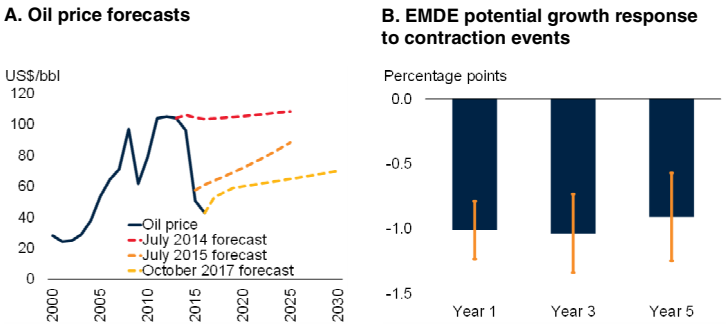
Despite a rebound in oil prices in the second half of 2017, which was supported by prospects of strengthening demand and production cuts by OPEC and non-OPEC producers, numerous factors limit upside risks to the outlook. First, greater price responsiveness of shale compared with conventional oil should ensure a rapid recovery in supply if upward price pressures materialize. Second, on the demand front, an accelerated uptake of more fuel-efficient technologies (e.g., electric vehicles and natural gas-powered commercial trucks), or new technological breakthroughs (e.g., self-driving cars or fuel cell technology) could considerably reduce oil consumption prospects (Cherif, Hasanov, and Pande 2017; International Energy Agency 2017). Third, environmental concerns (driven by pollution or climate-change considerations) could accelerate the use of policy tools that favor renewable energy. However, oil supply shocks (notably geopolitically-driven disruptions) or demand shocks (especially from large EMDEs, such as India and China, where most demand growth is expected to originate) could still trigger sharp fluctuations in oil prices and overshooting in both directions (Arezki et al. 2017).

The episode of falling oil prices in 2014-16 illustrates that large price changes can have disruptive effects on global activity, including by discouraging investment in both energy and some non-energy sectors. While persistently low oil prices could help sustain aggregate demand in oil-importing economies, positive effects would likely be limited in view of the recent experience. Low oil prices could also deter oil conservation efforts and incentives to develop renewable energies, which carry significant economic opportunities, including in low-income countries (World Bank and International Energy Agency 2015).

For oil exporters, the 2014–16 oil price plunge has cast a long shadow, as significant declines in investment and output tend to lead to weaker potential output growth in subsequent years. The expectation that oil prices will remain markedly lower than previously expected increases the urgency of reforms to restore growth and fiscal sustainability, whereas efforts so far have been mixed. The successful diversification experience of some energy producers (e.g., Malaysia, Mexico) suggests the need for both vertical diversification in oil, gas, and petrochemical sectors, as well as horizontal diversification beyond these sectors, with an emphasis on technological upgrades and competitiveness. Policy should help support investment in human capital, entrepreneurship, and employment in the non-oil private sector.

FIGURE SF1.12 Long-term outlook

Long-term oil price forecasts have been considerably downgraded over the last few years. The growth potential of oil-exporting EMDEs will likely suffer from past contractions in activity and investment, making reforms ever more urgent.



Source: World Bank.

A. Forecasts from various editions of World Bank's "Commodity Markets Outlook" report.

B. Contractions are defined as the years of negative output growth from the year after the output peak to output trough. Sample includes up to 45 EMDEs from 1989-2016. Dependent variable defined as cumulative slowdown in potential growth after a contraction event. Bars show coefficient estimates, while vertical lines show shock +/- 1.64 standard deviations (10 percent confidence bands). The methodology is described in Chapter 3.

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ANNEX TABLE SF1.1 Country classification

EMDE oil exporters[1]	EMDE non-oil commodity exporters[2]	EMDE commodity importers[3]
Albania	Argentina	Afghanistan
Algeria	Armenia	Antigua and Barbuda
Angola	Belize	Bahamas, The
Azerbaijan	Benin	Bangladesh
Bahrain	Botswana	Barbados
Bolivia*	Brazil	Belarus
Brunei Darussalam	Burkina Faso	Bhutan
Cameroon	Burundi	Bosnia and Herzegovina
Chad	Central African Republic	Bulgaria
Colombia	Chile	Cambodia
Congo, Rep.	Congo, Dem. Rep.	Cabo Verde
Ecuador	Costa Rica	China
Equatorial Guinea	Côte d'Ivoire	Comoros
Gabon	Ethiopia	Croatia
Ghana	Gambia, The	Djibouti
Iran, Islamic Rep.	Guatemala	Dominica
Iraq	Guinea	Dominican Republic
Kazakhstan	Guinea-Bissau	Egypt, Arab Rep.
Kuwait	Guyana	El Salvador
Libya	Honduras	Eritrea
Malaysia*	Indonesia	Fiji
Myanmar*	Kenya	Georgia
Nigeria	Kosovo	Grenada
Oman	Kyrgyz Republic	Haiti
Qatar*	Lao PDR	Hungary
Russia	Liberia	India
Saudi Arabia	Madagascar	Jamaica
South Sudan	Malawi	Jordan
Sudan	Mali	Kiribati
Timor-Leste	Mauritania	Lebanon
Trinidad and Tobago	Mongolia	Lesotho
Turkmenistan*	Morocco	Macedonia, FYR
United Arab Emirates	Mozambique	Maldives
Venezuela, RB	Namibia	Marshall Islands
Yemen, Rep.*	Nicaragua	Mauritius
	Niger	Mexico
	Papua New Guinea	Micronesia, Fed. Sts.
	Paraguay	Moldova
	Peru	Montenegro
	Rwanda	Nauru
	São Tomé and Príncipe	Nepal
	Senegal	Pakistan
	Sierra Leone	Palau
	South Africa	Panama
	Suriname	Philippines
	Tajikistan	Poland
	Tanzania	Romania
	Togo	Serbia
	Tonga	Seychelles
	Uganda	Solomon Islands
	Ukraine	Somalia
	Uruguay	Sri Lanka
	Uzbekistan	St. Kitts and Nevis
	West Bank and Gaza	St. Lucia
	Zambia	St. Vincent and the Grenadines
	Zimbabwe	Swaziland
		Syrian Arab Republic
		Thailand
		Tunisia
		Turkey
		Tuvalu
		Vanuatu
		Vietnam

* Primarily natural gas exporter.

[1] A country is classified as oil exporter when, on average in 2012–14, exports of crude oil and natural gas accounted for 20 percent or more of total exports. Countries for which this threshold is met as a result of re-exports are excluded. Countries that are primarily exporters of natural gas are included in this category, as the price of natural gas is tightly connected to crude oil. When data are not available, judgment is used.

[2] A country is classified as non-oil commodity exporter when, on average in 2012–14, either (i) total commodities exports accounted for 30 percent or more of total exports; or (ii) exports of any single commodity other than oil and gas accounted for 20 percent or more of total exports. Countries for which these thresholds are met as a result of re-exports are excluded. When data are not available, judgment is used. This taxonomy results in the classification of some well-diversified economies as importers, even if they are exporters of certain commodities.

[3] Commodity importers are EMDE economies that are not classified as commodity exporters.

ANNEX SF1.1 Decomposition of supply and demand shocks to oil prices: Bayesian structural vector autoregressive model approach

Oil supply and demand shocks are not observable and must be inferred from complex interactions between oil price fluctuations and changes in selected demand and supply indicators. Such statistical inference relies on a set of structural identification restrictions. This annex elaborates on the Bayesian structural vector autoregressive (SVAR) approach used to distinguish supply and demand shocks and assess their respective roles in the 2014–16 oil price plunge.

The use of structural VAR models to identify shifts in oil supply and demand curves was first introduced by Kilian (2009) and then extended by Kilian and Murphy (2012) and Baumeister and Peersman (2013). Their identification strategy was based on the notion that a favorable supply shock should lead to a combination of rising oil production, higher economic activity, and lower oil prices. In contrast, a favorable demand shock should lead to an increase in economic activity and oil production, and higher oil prices. In this context, shocks are identified based on sign restrictions, occasionally complemented by an assumption that the oil supply response to short term price movements is close to zero (Kilian and Murphy 2012). Further research undertaken by Baumeister and Hamilton (2015) demonstrated that some of these identification strategies can lead to implausible estimates of oil demand and supply elasticities. Following Caldara, Cavallo, and Iacoviello (2016), a more flexible approach was selected, which complements sign restrictions on the short-term supply and demand elasticities with prior ranges based on a survey of the literature.

The specification of the model is as follows:

$$AY_t = B(L)Y_{t-1} + \varepsilon_t \qquad (1)$$

$Y_t = [q_t, p_t^o, y_t, p_t^m]'$ denotes the vector of four endogenous variables and includes global oil production (q_t), international oil prices (p_t^o), global industrial production (y_t), and metals prices (p_t^m); A and $B(L)$ are coefficients matrices capturing instantaneous and dynamic relationships of the system; and ε_t is a vector of error terms. The first and second equations of the system capture oil supply and demand conditions, while the third and fourth equations capture global demand conditions proxied by global industrial production and metals prices. The identification strategy consists of imposing prior distributions that map the parameters space of the matrix A to their respective empirical ranges, as follows:

$$A = \begin{bmatrix} 1 & -\alpha_s & 0 & 0 \\ 1 & -\beta_d & -\beta_y & 0 \\ -\gamma_s & 0 & 1 & 0 \\ -\delta_s & \delta_d & -\delta_y & 1 \end{bmatrix}$$

The parameters $\alpha_s \geq 0$ and $\beta_d \leq 0$ capture short-term supply and demand elasticities of oil, respectively. The elasticity of oil price with respect to economic activity is captured by $\beta_y \geq 0$. Only changes in oil quantity directly affect manufacturing production through the parameter $\beta_s \geq 0$, while changes in oil prices have an indirect effect via their impact on oil quantity. The metals price index (p_t^m) is a leading indicator capturing global economic activity not accounted for by industrial production (Kilian and Zhou 2017; Baumeister and Kilian 2016; Alquist and Coibion 2014; Delle Chiaie, Ferrara, and Giannone 2016). It is assumed that both oil prices and quantities affect metals prices through the parameters δ_s and δ_d. Industrial production is positively correlated with metals prices ($\delta_y \geq 0$). In the estimation, the prior distributions of α_s and β_d are restricted to be centered at median values of 0.1 and -0.1. These values were taken from a literature survey of 32 studies (including Baumeister and Peersman 2013; Kilian 2009; Kilian and Murphy 2012, Asali 2011; Lin and Prince 2013). The model was estimated based on monthly data over the period 1991–2017.

While the identification strategy is more flexible and offers more plausible estimates of short term oil supply and demand elasticities, results tend to confirm the conclusions of earlier studies—namely, that an oil price decline driven by a favorable supply shock should be expected to

support global industrial production over time, while a price decline resulting from a drop in demand is associated with a subsequent slowdown in global activity. The model also suggests that demand shocks played a major role in driving oil price fluctuations during the 2000s, in line with findings of Baumeister and Peersman (2013) and Kilian and Hicks (2013). However, the relative importance of supply factors was substantially higher during the 2014-16 oil price plunge.

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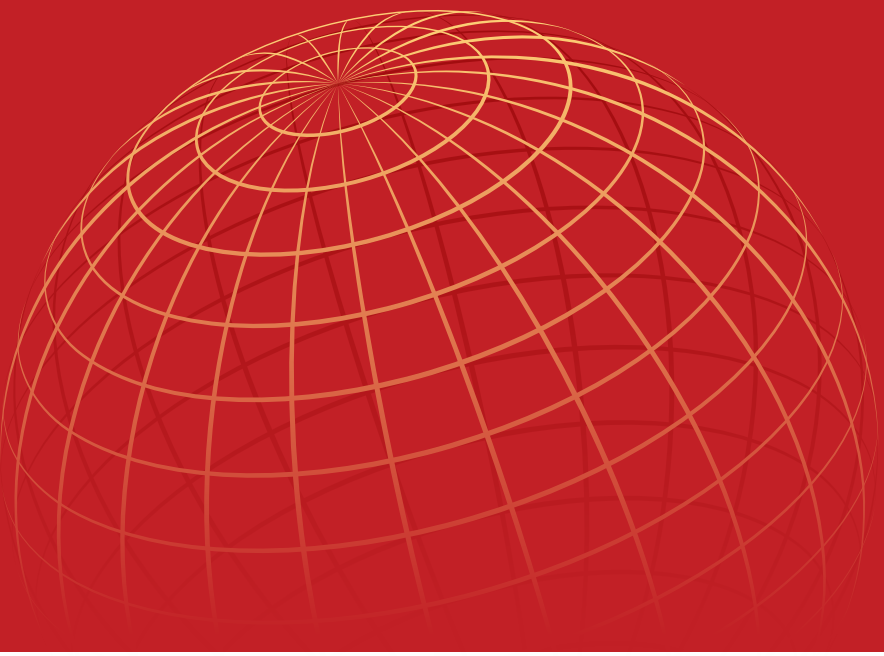


CHAPTER 2

REGIONAL OUTLOOKS

EAST ASIA and PACIFIC

Growth in the East Asia and Pacific (EAP) region strengthened marginally to 6.4 percent in 2017, 0.2 percentage point higher than expected, largely reflecting a significant improvement in the external environment. Regional growth is projected to gradually slow to 6.2 percent in 2018, and to 6.1 percent on average in 2019-20, broadly in line with previous forecasts, with the structural slowdown in China outweighing a modest further cyclical pickup in the rest of the region. Risks to the forecast have become more balanced, especially because of the potential for further upside surprises to growth in advanced economies, but are still tilted on the downside. Downside risks include rising geopolitical tensions, an abrupt tightening of global financing conditions, increased global protectionism, and steeper-than-expected slowdowns in major economies, including China. Highly leveraged economies and countries with high or rapidly rising fiscal deficits are particularly vulnerable to financial and real disruptions.

Recent developments

Growth in the region is estimated to have picked up slightly to 6.4 percent in 2017, 0.2 percentage point above our June forecast, amid a strengthening expansion of global activity and trade, and a recovery in commodity prices, against the backdrop of benign financing conditions (Chapter 1; Table 2.1.1; Figure 2.1.1). The region continued to be a major driver of global growth, accounting for more than a third of it in 2017, mostly because of China's significant contribution. Growth in China inched up in 2017—a deviation from the economy's structural slowdown, related to softening in its fundamental drivers (Box 2.1). Growth in the region excluding China accelerated slightly to around its potential rate, reflecting a cyclical recovery in large commodity exporters (e.g., Indonesia and Malaysia) and Thailand (Box 2.1).

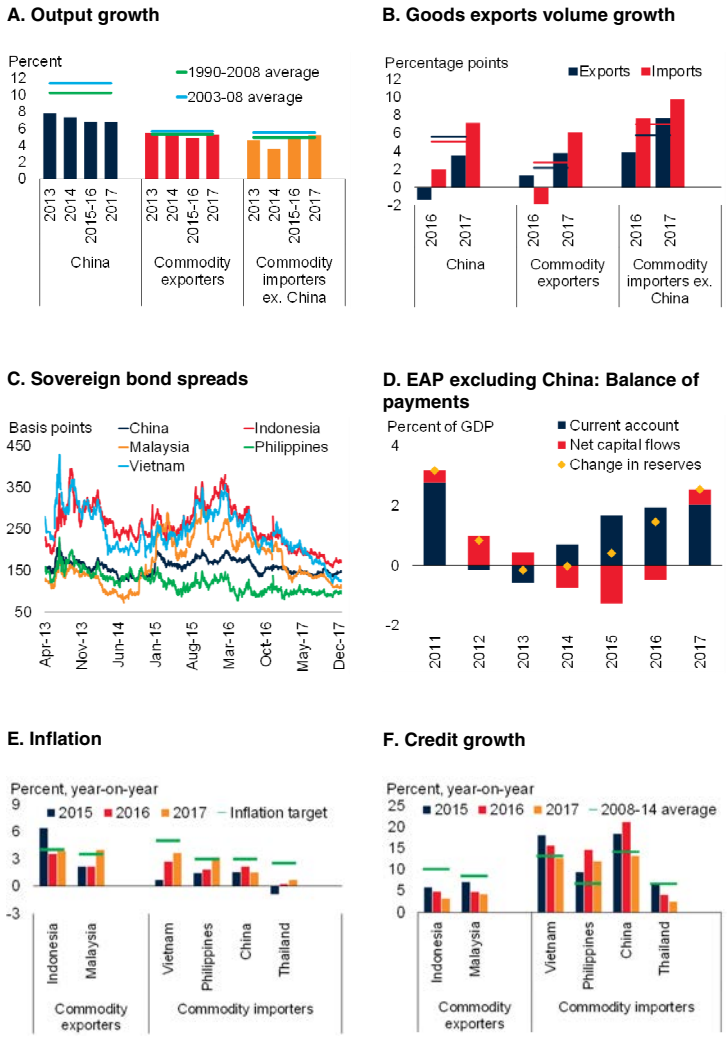
In China, economic activity continued to be driven mainly by consumption. The stronger-than-expected growth in 2017 was mainly due to an acceleration in exports on the back of firming global demand. This outweighed a rebound in imports stemming from solid domestic demand and production cuts in overcapacity sectors, resulting in a positive contribution from net exports to GDP growth (World Bank 2017a). Domestic rebalancing continued, with consumption growing faster than investment and services faster than industry (Figure 2.1.2). Despite some acceleration, consumer price inflation continued to be below target. Despite regulatory tightening, credit growth continued to support economic activity. Meanwhile, housing prices eased in response to tighter policies targeting real estate sector. Tighter capital controls contributed to reduced capital outflows, a reversal of the earlier foreign reserve drawdown, and an appreciation of the renminbi.

The modest acceleration of growth in the rest of the region was broad-based. Strong domestic demand was supported by improved confidence, accommodative policies, and a reversal of capital outflows. A recovery of commodity prices supported activity in commodity exporters (Special Focus 1). The recovery in regional exports stemmed from the upturn in global trade and manufacturing, which in turn was encouraged by stronger capital spending in advanced economies and a rebound of imports in China and several other large EMDEs (Chapter 1). Regional headline inflation moved up, reflecting higher energy prices, but core inflation rates remained moderate. Among the highlights:

Note: This section was prepared by Ekaterine Vashakmadze. Anh Mai Bui and Jinxin Wu provided research assistance.

FIGURE 2.1.1 EAP: Recent developments

Growth remained robust in 2017 on solid domestic demand and firming exports. Financial markets remained broadly stable and capital outflows from the region (excluding China) reversed. Inflation across the region picked up, but remained below central banks' targets in China, Thailand, and Vietnam. Real credit growth generally moderated on tighter regulations and higher inflation, but remained high in China, the Philippines, and Vietnam.



Sources: Central Bank News, Haver Analytics, International Monetary Fund, J.P. Morgan, World Bank.

Notes: EAP = East Asia and Pacific. Commodity exporters include Indonesia, Lao PDR, Malaysia, and Mongolia. Commodity importers ex. China include Cambodia, Philippines, Solomon Islands, Thailand, Vanuatu, and Vietnam. GDP-weighted averages.

B. Data for 2017 are year to date. Horizontal lines indicate long-term averages. Long-term average is 2006-17 for China, and 2012-17 for others.

C. Measures the average spread of a country's sovereign debt (as measured by J.P. Morgan's Emerging Markets Bond Index) over their equivalent maturity U.S. Treasury bond. Last observation is December 18, 2017.

D. Data for 2017 reflect 2017Q3.

E. Average year-on-year growth. Inflation targets for 2017 are 3 percent in China and 5 percent in Vietnam. The figure shows the mid-points of targeted ranges in Indonesia (3-5 percent), Philippines (2-4 percent), and Thailand (1-4 percent). For Malaysia, the mid-point of Bank Negara's 2017 forecast of 3-4 percent is used. Data for 2017 are year to date.

F. Real private sector credit growth. Average year-on-year growth. Data for 2017 are year to date.

Click here to download data and charts.

- Growth in commodity exporters was higher than expected and within reach of its long-term rate. GDP accelerated sharply in Malaysia, supported by increased private sector spending and rising exports, and inched up in Indonesia, due to stronger growth in investment and exports. Among smaller commodity exporters, growth in Mongolia began to recover from its 2016 low, helped by a rebound in private investment in the wake of a new stabilization program backed by international financial institutions (IMF 2017a). Growth in Myanmar also rebounded, though by less than expected, amid policy uncertainty. Exceptions to the broad acceleration included the Lao People's Democratic Republic, where growth slowed on weaker tourism activity, stronger controls on government spending, moderating credit growth, and decelerating investment. More marked slowdowns were noted in Papua New Guinea and Timor-Leste, as these economies adjusted to lower commodity prices, and policy uncertainty (World Bank 2017b; Table 2.1.2).

- More generally, stronger initial conditions and fundamentals helped some regional commodity exporters to recover from the commodity price shock more quickly than others (Chapter 1, Special Focus 1). Key determinants of the speed of recovery in Indonesia and Malaysia included ample macroeconomic policy space, adequate reserve buffers, effective policy frameworks such as flexible exchange rate regimes, and diversified export bases (e.g., Indonesia and Malaysia). In contrast, adjustment to low commodity prices has proven more protracted than initially expected in some energy exporters (Special Focus 1). Regional commodity exporters with sluggish performance in 2017 include countries that began to undertake belated policy adjustment (e.g., Timor-Leste).

- Aggregate growth in commodity importers, at around 5 percent and near its potential rate, was broadly in line with expectations, but performance was mixed within the group. Following several years of weakness, growth picked up in Thailand on stronger domestic

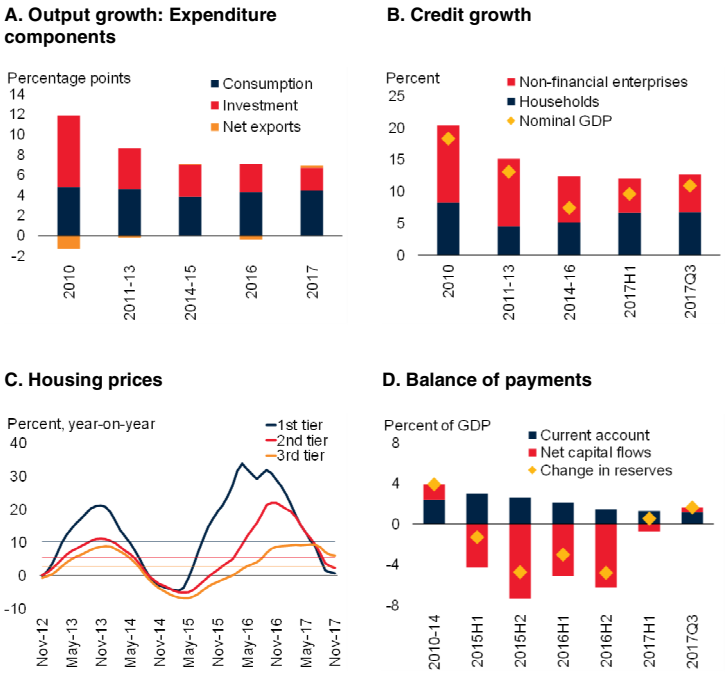
demand, supported by improved consumer and business confidence and accommodative policies. A sharp recovery in exports after two years of weakness also helped spur growth. Growth in Vietnam accelerated, on the back of solid export growth. In Cambodia, stronger growth in emerging manufacturing exports (e.g., auto parts, electrical appliances) and robust tourist revenues partly offset a slower growth in garment exports. In the Philippines, growth decelerated slightly, to a still-solid 6.7 percent, as the impact of election-related spending in 2016 dissipated (World Bank 2017c).

Investment in the region excluding China showed signs of a cyclical upturn, driven mainly by the private sector. Although investment performance was mixed across countries, it generally accelerated in commodity exporters and in commodity importers with improving cyclical positions (e.g., Fiji and Thailand). Among commodity exporters, stronger investment growth reflected rising commodity prices and reduced financing costs (e.g., Indonesia, Malaysia, Mongolia) and improved business confidence (e.g., Malaysia and Mongolia). Investment growth remained generally solid among commodity importers—accelerating in Thailand, reflecting improved business confidence and increased public infrastructure spending, and in Fiji, boosted by post-cyclone reconstruction spending. In contrast, investment growth declined from earlier record-high rates in the Philippines, as front-loaded investment spending eased.

Trade flows recovered markedly across the region. A significant pickup in import growth reflected firming domestic demand, especially investment. Export growth also rebounded amid firming commodity prices, improved foreign demand, and strengthening manufacturing activity encouraged by higher capital spending. The pickup in global investment and manufacturing growth contributed to a recovery of regional exports in machinery, electronics, and semiconductors. Services trade also recovered in 2017, albeit at a slower pace than goods trade, as the former is generally less affected by short-term inventory and production cycles (Chapter 1).

FIGURE 2.1.2. China

GDP growth in China inched up in 2017, with drivers of activity continuing to shift away from largely state-led investment. Growth continued to be credit-intensive. Tighter regulations led to a significant slowdown of house price growth in Tier 1 and 2 cities.



Sources: Haver Analytics, World Bank.

A. Data for 2017 reflect 2017Q3.

C. The National Bureau of Statistics of China surveys house prices in 70 cities and divides them into three tiers. The first tier includes Beijing, Guangzhou, Shanghai, and Shenzhen. The second tier includes 31 provincial capital and sub-provincial cities. The second tier in this chart includes Chengdu, Chongqing, Tianjin, Wuhan, and Xiamen. The third tier includes 35 other cities. The last observation is November 2017. Horizontal lines indicate February 2011 to November 2017 averages.

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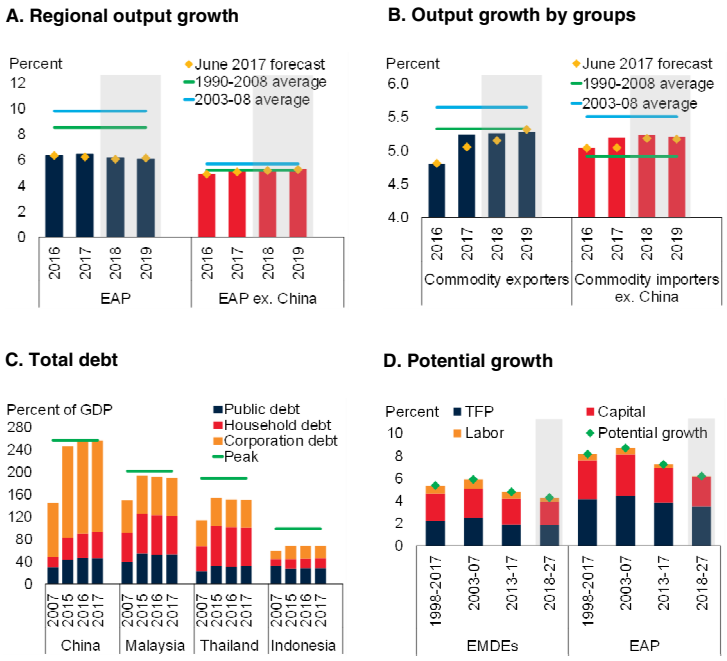
Regional financial markets remained stable throughout the year. Bond spreads have generally declined, particularly for commodity exporters and investment grade borrowers, and net capital outflows from the region (excluding China) have reversed (Figure 2.1.1). The region has experienced a substantial rise in portfolio and international bond issuance. Aggregate foreign direct investment (FDI) inflows were stable, but trends were mixed across countries. FDI flows to Indonesia, Malaysia, and Mongolia accelerated, supported by a robust or improved outlook in the wake of a modest rise in commodity prices and lower financing costs. Most regional currencies have generally appreciated in real effective terms, except for the Philippine peso and Lao kip, and regional stock markets have generally strengthened.

FIGURE 2.1.3 EAP: Outlook and risks

Regional growth is projected to moderate slightly during the forecast horizon. This reflects a gradual slowdown in China, which offsets a pickup of activity in the rest of the region led by a cyclical rebound in several commodity exporters. Risks have become more balanced, but remain tilted to the downside. Elevated domestic debt (e.g., China, Malaysia, Thailand) and sizable external financing needs (e.g., Indonesia, Mongolia) would amplify the impact of external shocks. Regional potential growth is set to decline over the next decade, as demographic tailwinds turn into headwinds and capital accumulation slows.



Sources: Bank for International Settlements; Haver Analytics; International Monetary Fund; Quarterly External Debt Statistics, World Bank.

Note: EAP = East Asia and Pacific.

A. B. Commodity exporters include Indonesia, Lao PDR, Malaysia, and Mongolia. Commodity importers ex. China include Cambodia, Philippines, Solomon Islands, Thailand, Vanuatu, and Vietnam. Yellow diamonds correspond with the June 2017 edition of *Global Economic Prospects*. Shaded areas indicate forecasts.

C. The highest debt-to-GDP ratio since 1995Q1. The peak is identified to have occurred in 1997Q4 in Thailand, 1998Q4 in Malaysia, 2001Q4 in Indonesia, and 2017Q2 in China. 2017 data reflect 2017Q2. Total debt comprises of credit to household and non-financial corporations and general government debt (broad definition). For China, the sum of credit to household and non-financial corporations is consistent with the People's Bank of China Aggregate Financing to the Real Economy (stock) level. General government debt includes central and local government debt and social security funds, but excludes public enterprises. Data presented in the chart is broadly consistent with the IMF estimates of total debt (World Bank 2017a).

D. Potential growth estimates based on production function approach (Chapter 3).

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Two decades after the Asian financial crisis, which triggered a series of structural reforms, the region has become more resilient with healthier financial systems. This resilience was tested a decade later, by the global financial crisis and led to additional reforms, especially in commodity-exporting economies (e.g., Indonesia, Malaysia; Special Focus 1; World Bank 2016a, 2017a, 2017d). As a result, stronger fundamentals—including narrowing domestic and external imbalances, and stronger policy buffers amid solid growth—further improved the region's ability to withstand external headwinds.

These improvements notwithstanding, some countries in the region continue to face vulnerabilities in their financial sectors, with high levels of debt (e.g., China, Lao PDR, Malaysia, Mongolia, Thailand) and fast credit growth (e.g., China, the Philippines, and Vietnam). For example, the stock of non-financial sector debt in China reached 260 percent of GDP in 2017—above levels observed at the peak of previous credit cycles in other major EMDEs (BIS 2017; IMF 2017b; World Bank 2017e). Malaysia and Mongolia have large external financing needs. Limited policy buffers—including high or raising fiscal deficits in some smaller economies (e.g., Lao PDR and Vietnam) and among commodity exporters following the plunge of commodity prices (e.g., Mongolia and Papua New Guinea)—is a concern, especially if they are compound with high stock of debt (e.g., Mongolia and Papua New Guinea) (Kose et al. 2017, World Bank 2017a).

Outlook

Regional growth is projected to gradually slow to 6.2 percent in 2018 and 6.1 percent on average in 2019-20, broadly unchanged from June forecasts (Figure 2.1.3), with the continuing gradual structural slowdown in China offsetting a cyclical pickup in the rest of the region.

The region is expected to continue to be a major driver of global growth and account for more than a third of it in 2017-20, mostly because of China's significant (30 percent) contribution. The outlook is predicated on a modest continuing recovery of commodity prices, improved external demand, and moderately tighter but still-supportive global financing conditions (Chapter 1).

- Growth in China is projected to slow from 6.8 percent in 2017 to 6.4 percent in 2018, and 6.2 percent on average in 2019-20, as rebalancing proceeds and credit growth decelerates. Policy support is expected to diminish, as monetary policy remains tight and fiscal policy becomes less accommodative. This outlook is predicated on continued

reforms, reaffirmed by China's 19th Party Congress, which are expected to lead to further reduction in excess capacity, gradual unwinding of financial sector vulnerabilities, and shift of growth drivers from capital accumulation to total factor productivity (TFP). Growth in the rest of the region is projected to accelerate marginally to 5.3 percent in 2018, led by a continued cyclical rebound in commodity-exporters, and stay around this level for the most part of the forecast horizon.

- Growth in majority of commodity exporters is projected to accelerate, and negative output gaps—the legacy of the weakness of commodity prices in the wake of the global financial crisis—are expected to gradually close. Among the large commodity exporters, growth is expected to accelerate in Indonesia, as private consumption strengthens in line with gains in real wages. Growth is projected to remain strong at around 5 percent on average in 2018-20 in Malaysia, despite some moderation in investment and export growth. Among smaller economies, a cyclical recovery is expected to continue in Mongolia, and get underway in Papua New Guinea and Timor-Leste, as domestic headwinds gradually dissipate. Lao PDR is expected to maintain a rapid pace of growth, led by the electricity sector.

- Growth in commodity importers is projected to remain slightly above 5 percent in on average in 2018-20. In Thailand, growth is projected to remain around 3.5 percent on average in 2018-20 reflecting recovery in merchandise exports and tourism (World Bank 2017f). In Vietnam, growth will slightly moderate to a still-strong 6.5 percent on average in 2018-20, supported by robust agricultural production and strong export-oriented manufacturing. The Philippines will continue to be the fastest-growing economy in the Association of Southeast Asian Nations (ASEAN), despite some stabilization of investment growth. Cambodia is expected to maintain rapid expansion, supported by trade and FDI inflows.

Beyond the forecast horizon, regional potential growth is anticipated to decelerate to under 6 percent in 2018-27, as demographic pressures in China and other large economies (e.g., Thailand) dampen labor supply and slow productivity growth, and capital accumulation slows (Chapter 3; Box 2.1).

Risks

Risks to the regional forecasts have become more balanced, but they continue to be tilted to the downside. On the upside, stronger-than-expected growth observed in 2017 in the largest advanced economies and EMDEs could continue in the near term. Amid diminishing crisis legacies in advanced economies and the fading effect of earlier terms-of-trade shocks in commodity-exporting EMDEs, rising business confidence and financial market optimism could underpin a stronger investment-led recovery in the short term. More generally, a further strengthening of investment in the largest advanced economies and EMDEs could stimulate trade and have positive spillover effects on activity across the region (Chapter 1, World Bank 2016b).

On the downside, there are three major risks to the forecasts, which could be amplified by the vulnerabilities of some economies, such as elevated domestic debt, large external financing needs, and limited policy buffers.

Geopolitical tensions in the Korean peninsula increased substantially in 2017. A rise in this and other geopolitical risks, especially those involving large economies, could negatively affect confidence and lead to bouts of risk aversion and financial stress across the region. The materialization of such risks could have very serious effects on regional activity.

A faster-than-expected tightening of global financing conditions, or a steeper-than-expected slowdown in major economies, including China, could exacerbate existing financial vulnerabilities and set back regional growth. The shock could propagate across the region through reduced capital flows, heightened financial market volatility, pressures on exchange rates and asset

prices, and increased risk premiums. A significant disruption to China's growth could have large regional spillovers (Huidrom, Kose, and Ohnsorge 2017; World Bank 2016a).

Increased protectionist sentiment in some advanced economies, particularly the United States, and possible policy changes related to the United Kingdom's anticipated exit from the European Union, continue to exacerbate uncertainty about the future of established trading and investment relationships. Trade restrictions in advanced economies could disproportionately affect the more open economies in the region. Significant disruption to China's exports would undermine its growth, with possible large adverse effects on the region. Trade and investment-restricting measures in the United States could trigger retaliatory measures, possibly worsening the effect of protectionism on regional activity.

Domestic vulnerabilities, including high leverage rates and high or rapidly rising fiscal deficits, could amplify the impact of external shocks (World Bank 2015a, 2016b, 2016c, 2017a). Over the longer term, a more pronounced slowdown in potential output growth in both advanced economies and EMDEs would make the global economy more vulnerable to shocks and worsen prospects for improved living standards (Chapters 1 and 3). Slowing long-term growth in large economies—particularly in advanced economies, and China, which both have substantial trade, commodity, and financial linkages with the EAP region—would have important negative spillovers on the region (World Bank 2015a, 2016b, 2016c).

TABLE 2.1.1 East Asia and Pacific forecast summary

(Real GDP growth at market prices in percent, unless indicated otherwise)

	2015	2016	2017e	2018f	2019f	2020f	Percentage point differences from June 2017 projections: 2017e	2018f	2019f
EMDE EAP, GDP[1]	**6.5**	**6.3**	**6.4**	**6.2**	**6.1**	**6.0**	**0.2**	**0.1**	**0.0**
(Average including countries with full national accounts and balance of payments data only)[2]									
EMDE EAP, GDP[2]	6.5	6.3	6.5	6.2	6.1	6.0	0.3	0.1	0.0
GDP per capita (U.S. dollars)	5.8	5.6	5.8	5.6	5.5	5.4	0.2	0.2	-0.1
PPP GDP	6.4	6.3	6.4	6.1	6.0	5.9	0.2	0.1	-0.1
Private consumption	7.2	7.1	7.1	7.1	7.0	6.9	0.0	0.0	-0.1
Public consumption	8.5	9.1	9.1	7.8	6.6	6.5	1.6	0.9	-0.2
Fixed investment	6.7	6.5	6.2	5.8	5.8	5.7	-0.2	-0.2	-0.3
Exports, GNFS[3]	0.8	1.8	4.3	4.1	4.5	4.7	1.0	0.5	0.4
Imports, GNFS[3]	1.3	3.8	5.5	5.2	5.3	5.3	0.6	0.2	0.1
Net exports, contribution to growth	-0.1	-0.5	-0.2	-0.2	-0.2	-0.1	0.2	0.1	0.0
Memo items: GDP									
East Asia excluding China	4.9	4.9	5.2	5.3	5.3	5.2	0.1	0.1	0.0
China	6.9	6.7	6.8	6.4	6.3	6.2	0.3	0.1	0.0
Indonesia	4.9	5.0	5.1	5.3	5.3	5.3	-0.1	0.0	-0.1
Thailand	2.9	3.2	3.5	3.6	3.5	3.4	0.3	0.3	0.1

Source: World Bank.
Notes: e = estimate; f = forecast. EMDE = emerging market and developing economy. World Bank forecasts are frequently updated based on new information and changing (global) circumstances. Consequently, projections presented here may differ from those contained in other Bank documents, even if basic assessments of countries' prospects do not differ at any given moment in time.
1. GDP at market prices and expenditure components are measured in constant 2010 U.S. dollars. Excludes American Samoa and Democratic People's Republic of Korea.
2. Sub-region aggregate excludes American Samoa, Democratic People's Republic of Korea, Fiji, Kiribati, the Marshall Islands, the Federated States of Micronesia, Myanmar, Palau, Papua New Guinea, Samoa, Timor-Leste, Tonga, and Tuvalu, for which data limitations prevent the forecasting of GDP components.
3. Exports and imports of goods and non-factor services (GNFS).
For additional information, please see www.worldbank.org/gep.

TABLE 2.1.2 East Asia and Pacific country forecasts[1]

(Real GDP growth at market prices in percent, unless indicated otherwise)

	2015	2016	2017e	2018f	2019f	2020f	Percentage point differences from June 2017 projections) 2017e	2018f	2019f
Cambodia	7.0	7.0	6.8	6.9	6.7	6.7	-0.1	0.0	0.0
China	6.9	6.7	6.8	6.4	6.3	6.2	0.3	0.1	0.0
Fiji	3.6	0.4	3.8	3.5	3.3	3.2	0.1	0.0	0.0
Indonesia	4.9	5.0	5.1	5.3	5.3	5.3	-0.1	0.0	-0.1
Lao PDR	7.4	7.0	6.7	6.6	6.9	6.9	-0.3	-0.2	-0.3
Malaysia	5.0	4.2	5.8	5.2	5.0	4.7	0.9	0.3	0.0
Mongolia	2.2	1.4	2.8	3.1	7.3	5.5	3.0	1.2	-0.7
Myanmar	7.0	5.9	6.4	6.7	6.9	6.9	-0.5	-0.5	-0.4
Papua New Guinea	8.0	2.4	2.1	2.5	2.4	3.4	-0.9	-0.7	-1.0
Philippines	6.1	6.9	6.7	6.7	6.7	6.5	-0.2	-0.2	-0.1
Solomon Islands	2.5	3.3	3.0	3.0	2.8	2.7	-0.3	0.0	-0.2
Thailand	2.9	3.2	3.5	3.6	3.5	3.4	0.3	0.3	0.1
Timor-Leste[2]	4.0	5.7	2.4	4.2	5.0	5.0	-1.6	-0.8	-1.0
Vietnam	6.7	6.2	6.7	6.5	6.5	6.5	0.4	0.1	0.1

Source: World Bank.
Notes: e = estimate; f = forecast. World Bank forecasts are frequently updated based on new information and changing (global) circumstances. Consequently, projections presented here may differ from those contained in other Bank documents, even if basic assessments of countries' prospects do not differ at any given moment in time.
1. GDP at market prices and expenditure components are measured in constant 2010 U.S. dollars. Excludes American Samoa and Democratic People's Republic of Korea.
2. Non-oil GDP. Timor-Leste's total GDP, including the oil economy, is roughly four times the non-oil economy. It is highly volatile, sensitive to changes in global oil prices and local production levels.
For additional information, please see www.worldbank.org/gep.

BOX 2.1.1 Potential growth in East Asia and Pacific

The East Asia and Pacific region's potential growth rate has fallen in recent years to well below the high rates prior to the global financial crisis and its longer-term average. Notwithstanding this decline, the 7 percent pace remains twice as high as the emerging market and developing economy (EMDE) average. Growth rates in China and in the rest of the region are gradually converging. The slowdown of reginal potential growth reflects a moderation of potential growth in China. In the rest of the region, potential growth has been strengthening compared to its longer-term average, mainly reflecting a robust capital accumulation. Policies to boost total factor productivity across the region could partly offset the diminishing returns from capital and the effects of demographic trends in several major economies that dampen labor supply and slow productivity growth.

Introduction

Since the Asian financial crisis 20 years ago, growth in the East Asia and Pacific (EAP) region has been twice as high as the EMDE median (Figure 2.1.1.1). However, the region's growth rate has slowed sharply, especially since the global financial crisis, reflecting both cyclical downturns and a weakening of the region's underlying rate of potential growth (Chapter 3).

Notably, China's potential growth rate fell sharply from around 10 percent during 2003-07 to around 7-8 percent during 2013-17, about 1.3 percentage points below its longer-term (1998-2017) average. Following initial effort to sustain actual growth above potential growth, government-initiated policies that gradually brought actual growth in line with the lower potential growth rate and shifted the impetus of growth from investment to consumption. This prevented the opening of large output gaps. However, and sizable financial vulnerabilities, accumulated during the earlier period of rapid, credit-fueled expansion, have yet to be addressed (World Bank 2016a, 2016d).

Elsewhere in the EAP region, potential growth strengthened somewhat in 2013-17, although with wide divergences among countries. The region excluding China is now experiencing a cyclical upturn of growth toward its trend level, led by the commodity exporters (e.g., Indonesia, Malaysia, Mongolia) that were hit by sharply lower world prices, and Thailand, which faced domestic challenges.

Against this backdrop, this box examines deeper the following questions:

- How has potential growth evolved in the region and what were its main drivers?
- What are the prospects for potential growth?
- What are the policy options to lift potential growth?

This box suggests that China's potential growth is expected to be limited by the effects of demographic trends that dampen labor supply and by diminishing returns from capital, while the rest of the region continues to face the challenge of boosting its relatively subdued total factor productivity growth. The EAP region is expected to experience a broad-based slowdown in potential growth to a (still-robust) rate of around 6 percent during the next decade (2018-27). This box concludes that policy efforts could help moderate the slowdown, support poverty reduction, and even help several middle-income regional economies to attain high-income status. As factor accumulation is expected to slow, accelerating productivity growth is the main path for many regional economies to achieve convergence with upper income economies.

Evolution of potential growth[1]

At around 7.2 percent in 2013-17, potential growth in the EAP region was about twice as high as the average for other EMDEs, but still well below the rates achieved over the past two decades (Figure 2.1.1.2). This weakening reflected a slowdown of potential growth for China from around 10 percent prior to the global financial crisis to around 7-8 percent.

In contrast, potential growth elsewhere in the EAP region reached about 5 percent in 2013-17, about 0.7 percentage point above the longer-term (1998-2017) average rate, although rates varied considerably from country to country.

Note: This box was prepared by Ekaterine Vashakmadze. Anh Mai Bui and Jinxin Wu provided research assistance.

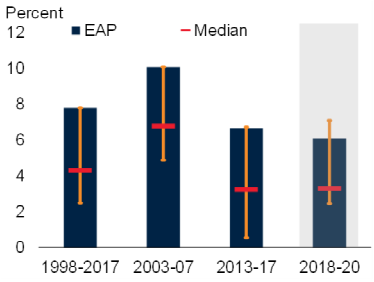
[1] The remainder of this box refers to potential growth measures derived using the production function approach, as described in Chapter 3. Although estimates of potential growth can vary depending on the underlying methodology, other studies find results similar to those described here. For instance, Anand et al. (2014) report that China's trend growth appears to have peaked around 2006–07 at 11 percent and then slowly declined to below 8 percent by 2013. By contrast, trend growth for the ASEAN countries (e.g., Indonesia, Malaysia, the Philippines, Thailand, and Vietnam) has been stable or marginally stronger. The ADB (2016) estimates potential growth at around 9 percent for China, and 3-5 percent for the ASEAN economies (e.g., Philippines, Indonesia, Malaysia, and Thailand). Bai and Zhang (2017), Nabar and N'Diaye (2013), Maliszewski and Zhang (2015), OECD (2012a), and Perkins and Rawski (2008) have also confirmed the slowdown of potential growth in China.

BOX 2.1.1 Potential growth in East Asia and Pacific *(continued)*

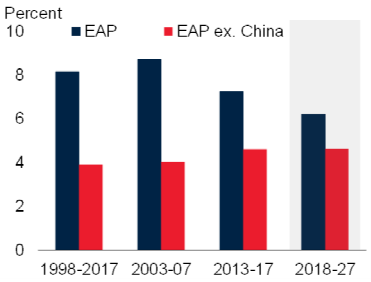
FIGURE 2.1.1.1 Regional actual and potential growth rates

Since the Asian financial crisis 20 years ago, growth in the EAP region has been twice as high as the EMDE median. Slowing regional GDP growth in recent years reflects both cyclical and longer-run structural factors. Growth rates in China and in the rest of the region are gradually converging.

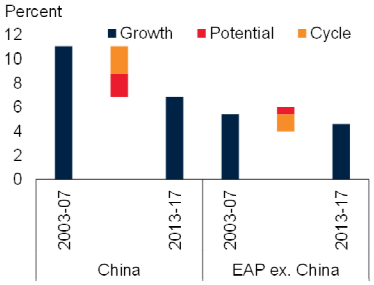
A. Actual output growth



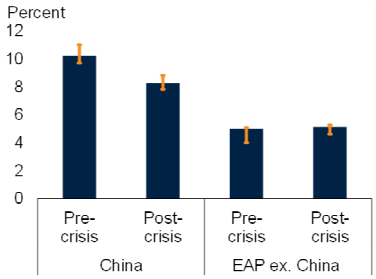
B. Potential output growth



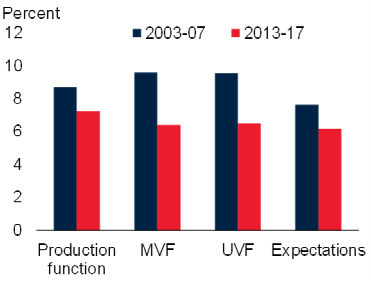
C. Contribution to post-crisis actual growth slowdown



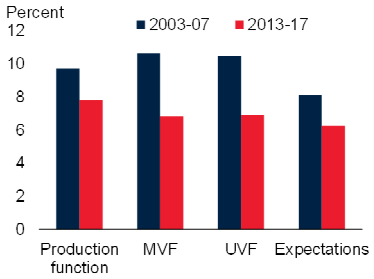
D. Estimates of potential output growth



E. Regional potential output growth by different estimates



F. China potential output growth by different estimates



Sources: World Bank, World Development Indicators, Penn World Tables, International Monetary Fund.

Note: EAP = East Asia and Pacific. EAP ex. China includes Indonesia, Mongolia, Philippines, and Thailand.

A. Blue bars show period averages of annual GDP-weighted averages of EAP countries. Red markers show median GDP-weighted averages of the six EMDE regions. Vertical lines denote range of regional GDP-weighted averages.

B. C. D. Potential growth estimates based on production function approach.

C. Blue bars denote average actual growth over five-year period. Red bars denote contribution of potential growth to change in actual growth between the two five-year periods; orange bars denote contribution of cyclical growth.

D. Pre-crisis denotes 2003-07 for World Bank (2018), 2000-07 for ADB (2016), 2003-07 for Anand et al. (2014), and 2006-07 for Barnett et al. (2015). Post-crisis denotes 2013-17 for World Bank (2018), 2008-14 for ADB (2016), 2011-13 for Anand et al. (2014), and 2013 for Barnett et al. (2015). Vertical lines denote range of potential growth estimates in the four above sources. EAP ex. China in the World Bank sample includes Indonesia, Mongolia, Philippines, and Thailand. EAP ex. China in Anand et al. (2014) and the ADB (2016) papers include Indonesia, Malaysia, Philippines, and Thailand.

E. F. MVF stands for multivariate filter-based potential growth estimates; UVF stands for univariate filter-based potential growth estimates (specifically, the Hodrick-Prescott filter); Expectations stands for potential growth proxied by five-year-ahead *World Economic Outlook* growth forecasts.

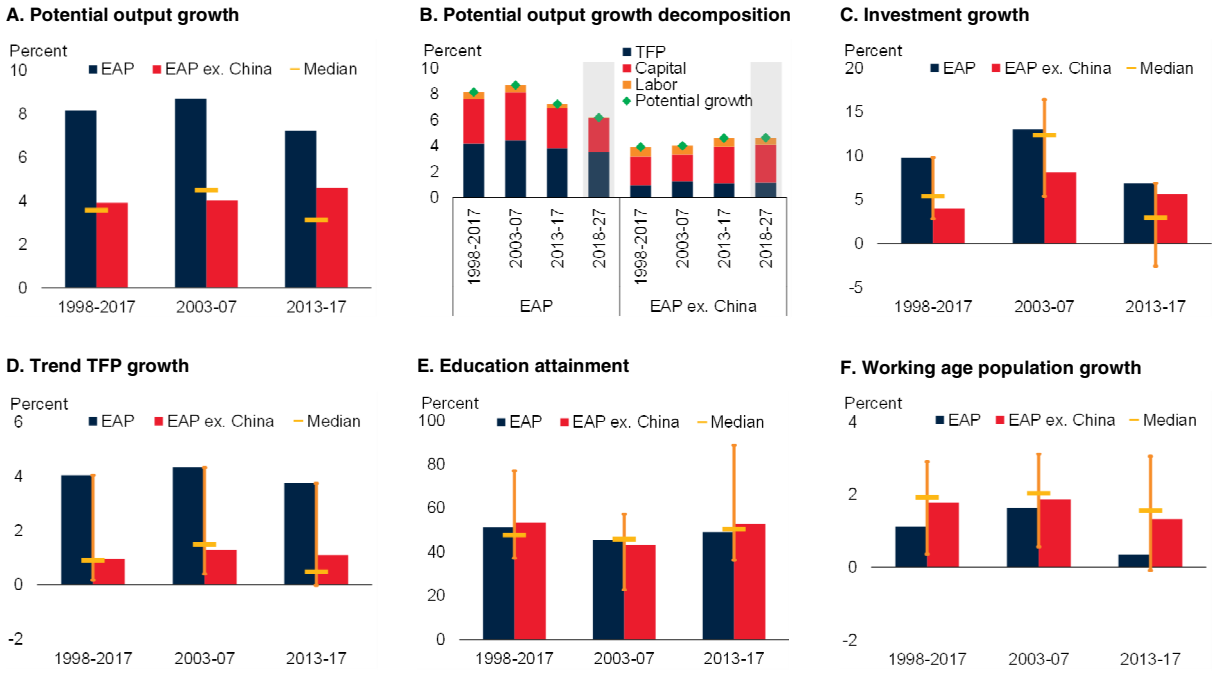
Click here to download data and charts.

- Potential growth accelerated in Malaysia to around 5 percent in 2013-17 (just above its longer-term average), thanks to a series of comprehensive structural reforms that offset the impact of a declining workforce on labor supply (ADB 2016; BNM 2012 and 2015; IMF 2016a; Lian and Shahrier 2014; Munoz et al. 2016).
- In contrast, potential growth in Thailand weakened to around 3.5 percent on average in 2013-17, close to the long-term average, following a short-lived acceleration to around 4 percent in 2003-07. Potential growth in Thailand, which is the lowest in South East Asia, was held back by unfavorable demographics and domestic policy uncertainty that discouraged investment, all of which weighed on TFP growth (ADB 2016; IMF 2016b).
- Potential growth in Indonesia, the country most severely affected by the Asian financial crisis, strengthened to above 5 percent in 2013-17, thanks to favorable demographics, robust investment growth and reforms (Tabor 2015; IMF 2017c; OECD 2016a; World Bank 2015b).
- Potential growth also accelerated in the Philippines to around 5-6 percent in 2013-17—more than 1 percentage point above the longer-term average rate.

BOX 2.1.1 Potential growth in East Asia and Pacific *(continued)*

FIGURE 2.1.1.2 Drivers of potential growth

Slowing regional potential growth, increasingly determined by China's performance, was broad based and reflected weakness in all of its main drivers. Excluding China, rising capital accumulation offset weakening productivity growth in the region.



Sources: Haver Analytics, World Bank staff estimates, Penn World Tables, World Development Indicators, United Nations Educational, Scientific, and Cultural Organization (UNESCO) Institute of Statistics.
Note: EAP = East Asia and Pacific.
A. C. -F. Yellow markers show median of the six EMDE regions.
B. Potential growth estimates based on production function approach (Chapter 3).
C. -F. Vertical bars denote range of averages for all EMDE regions.
E. The percentage of population ages 25 and over that attained or completed lower secondary education. EAP ex. China includes Indonesia, Malaysia, Mongolia, Philippines, and Thailand.
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More than a decade of policies aimed at shifting growth from consumption to investment resulted in a strong capital accumulation, supported by favorable demographics.

- Potential growth in Cambodia, Lao PDR, and Vietnam, three economies closely linked to China, remained high in 2013-17 (around 6 percent in Vietnam and around 7 percent in Cambodia and Lao PDR). But these rates are below longer-term averages and reflect the limitations of growth driven by foreign inflows (Cambodia), natural resources (Lao PDR), and public spending (Vietnam) (Breu et al. 2012; World Bank and Ministry of Planning and Investment of Vietnam 2016).
- Potential growth slowed in Myanmar, Papua New Guinea, Timor-Leste, and Mongolia, owing to their dependence on commodity exports, the collapse in global commodity prices, and weakness in major commodity-importing economies such as China.
- Potential growth in Pacific Islands was weak and volatile throughout the entire period reflecting country-specific factors, but may have improved recently amid a global growth recovery (World Bank 2017g).

Drivers of potential growth

The recent slowdown in regional potential growth, which has been mostly attributable to China, reflected weakness in all its fundamental drivers (Figure 2.1.1.2).

- Contribution from regional working-age population growth to regional potential growth fell from about

BOX 2.1.1 Potential growth in East Asia and Pacific *(continued)*

0.6 percentage points in 2003-2007 to around 0.3 percentage point in 2013-17. This reflects a sharp slowdown of growth of China's working-age population since the late 2000s. Notwithstanding these regional demographic trends, many countries, including Malaysia, the Philippines, and Cambodia, continue to enjoy rising working-age populations.

- Regional potential growth that had resulted from rapid capital accumulation also moderated as the effects of the recent investment surge, especially in China faded. Although investment growth has eased from stimulus-driven peaks in 2010-12 that produced overcapacity in some economies, high investment ratios across the region (e.g., about 43 percent of GDP in China in 2013-17 on average) continued to support potential growth.
- Regional TFP growth also slowed, as the productivity boost following China's World Trade Organization (WTO) accession in 2001 dissipated, the allocation of capital become less efficient during a prolonged investment boom, and as economies increasingly shifted their production from the manufacturing section with stronger TFP growth to the services sector with lower TFP growth (Nabar and N'Diaye 2013; Maliszewski and Zhang 2015).

There have been important cross-country differences in the recent trends in potential growth within the EAP region.

- China's slowdown was broad-based. As its population ages, the contribution from working-age population growth has fallen from about 0.6 percentage points in 2003-07 to –0.1 in 2013-17. Despite a policy-guided decline in investment, capital accumulation slowed, but remained strong, accounting for about 40 percent of potential growth. TFP growth declined, in part reflecting declining productivity of investment, misallocation of resources, and narrowing room for catchup productivity growth. But its contribution to potential growth remained higher than the EMDE average (Chapter 3; Nabar and N'Diaye 2013; Anand et al. 2014).
- In the rest of the region, potential growth continued to rely heavily on factor accumulation, while TFP growth remained subdued. Notably, diminishing labor supply growth was more than offset by a higher contribution from capital accumulation (Anand et al. 2014). Although productivity growth remained subdued, it inched up in 2013-17, led by Indonesia, the Philippines, and Vietnam. In contrast to the rest of the group, Thailand experienced a broad-based decline in potential growth. This follows several years of weak confidence, investment, and FDI inflows, against the backdrop of sharp decline in labor supply growth.

Labor supply

During the past five decades and until the late 2000s, regional growth has been supported by a rapidly growing working-age population (IMF 2017d; World Bank 2013a, 2015c). Many regional economies reaped a "demographic dividend" as the number of workers grew faster than the number of dependents. However, overall, these demographic trends have since turned less favorable and are expected to deteriorate over the next decade.

The contribution from labor supply growth declined to just 0.3 percentage point in 2013-17 from around 0.6 percentage point during the 2003-07 period. This was especially stark in China, where the contribution declined from 0.6 percentage point pre-crisis to –0.1 post-crisis, and in Thailand where labor supply growth has also stalled due to rapid aging.

Despite this overall regional trend, many regional economies are still enjoying the demographic dividend from rapid labor supply growth (e.g., Cambodia, Indonesia, Malaysia, Myanmar, Lao PDR, and Papua New Guinea, and the Philippines; World Bank 2015c). While this supports potential growth, rapidly growing populations in lower-income countries pose other challenges, including providing adequate public service delivery.

Several factors besides demographic trends have affected labor supply within the EAP region. For example, labor force participation rates (and productivity) have been boosted by increases in secondary school completion rates of 10 percentage points between 2013-17 and 2003-07, tertiary enrollment rates by 14 percent, and life expectancy by 2 years. The effect was particularly pronounced in China and Malaysia, which have made large strides in improving life expectancy and education over the past two decades. In contrast, the region has not seen a major improvement in its female labor force participation rate between 2013-17 and 2003-07, with some exceptions (e.g., Malaysia).

Capital accumulation

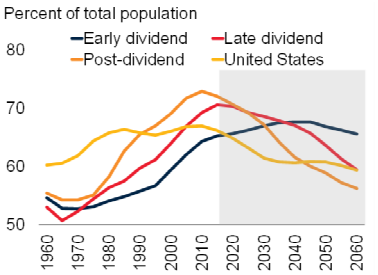
Although rates of capital accumulation eased in most EAP economies during 2013-17 compared with pre-crisis rates, their contribution to potential growth remained robust.

BOX 2.1.1 Potential growth in East Asia and Pacific *(continued)*

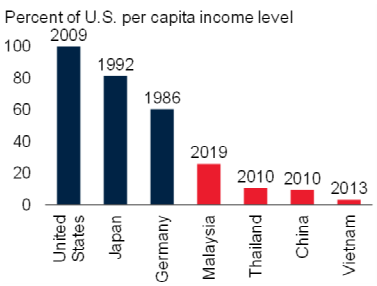
FIGURE 2.1.1.3 Income convergence

Over five decades and until the late 2000s, regional growth was supported by a rapidly growing working-age population. However, demographic trends are now less favorable and are expected to deteriorate over the next decade. Malaysia and China could reach high-income status within a decade, even at expected slower potential growth rates. A combination of policies to improve investment, education and health outcomes and labor market reforms could stem the expected decline in global potential growth over 2018-27.

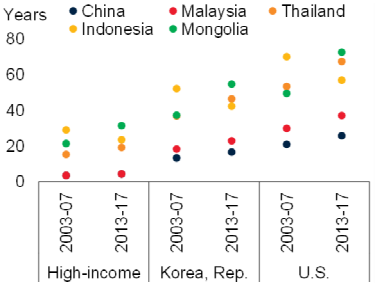
A. Share of working-age population



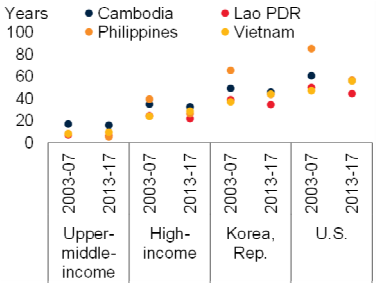
B. Relative per capita income at peak working-age population share



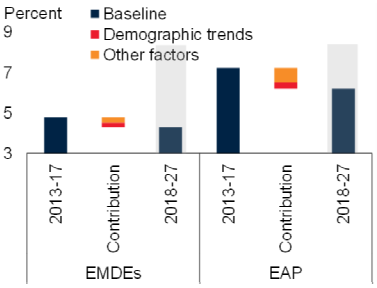
C. Years for per capita income to converge to higher income levels



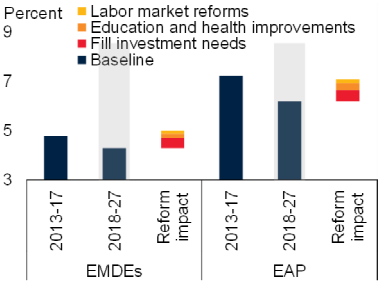
D. Years for per capita income to converge to upper-middle-income levels



E. Baseline potential output growth



F. Potential output growth under reform scenarios



Sources: United Nations World Population Prospects: 2017 Revision (medium-fertility scenario); World Bank staff estimates; International Monetary Fund, World Economic Outlook.

A. Early dividend countries include Cambodia, Lao PDR, Indonesia, and Philippines. Late dividend countries include Malaysia and Vietnam. Post dividend countries include China and Thailand. Post dividend is defined as a total fertility rate 30 years earlier below 2.1, and a shrinking working-age population share over the subsequent 15 years, or a shrinking absolute working-age population. Late dividend is defined as a total fertility rate 30 years earlier above 2.1, and a shrinking working-age population share over the subsequent 15 years. Early dividend is defined as an increasing working-age population share over the subsequent 15 years.

B. Figure shows per capita income in percent of U.S. per capita income in the year when the working age population share peaked (years shown above the bars). Only countries where working-age population shares reach peak before 2020. Red bars are East Asia Pacific countries.

C. D. Number of years to converge to per capita GDP of the specified country or income group in 2017. The years to converge for each country are calculated as the years to close the difference between GDP per capita in 2017, assuming average potential growth in the period specified. Potential growth of China, Indonesia, Mongolia, Philippines, and Thailand is from the production function approach. Potential growth of other countries is from the five-year expectation approach.

E. "Other factors" reflects declining population growth, trend improvements in human capital, and a slowdown in investment growth to output growth.

F. Policy scenarios are described in Annex 3.1.

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- In some ASEAN economies, such as Indonesia and the Philippines, supportive monetary policy had spurred investment and, hence, capital accumulation in the wake of the global financial crisis.
- Rapid capital accumulation has also reflected infrastructure upgrades. In the Philippines, improved macroeconomic policy management and the government's public-private partnership initiative, have boosted capital accumulation.
- In Malaysia, capital accumulation has gathered momentum with investments made under the Economic Transformation Program (Munoz et al. 2016).

Investment in developing EAP was largely supported by high domestic saving rates and foreign investment. EAP attracted half of global FDI during 2013-17, and FDI stocks exceeded 50 percent of GDP in all economies. Foreign capital played an important role in transfer of new

BOX 2.1.1 Potential growth in East Asia and Pacific *(continued)*

technologies and knowhow, the development of human capital, the integration into global markets, improved competitiveness, and firms' development and reorganization (Moura and Forte 2010; World Bank 2017h). However, in smaller, heavily commodity-dependent economies, including Mongolia and Papua New Guinea, investment has contracted sharply during 2013-17 as FDI for mining-sector projects declined.

TFP growth

In most EAP countries, potential TFP growth has eased or remained subdued post-crisis. This has been attributed to temporary and persistent factors (Asian Productivity Organization (APO) 2016; Box 3.2; World Bank 2017h).[2] Temporary factors include heightened policy uncertainty (e.g., Myanmar, Thailand) and investment weakness in several commodity-exporting economies severely affected by the plunge in commodity prices (e.g., Mongolia, Papua New Guinea). Persistent factors, which contributed to a moderation of TFP growth, include maturing global value chains (e.g., China, Malaysia), a switch in information and communications technologies to consumer applications from productivity-enhancing hardware and software (e.g., China), and slowing human capital accumulation and weak human capital investment in lower income economies with limited fiscal space (e.g., Cambodia, Lao PDR). Slowing productivity growth has also been attributed to slowing factor reallocation (e.g., China, Malaysia, Thailand). In contrast, TFP growth in several economies (e.g., Indonesia and the Philippines) benefited from sustained high investment rates amid political stability, and the potential for productivity increases from factor reallocation that is at quite early stages.

Maturing gains from factor reallocation. The reallocation of labor toward sectors enjoying higher or faster productivity growth—particularly from agriculture to manufacturing, construction, and non-traditional services—has been an important channel underpinning productivity gains in the region and has slowed in some countries (World Bank 2017h). This transformation has stalled in Thailand, weakened significantly in China, and proceeded slowly in Malaysia since the Asian financial crisis. In contrast, TFP has grown in Indonesia, Vietnam, and the Philippines, where labor reallocation continues at a rapid pace. In Vietnam, intersectoral reallocation continues to account for approximately half of labor productivity growth, with no signs of a slowdown (World Bank 2017h).

Maturing global supply chains. Productivity in the region, and especially in China, was boosted by rapid integration into global and regional supply chains in the wake of China's accession to the World Trade Organization. The maturing of these supply chains has meant that this surge in productivity growth has waned (Constantinescu, Mattoo, and Ruta 2017; Kummritz et al. 2017).

Other factors. Among the factors contributing to the region's subdued TFP are weak research and development (particularly in Indonesia, the Philippines, Thailand, Vietnam), inadequate infrastructure (particularly in Indonesia and Thailand), low levels of economic complexity (particularly in Indonesia, the Philippines, and Vietnam), and difficulty in doing business and stringent regulations in product markets (particularly in Malaysia and Thailand) (Munoz et al. 2016; World Bank 2017h). Finally, distortions in economic incentives leading to factor misallocation (reflected in sectoral overcapacity, for example) appear to be holding back productivity in China and Vietnam (IMF 2017d).

Prospects for potential growth: What could happen?

Potential growth within the EAP region is expected to ease further by about 1 percentage point to around 6 percent during 2018-27, reflecting a slowdown in China.[3]

This potential growth slowdown reflects ongoing demographic trends that are dampening labor supply, slowing productivity growth and putting the region at risks of becoming old before becoming rich (Figure 2.1.1.3; IMF 2017d). The largest declines in the share of the working-age population are expected in China. In contrast, many countries, including Cambodia, Indonesia, Lao PDR, Malaysia, Myanmar, and Papua New Guinea, and the Philippines, will see a rise in working-age populations and could enjoy a demographic dividend if they generate sufficient jobs (Bloom, Canning, and Fink 2010; IMF 2017d; World Bank 2015c).

A slowing pace of capital accumulation is projected to reduce EAP potential growth by about 0.4 percentage point. The steepest slowdowns in capital accumulation are

[2] For more detailed discussion please see the "World Bank East Asia Regional Economic Update," April 2017.

[3] The baseline scenario assumes broadly constant policies, long-term investment-to-GDP ratios, and population dynamics as projected in the UN Population Projections (Chapter 3).

BOX 2.1.1 Potential growth in East Asia and Pacific *(continued)*

expected in China, where policy efforts to rein in credit growth continue, and the Philippines, where a surge in public investment is expected to fade. In contrast, in Thailand, investment is expected to recover from depressed levels.

Stabilizing global value chains (GVC) and maturing electronics technologies may also dampen productivity growth. In manufacturing, greater vertical specialization has been associated with higher labor productivity (Kummritz et al. 2017). The slower pace of GVC expansion could slow productivity growth by removing incentives to take advantage of a more efficient international division of labor and diffusion of technology.

Policy options to lift potential growth

Against this backdrop, the region faces the challenge of completing China's transition to a slower but more sustainable and balanced growth path, and of implementing growth-enhancing reforms to achieve convergence with higher income status. Meeting these priorities will require attending to the following policy priorities:

Improved resource allocation in China. Corporate sector reform, more sustainable credit growth, and a stronger intergovernmental fiscal system could help eliminate excess industrial capacity and improve the allocation of resources (IMF 2017d; Jin and Rial 2016; World Bank 2017i). Institutional reforms—such as better corporate governance, enhanced auditing and accounting standards, and a stronger regulatory framework—could promote competition and productivity growth.

Investment into technological and physical capital. Several countries in the region continue to have sizable infrastructure investment needs (Vashakmadze et al. 2017). Such investment can be financed by raising additional revenue (e.g., Cambodia, Indonesia, Lao PDR, the Philippines), reducing reliance on resource revenues (e.g., Indonesia, Malaysia, Mongolia, Papua New Guinea), increasing the efficiency of public investment (Indonesia, Lao PDR, Vietnam), rebalancing public expenditures towards public investment and promoting public-private cooperation (World Bank 2011, 2015b). Developing and implementing rigorous and transparent processes for project selection, appraisal, and procurement, could make public investment more efficient and could improve operation and maintenance of assets (IMF 2017d). Enhancing transparency and governance of state-owned enterprises could ease pressure on fiscal resources (e.g., Thailand, Vietnam; World Bank 2016a).

Trade integration. Rising international trade has been an important source of EAP growth. The region opened its economies to trade and foreign direct investment, exploiting competitive advantages in the manufacturing sector. Increased trade openness has brought strong productivity gains, especially after the Asian financial crisis, against the backdrop of solid economic institutions and improved macroeconomic fundamentals (Havrylyshyn 1990; Trejos and Barboza 2015; Eris and Ulasan 2013). However, protracted weakness in advanced economies, signs of weakened commitment to trade liberalization, and an increased risk of protectionism are threatening prospects for a further expansion of trade. Steps that could help counter this risk include:

- Lowering non-tariff barriers would further expand global and regional trade and improve the international allocation of investment, thereby boosting productivity and competitiveness. Barriers to services trade remain elevated for many countries of the region (e.g., Indonesia, Malaysia, the Philippines, Thailand). Restrictions on foreign control and ownership, discretionary licensing, and limits on the operations of foreign companies have significant negative impacts on the delivery of services across borders. In addition, foreign entry restrictions in some EAP countries are prohibitive for many professional services such as legal, accounting, or engineering (World Bank 2016a).

- Regional partnerships and trade agreements, including the ASEAN economic community and the proposed Regional Comprehensive Economic Partnerships, will help stimulate structural reforms and promote stable income growth. These partnerships can also help to boost the region's resilience, as they did during the global financial crisis in 2008-09, facilitate reforms and help to overcome constraints in services, investment, competition, and small and medium enterprise (SME) development (World Bank 2016a, 2016f).

Investment into human capital. High-quality education would raise labor-force skills, and promote productivity growth (World Bank 2014a, 2017j). Reforms that reduce barriers to female labor force participation could increase participation rates and productivity (ADB 2015; Kinoshita and Guo 2015).

BOX 2.1.1 Potential growth in East Asia and Pacific *(concluded)*

Investment in technological capital and spurring innovation. Productivity growth can also be boosted by spurring innovation and technology adaptation (Cirera and Maloney 2017). This could be achieved through higher spending on research and development and attracting foreign direct investment, which can be an important source of technology transfer.

- In China and upper-middle-income economies, the effectiveness of R&D spending could be improved, and measures could be taken to raise productivity in the services sectors, in particular by reducing barriers to competition (World Bank and Development Research Center of the State Council of the People's Republic of China 2012; Munoz et al. 2016; World Bank 2016g).
- Lower-income EAP countries may be able to capitalize on rising FDI inflows by strengthening their capacity to adopt new technology (World Bank 2014b, 2017h) The ASEAN-4 countries (e.g., Indonesia, Malaysia, Thailand, and the Philippines) have begun by strengthening the quality and flexibility of domestic education systems. In some economies, better public infrastructure could foster connectivity and spur innovation.

Urbanization. The region has the potential for continued, rapid urban development (World Bank 2015d). Although more than 450 million people moved to cities between 2000 and 2016, the share of people living in urban centers in the EAP region remains at 54 percent in 2016 (around 50 percent excluding China), well below the advanced-economy average (80.5 percent) in the majority of the region's economies.[4] China's current urbanization rate is 55.6 percent, with only 23.7 percent of China's population in urban agglomerations compared to 45.3 percent in the United States. With still a large share of the EAP workforce engaged in agriculture, there is scope for substantial productivity gains from moving workers to urban centers and employment in manufacturing and services, particularly in Cambodia, Indonesia, the Philippines, Timor-Leste, Thailand, and Vietnam (World Bank 2016a). Measures to foster urbanization include investment in infrastructure and social services, making land more accessible on a fair and transparent basis, encouraging facilities that support recent migrants, and coordinating urban services across municipal boundaries.[5]

Business climate reforms. Improvements in the business climate and reductions in the cost of doing business would also help (e.g., Cambodia, Fiji, Lao PDR, Myanmar, Papua New Guinea, Timor-Leste, and the small Pacific Islands; World Bank 2017k, 2017l). Cambodia, Lao PDR, Myanmar, and Papua New Guinea rank low on the 2016 Corruption Perception Index reported by Transparency International and on other governance indicators. Enhanced transparency, strengthened accountability, and greater responsiveness of state institutions to the needs of the private sector would bolster investor confidence and invite productivity-enhancing investment (Kummritz et al. 2017).

[4] Urbanization rates are particularly low at only 13 percent in Papua New Guinea, 21 percent in Cambodia, and around 35 percent in Myanmar and Vietnam.

[5] Felipe, Sotocinal, and Bayudan-Dacuycuy (2015), ADB (2016), Creehan (2015), Bryson and Nelson (2016), World Bank and Development Research Center of the State Council, China (2014).

EUROPE and CENTRAL ASIA

Growth in the Europe and Central Asia (ECA) region is estimated to have accelerated from 1.7 percent in 2016 to 3.8 percent in 2017, up from 2.5 percent expected in June 2017. The recovery was broad-based and supported by revitalized domestic demand and robust external demand. Growth is expected to moderate to 2.9 percent in 2018 and stabilize at 3 percent in 2019-20. Risks appear more balanced than in June 2017 but continue to be tilted to the downside. Domestic fiscal, external, and financial sector vulnerabilities, as well as policy uncertainty, amplify risks.

Recent developments

In 2017, the ECA region emerged from three years of subpar growth, following the 2014-16 oil price plunge (Special Focus 1). Growth is estimated to have strengthened to 3.8 percent, 1.3 percentage point higher than projected in June, supported by a broad-based recovery across the region. Growth strengthened in the commodity-exporting eastern part of the region as well as the commodity-importing western part (Figure 2.2.1). The acceleration of activity was largely driven by private consumption and investment, though in the western part net exports also contributed.

The stabilization and partial rebound of oil prices since early 2016 and supportive macroeconomic policies buttressed the recovery of large energy exporters in the eastern part of the region. Their recovery was facilitated by easing inflation, rising real incomes, improving financing conditions, and improved investor confidence. Growth momentum in the western part of the region was supported by tightening labor markets, as manifested in declining unemployment rates and robust real wage growth, as well as improving consumer confidence and investment bolstered by increased absorption of EU structural funds (IMF 2017e). In addition, the pickup in growth in the advanced economies of Europe from late 2016 provided tailwinds to the region's economies through increased export demand.

The two largest economies, the Russian Federation and Turkey, accounted for most of the improvement in the region's expansion in 2017. However, growth picked up in most ECA countries as well, with particularly notable advances in Armenia, Belarus, Kazakhstan and Poland. In contrast, growth weakened in the Kyrgyz Republic, the former Yugoslav Republic of Macedonia, Moldova, Serbia, Ukraine, and Uzbekistan. Azerbaijan continued contracting, albeit at a slower pace.

In Russia, after a two-year recession, output expanded by 1.7 percent in 2017, bolstered by higher oil prices and supportive monetary policies amid lower inflation (World Bank 2017n). Floatation of the currency in 2014 helped cushion the impact of the oil price plunge and international sanctions, as did financial sector support. The decline in inflation from a 17 percent peak in early 2015 to below the 4 percent target in late 2017 buttressed disposable income and consumption growth. Stabilizing oil prices supported private investment, primarily in energy and transportation.

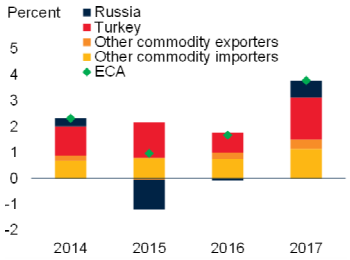
The significant rebound in Turkey's growth last year—to 6.7 percent, from 3.2 percent in 2016—was supported by fiscal stimulus aimed at expe-

Note: The author of this section was Yoki Okawa. Research assistance was provided by Shituo Sun.

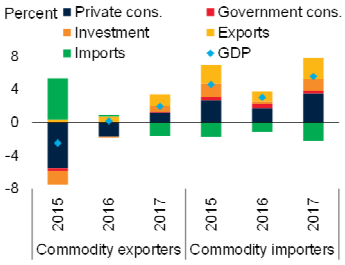
FIGURE 2.2.1 ECA: Recent developments

Growth continued to rise in 2017 in a broad-based recovery. The acceleration has been largely driven by private investment and consumption, though exports have also contributed to commodity importers. Labor markets have remained robust. Inflation in commodity exporters is slowing as depreciation pressures ease, while inflation in commodity importers is gathering speed.

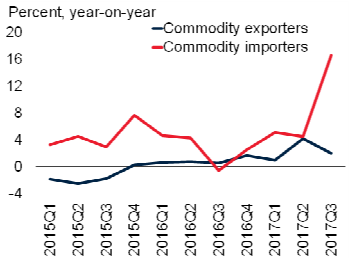
A. Growth



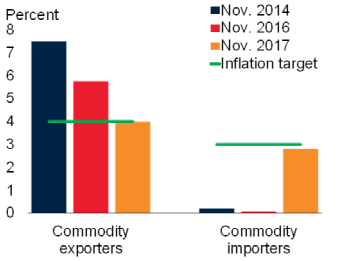
B. Growth decomposition



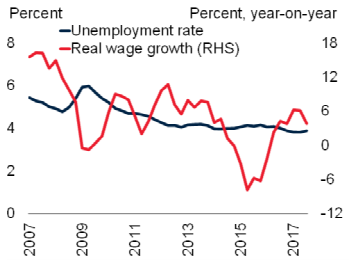
C. Industrial production



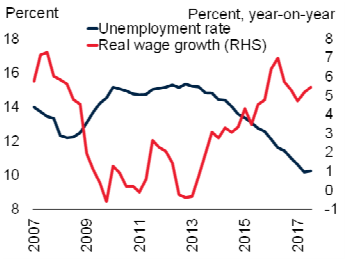
D. Inflation



E. Labor market (commodity exporters)



F. Labor market (commodity importers)



Sources: Haver Analytics, national central banks, World Bank.

A. GDP-weighted averages. Other commodity exporters include Albania, Armenia, Azerbaijan, Kazakhstan, the Kyrgyz Republic, Tajikistan, Turkmenistan, Ukraine, and Uzbekistan. Other commodity importers include Belarus, Bulgaria, Bosnia and Herzegovina, Croatia, Georgia, Hungary, Kosovo, FYR Macedonia, Montenegro, Moldova, Poland, Romania, and Serbia.

B. GDP-weighted averages. Commodity exporters include Albania, Armenia, Azerbaijan, Kazakhstan, the Kyrgyz Republic, Russia, Ukraine, and Uzbekistan. Commodity importers include Belarus, Bulgaria, Croatia, Georgia, Hungary, FYR Macedonia, Moldova, Poland, Romania, and Turkey.

C. GDP-weighted averages. Commodity exporters include Albania, Armenia, Azerbaijan, Kazakhstan, the Kyrgyz Republic, Russia, Tajikistan, Turkmenistan, Ukraine, and Uzbekistan. Commodity importers include Belarus, Bulgaria, Bosnia and Herzegovina, Croatia, Georgia, Hungary, Kosovo, Moldova, FYR Macedonia, Montenegro, Poland, Romania, Serbia, and Turkey.

D. Inflation and target are median in each sub-grouping. Commodity exporters include Albania, Azerbaijan, Kazakhstan, the Kyrgyz Republic, Russia, Ukraine, and Armenia. Commodity importers include Belarus, Bosnia and Herzegovina, Bulgaria, Croatia, Georgia, Hungary, Kosovo, FYR Macedonia, Moldova, Poland, Romania, Serbia, and Turkey.

E. F. Averages among the country group. Real wage growth is year-on-year growth. Commodity exporters include Kazakhstan, Russia, and Ukraine. Commodity importers include Bulgaria, Croatia, Hungary, FYR Macedonia, Poland, Romania, Serbia, and Turkey.

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diting recovery from the economic repercussions of the 2016 failed coup attempt. Export growth also rose on the back of strengthening demand from the European Union and competitiveness gains from the 2016 currency depreciation.

In Kazakhstan, growth is estimated to have rebounded to 3.7 percent in 2017 from 1.1 percent in 2016. The recovery was boosted by increased production at the Kashagan oil field (exempt from production cuts agreed by OPEC and some non-OPEC producers) and supportive macroeconomic policies. The latter included fiscal stimulus (the authorities' flagship "Nurly Zhol" initiative, which provided funding to infrastructure, SMEs, and housing), greater exchange rate flexibility, and easing monetary policy. Declining inflation helped support private consumption (World Bank 2017m). Recovery in Russia and Kazakhstan generated positive spillovers for commodity-importing countries in the region through remittances and exports (e.g., Armenia, Belarus, Georgia, Moldova).

The economy of Azerbaijan continued contracting albeit at a slower pace of 1.4 percent in 2017 compared to 3.1 percent in 2016. The economy is weighed down by the legacies of the 2014-16 oil price plunge, including a damaged banking sector, subdued credit growth, and lower government revenue. Weak monetary policy transmission, impaired by shallow financial markets, limited the effectiveness of monetary policy in fighting inflation, damaging real income growth. There were, however, signs of recovery in the non-oil sector and an increase in investment. The economic contraction in Belarus abated, as inflation declined and the economy benefited from the resumption of growth in Russia.

In Ukraine, growth weakened in 2017 in the wake of the trade blockade with eastern Ukraine, which disrupted mining and electricity production. Growth in the Kyrgyz Republic was adversely affected by a slowdown at the Kumtor gold mine. Despite recent improvements, a still-weak business environment continued weighing on growth in Uzbekistan.

Continued expansion in the advanced economies of Europe supported growth in the western part

of the region. Export and strong consumption helped raise growth in Central Europe, from 3.2 percent in 2016 to 4.7 percent in 2017.[1] Consumption rose supported by robust labor markets and, in some cases, fiscal stimulus (e.g., child subsidies in Poland, VAT cuts in Romania). Investment growth also strengthened, partly reflecting increased absorption of EU structural funds.

The impact of the recent recovery on labor markets varied across countries. The unemployment rate for commodity exporters declined by only 0.2 percentage points from the peak in 15Q2 to 17Q3, while real wage growth recovered from -8 percent to 4 percent over the same period. In contrast, the unemployment rate for commodity importers declined more significantly on the back of strengthening growth and labor market reforms (World Bank 2018o).

Amid tightening labor markets, inflation rose somewhat in the western part of the region in 2017 but continued falling in the eastern part of the region as exchange rate depreciation pressures eased. Inflation rates were generally below central bank target ranges in both parts of the region.

Outlook

Regional growth is expected to moderate to 2.9 percent in 2018 and stabilize at 3 percent in 2019-20 (Figure 2.2.2). The relatively stable overall growth forecast, however, masks considerable cross-country differences. The forecast is predicated on a modest recovery in commodity prices, a gradual moderation of growth in the Euro Area following a strong cyclical pickup in 2017-18, an orderly tightening of global financing conditions, and the absence of new geopolitical tensions.

In the eastern part of the region, growth is expected to continue strengthening during 2018-20, in line with firming commodity prices and strengthening domestic demand supported by remittances (Armenia, Azerbaijan, Belarus, the Kyrgyz Republic, Tajikistan). Commodity exporters that have already adjusted to current oil price levels are expected to follow a somewhat different path. Growth in Russia is expected to stabilize at around 1.8 percent in 2018-20. Growth in Kazakhstan is projected to moderate to 2.6 percent in 2018 as the one-off effects of increased production at the Kashagan oil field and the fiscal stimulus wane. It is set to rise to 3 percent by 2020 as the country reaps the benefits of structural reforms. Ukraine's economy is expected to continue mending as geopolitical tensions subside, with growth strengthening to 4 percent in the medium term. In Uzbekistan, exchange rate liberalization in September 2017, which resulted in a significant currency depreciation, will help improve competitiveness, enhance market efficiency, and economic growth.

Growth in the western part of the region is projected to slow in line with the maturing recovery in the Euro Area. The gradual slowdown in EU growth (Chapter 1) will weigh on the region's export growth, particularly in Central Europe, where growth is projected to decelerate from 4.7 percent in 2017 to 3.2 percent in 2020, with growth weakening in Hungary, Poland, and Romania. Growth in Turkey is projected to moderate to around 3.5 percent in 2018, as the impact of the 2017 fiscal measures fades.

Risks

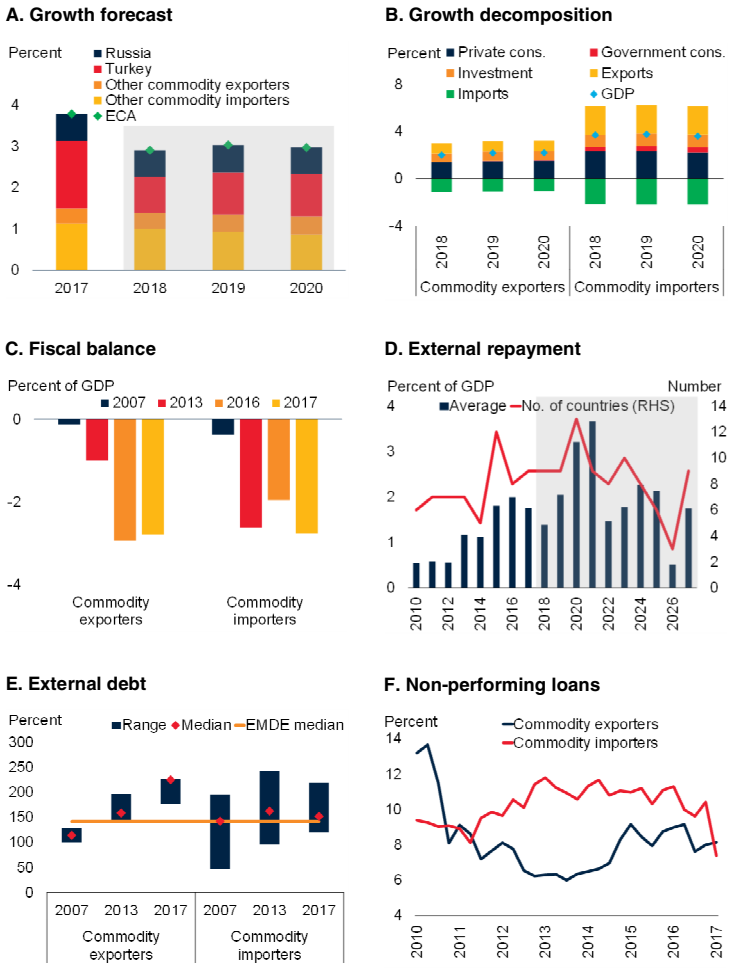
The risks to growth in the region have become more balanced but continue to be tilted to the downside. On the upside, a more favorable external environment than assumed, including faster-than-expected growth in the EU—the largest trading partner and financing source for ECA countries—as well as other major economies, could benefit growth in the region. Acceleration in structural reforms could also boost growth by more than is projected.

However, downside risks remain significant. A disorderly tightening of global financing conditions could raise financing costs and suppress capital inflows and growth. Lower-than-projected oil prices could adversely affect oil

[1] Central Europe includes Poland, Hungary, Bulgaria, and Romania.

FIGURE 2.2.2 ECA: Outlook and risks

Regional growth is expected to remain stable in 2018-20. Fiscal vulnerabilities remain elevated throughout the region, though lower external debt repayments over the next few years will provide some breathing space. For commodity exporters, external debt in relation to exports has increased above the level of EMDE peers in the wake of the 2014-16 oil price plunge and financial vulnerabilities persist. In contrast, for commodity importers, external debt has remained on par with other EMDEs and financial indicators have continued improving.



Sources: Bloomberg, Haver Analytics, International Monetary Fund, World Bank.

A. GDP-weighted averages. Other commodity exporters include Albania, Armenia, Azerbaijan, Kazakhstan, the Kyrgyz Republic, Tajikistan, Turkmenistan, Ukraine, and Uzbekistan. Other commodity importers include Belarus, Bulgaria, Bosnia and Herzegovina, Croatia, Georgia, Hungary, Kosovo, FYR Macedonia, Montenegro, Moldova, Poland, Romania, and Serbia.

A. D. Shaded areas indicate forecasts.

B. GDP-weighted averages. Commodity exporters include Albania, Armenia, Azerbaijan, Kazakhstan, the Kyrgyz Republic, Russia, Ukraine, and Uzbekistan. Commodity importers include Belarus, Bulgaria, Croatia, Georgia, Hungary, FYR Macedonia, Moldova, Poland, Romania, and Turkey.

C. Median of general government net lending/borrowing over GDP in each sub group. Commodity exporters include Albania, Armenia, Azerbaijan, Kazakhstan, the Kyrgyz Republic, Russia, Tajikistan, Turkmenistan, Ukraine, and Uzbekistan. Commodity importers include Belarus, Bosnia and Herzegovina, Bulgaria, Croatia, Georgia, Hungary, Kosovo, FYR Macedonia, Moldova, Montenegro, Poland, Romania, Serbia, and Turkey.

D. The average of total sovereign/local authority international bond repayments over GDP among countries who are scheduled to repay that year. Because countries who are not scheduled to repay in a given year are excluded from the average, the number of countries for each year is reported as well. Country sample includes 18 countries.

E. Total external debt over exports of goods and services plus primary income. Commodity exporters include Armenia, Russia, and Ukraine. Commodity importers include Belarus, Croatia, Georgia, Hungary, FYR Macedonia, Moldova, Poland, Romania, Serbia, and Turkey.

F. Average share of non-performing loans in percent of total loans. Commodity exporters include Armenia, Kazakhstan, the Kyrgyz Republic, Russia, Tajikistan, Ukraine, and Uzbekistan. Commodity importers include Belarus, Bosnia and Herzegovina, Bulgaria, Croatia, Georgia, Hungary, Kosovo, FYR Macedonia, Moldova, Poland, Romania, and Turkey.

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exporters, undermining their still-fragile recoveries and spilling over into smaller neighboring countries through trade and financial channels. An escalation of geopolitical tensions in Ukraine, a tightening of international sanctions on Russia, or an intensification of disagreements of some countries with the EU could deter international investors. The latter could lead to expectations of an end to EU accession protocol for Turkey and of disruptions in EU funding to some countries during the next budget cycle.

These risks may be amplified by various country-specific vulnerabilities, which include:

- *External vulnerabilities*: large external deficits (e.g., Belarus, Bosnia and Herzegovina, Georgia, Kosovo, the Kyrgyz Republic, Moldova, Montenegro, Serbia, Turkey) and high external debt (Tajikistan), which increased in the wake of the 2014-16 oil price plunge in the eastern part of the ECA region.

- *Fiscal vulnerabilities*: limited room for fiscal maneuvering, partly stemming from the fiscal stimulus implemented in the wake of the 2014-16 oil price plunge by both oil exporters (Kazakhstan, Russia) and some oil importers (Romania, Turkey). Lower external debt repayments coming due over the next few years, however, will reduce financing requirements and mitigate rollover risks.

- *Financial sector vulnerabilities*: weak asset quality of banks and other financial institutions in some countries (e.g., Belarus, Bosnia and Herzegovina, Croatia, Moldova) and deteriorating asset quality in others (e.g., Kazakhstan, Russia, Ukraine). Public funds injected into the troubled banks of Azerbaijan, Kazakhstan, Russia, Ukraine, and Uzbekistan in 2017 attest to continued challenges faced by the financial systems of these countries.

In the medium and long term, slower-than-expected productivity growth, partly as a result of low investment and delays in structural reforms, could reduce potential growth and slow down income convergence (Box 2.2.1, Chapter 3).

Major energy exporters, in particular, may suffer from lower growth if they fail to diversify their economies away from oil—for example, if the medium-term strategies recently adopted to that aim in Azerbaijan, Kazakhstan, Russia, and Uzbekistan fail to materialize.

TABLE 2.2.1 Europe and Central Asia forecast summary

(Real GDP growth at market prices in percent, unless indicated otherwise)

	2015	2016	2017e	2018f	2019f	2020f	Percentage point differences from June 2017 projections: 2017e	2018f	2019f
EMDE ECA, GDP[1]	**1.0**	**1.7**	**3.8**	**2.9**	**3.0**	**3.0**	**1.3**	**0.2**	**0.2**
EMDE ECA, GDP excl. Russia	3.6	2.9	5.1	3.6	3.8	3.7	1.8	0.1	0.1
(Average including countries with full national accounts and balance of payments data only)[2]									
EMDE ECA, GDP[2]	0.9	1.6	3.8	2.9	3.0	2.9	1.3	0.2	0.2
GDP per capita (U.S. dollars)	0.5	1.2	3.4	2.5	2.7	2.7	1.1	0.0	0.1
PPP GDP	0.6	1.6	3.6	2.9	3.0	2.9	1.1	0.2	0.2
Private consumption	-2.7	0.0	4.2	3.3	3.3	3.3	0.8	-0.6	-0.7
Public consumption	0.2	1.7	1.3	1.3	1.6	1.6	-1.0	-0.6	-0.5
Fixed investment	0.4	0.5	4.7	3.7	3.9	3.8	0.9	-0.5	-0.4
Exports, GNFS[3]	3.8	2.7	5.8	4.7	4.7	4.6	2.1	0.8	0.9
Imports, GNFS[3]	-5.7	1.5	6.6	5.5	5.4	5.2	1.2	-0.4	-0.6
Net exports, contribution to growth	3.0	0.5	0.1	0.0	0.0	0.0	0.4	0.4	0.5
Memo items: GDP									
Commodity exporters[4]	-2.3	0.3	2.1	2.1	2.3	2.3	0.4	0.2	0.3
Commodity importers[5]	4.5	3.0	5.5	3.7	3.7	3.6	2.1	0.2	0.1
Central Europe[6]	3.7	3.2	4.7	4.0	3.5	3.2	1.2	0.7	0.3
Western Balkans[7]	2.1	2.9	2.7	3.3	3.6	3.8	-0.5	-0.2	-0.1
Eastern Europe[8]	-7.6	0.8	2.0	3.1	3.5	3.5	0.6	0.5	0.3
South Caucasus[9]	1.7	-1.6	0.3	1.9	2.5	3.3	0.2	0.3	0.3
Central Asia[10]	3.3	3.3	4.6	3.8	4.1	4.3	0.7	-0.3	-0.4
Russia	-2.8	-0.2	1.7	1.7	1.8	1.8	0.4	0.3	0.4
Turkey	6.1	3.2	6.7	3.5	4.0	4.0	3.2	-0.4	-0.1
Poland	3.8	2.9	4.5	4.0	3.5	3.1	1.2	0.8	0.3

Source: World Bank.
Notes: e = estimate; f = forecast. EMDE = emerging market and developing economy. World Bank forecasts are frequently updated based on new information and changing (global) circumstances. Consequently, projections presented here may differ from those contained in other Bank documents, even if basic assessments of countries' prospects do not differ at any given moment in time.
1. GDP at market prices and expenditure components are measured in constant 2010 U.S. dollars.
2. Sub-region aggregate excludes Bosnia and Herzegovina, Kosovo, Montenegro, Serbia, Tajikistan, and Turkmenistan, for which data limitations prevent the forecasting of GDP components.
3. Exports and imports of goods and non-factor services (GNFS).
4. Includes Albania, Armenia, Azerbaijan, Kazakhstan, the Kyrgyz Republic, Kosovo, Russia, Tajikistan, Turkmenistan, Ukraine, and Uzbekistan.
5. Includes Belarus, Bosnia and Herzegovina, Bulgaria, Croatia, Georgia, Hungary, FYR Macedonia, Moldova, Montenegro, Poland, Romania, Serbia, and Turkey.
6. Includes Bulgaria, Croatia, Hungary, Poland, and Romania.
7. Includes Albania, Bosnia and Herzegovina, Kosovo, FYR Macedonia, Montenegro, and Serbia.
8. Includes Belarus, Moldova, and Ukraine.
9. Includes Armenia, Azerbaijan, and Georgia.
10. Includes Kazakhstan, the Kyrgyz Republic, Tajikistan, Turkmenistan, and Uzbekistan.
For additional information, please see www.worldbank.org/gep.

TABLE 2.2.2 Europe and Central Asia country forecasts[1]

(Real GDP growth at market prices in percent, unless indicated otherwise)

	2015	2016	2017e	2018f	2019f	2020f	Percentage point differences from June 2017 projections: 2017e	2018f	2019f
Albania	2.2	3.4	3.8	3.6	3.5	3.5	0.3	0.1	-0.3
Armenia	3.2	0.2	3.7	3.8	4.0	4.0	1.0	0.7	0.6
Azerbaijan	1.1	-3.1	-1.4	0.9	1.5	2.6	0.0	0.3	0.2
Belarus	-3.8	-2.6	1.8	2.1	2.4	2.4	2.2	1.6	1.2
Bosnia and Herzegovina[2]	3.0	3.1	3.0	3.2	3.4	3.5	-0.2	-0.5	-0.6
Bulgaria	3.6	3.9	3.8	3.9	4.0	3.9	0.8	0.7	0.7
Croatia	2.3	3.2	3.0	2.6	2.8	3.0	0.1	0.1	0.2
Georgia	2.9	2.8	4.3	4.2	4.7	5.0	0.8	0.2	0.2
Hungary	3.4	2.2	3.9	3.8	3.1	2.9	0.2	0.1	0.1
Kazakhstan	1.2	1.1	3.7	2.6	2.8	3.0	1.3	0.0	-0.1
Kosovo	4.1	3.4	4.4	4.8	4.8	4.7	0.5	0.6	0.4
Kyrgyz Republic	3.9	3.8	3.5	4.2	4.8	4.6	0.1	0.2	0.0
Macedonia, FYR	3.8	2.4	1.5	3.2	3.9	4.0	-1.3	-0.1	0.1
Moldova	-0.4	4.3	3.5	3.8	3.6	3.3	-0.5	0.1	0.1
Montenegro	3.4	2.9	4.2	2.8	2.5	2.1	0.9	-0.2	0.5
Poland	3.8	2.9	4.5	4.0	3.5	3.1	1.2	0.8	0.3
Romania	3.9	4.8	6.4	4.5	4.1	3.5	2.0	0.8	0.6
Russia	-2.8	-0.2	1.7	1.7	1.8	1.8	0.4	0.3	0.4
Serbia	0.8	2.8	2.0	3.0	3.5	4.0	-1.0	-0.5	0.0
Tajikistan	6.0	6.9	5.2	5.0	5.5	5.7	-0.3	-0.9	-0.6
Turkey	6.1	3.2	6.7	3.5	4.0	4.0	3.2	-0.4	-0.1
Turkmenistan	6.5	6.2	6.4	6.3	6.3	6.3	0.1	-0.2	-0.2
Ukraine	-9.8	2.3	2.0	3.5	4.0	4.0	0.0	0.0	0.0
Uzbekistan	8.0	7.8	6.2	5.6	6.3	6.5	-1.4	-2.1	-1.5

Source: World Bank.
Notes: e = estimate; f = forecast. World Bank forecasts are frequently updated based on new information and changing (global) circumstances. Consequently, projections presented here may differ from those contained in other Bank documents, even if basic assessments of countries' prospects do not differ at any given moment in time.
1. GDP at market prices and expenditure components are measured in constant 2010 U.S. dollars, unless indicated otherwise.
2. GDP growth rate is based on production approach.
For additional information, please see www.worldbank.org/gep.

BOX 2.2.1 Potential growth in Europe and Central Asia

Potential growth in Europe and Central Asia has declined by around 1.4 percentage point in 2013-17 from pre-crisis period, to 2.3 percent. The decline is mostly attributable to weaker productivity growth, but shrinking labor supply have played a role. Although population aging and slowing productivity growth are expected to continue weighing on potential growth over the next decade, there are policy options available to offset the decline.

Introduction

Growth in Europe and Central Asia (ECA) has slowed considerably since the global financial crisis, reversing the rapid convergence to advanced EU per capita incomes seen in prior years. To a large extent, this slowdown reflected cyclical factors—including the global financial crisis in 2007-08, the European debt crisis in 2010-11, and the oil price collapse in 2014-16—which triggered deep output contractions in some ECA countries.

Concurrent with the cyclical slowdown, potential growth appears to have slowed as well. Historical evidence suggests that steep output contractions can leave a lasting dent in potential growth through legacies such as human capital loss in extended unemployment spells, weakened investor confidence about growth prospects, and slower productivity gains resulting from weak investment (Chapter 3).[1]

Against this backdrop, this box discusses the following questions.

- How has potential growth evolved in the region and what were its main drivers?
- What are prospects for potential growth?
- What are the policy options to lift potential growth?

Evolution of potential growth and its drivers

Potential output growth in ECA has declined significantly since the global financial crisis, from 3.7 percent in 2003-07 to 2.3 percent in 2013-17 (Figure 2.2.1.1). About three-quarters of the decline reflected slowing total factor productivity (TFP) growth, and the remainder due to slowing labor supply growth. The decline in potential growth over the previous decade was steeper among commodity exporters (-1.7 percentage points) than among commodity importers (-0.9 percentage points). Spillovers from severe output contractions from falling commodity prices and geopolitical tensions in large commodity exporters such as Russia and Ukraine weighed on investment and potential growth for commodity exporters. Potential growth in Russia and Poland showed a decline after 2008-09, reflecting weak investment and demographic trends (Narodowy Bank Polski 2017). The exception was Turkey, where potential growth was largely unchanged during 2013-17 due to large numbers of youth entering the labor force.

Total factor productivity growth

Total factor productivity (TFP) growth in the region declined to 0.8 percent in 2013-17, about 0.4 percentage points below the long-term average. The deceleration of TFP growth reflected three factors (Figure 2.2.1.2):

- *Slowing foreign direct investment (FDI) inflows.* Growth in FDI flows to the region slowed to 1 percent per year in 2013-16 from 37 percent in 2005-07 (EBRD 2015). This likely adversely affected TFP growth in light of evidence that FDI has fostered technological transfers and productivity gains in the ECA region as a whole and particularly in Central Europe (Goldberg, Goddard, and Kuriakose 2011; Bijsterbosch and Kolasa 2010; IMF 2016c).
- *Slowing sectoral reallocation.* The reallocation of labor from the agriculture sector to services and industry has been an important source of economy-wide productivity gains over the past two decades (IMF 2016c). However, in the Western part of the region, the shift from agricultural to non-agricultural employment slowed after the global financial crisis.
- *Slowing reform momentum.* Over the past decade, countries in the ECA region have made large strides in improving their business environments, and the relevant indexes in Central and Eastern Europe, the Western, Balkans, and the South Caucasus are approaching the levels in advanced EU countries. However, reform momentum appears to have slowed after EU accession in the mid-2000s for Central Europe. Business climates in Central Asia continue to lag well behind those elsewhere in the region (EBRD 2014).

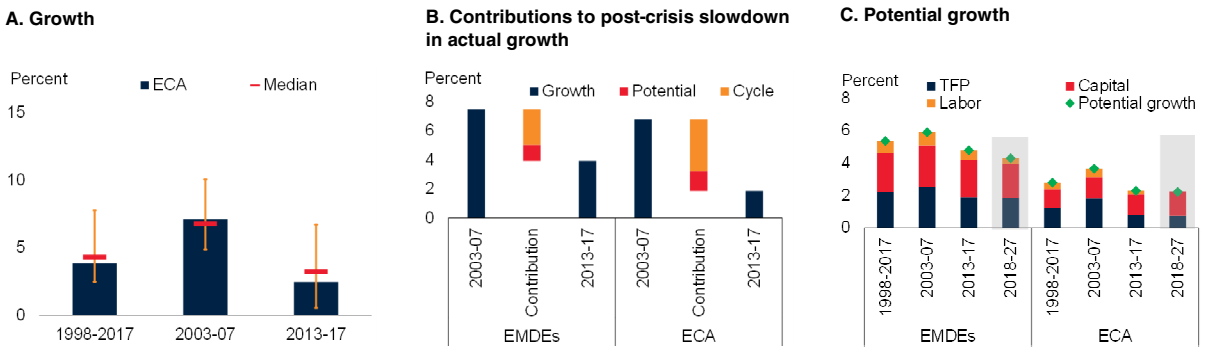
Note: This box was prepared by Yoki Okawa, Sinem Kilic Celik, and Modeste Some. Shituo Sun provided research assistance.

[1] The recent slowdown of potential growth and its implications for long-term growth prospects have been highlighted by EBRD (2014) for the region as a whole, IMF (2016c) for Central and South-Eastern Europe, and by ADB (2016) for Central Asia and the Caucasus.

BOX 2.2.1 Potential growth in Europe and Central Asia *(continued)*

FIGURE 2.2.1.1 Regional growth and drivers of potential growth

The growth slowdown in the region reflects both cyclical and longer-term structural factors. Unfavorable demographic trends, easing productivity growth, and weak investment have weighed on potential growth.



Source: World Bank.
Notes: GDP-weighted averages.
A. Blue bars indicate GDP-weighted average of 24 ECA countries. Vertical lines indicate range of averages for all EMDE regions.
B. C. Based on potential growth estimates using the production function approach (Chapter 3).
C. Shaded areas indicate forecasts.
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Capital accumulation

Post-crisis, investment growth in the ECA region slowed from double-digit rates in 2011 to near-zero in 2015-16. In most Western ECA countries, investment growth has remained well below the EU average, reflecting weak activity in Euro Area trading partners, external borrowing constraints especially during the Euro Area debt crisis, and structural and institutional impediments that slowed productivity growth (World Bank 2017b). Elsewhere in the region, low commodity prices, slowing growth in China, and weak activity in major advanced economies have softened growth prospects and weighed on investment (EBRD 2015). The oil price plunge of 2014-16 also had negative spillovers for investment in the mining sector.

Labor Supply

Working-age population growth, which has long been well below the EMDE average, has turned negative in the ECA region (Figure 2.2.1.3). This demographic shift began in the late 2000s and is attributed to collapsing fertility rates in the 1990s in the aftermath of the collapse of the Soviet Union. Slowing emigration and rising female labor force participation have only partially mitigated the effects of population aging.

- *Immigration to EU.* Although proximity to the EU has encouraged large-scale emigration from ECA countries since 1990, these flows have slowed since the global financial crisis amid weak Euro Area activity. While emigration has helped reduce unemployment and poverty in origin countries (partly by generating large remittance inflows), it has weighed on growth in these countries, especially where high-skilled workers have left (Docquier, Ozden, and Peri 2014; IMF 2016c; Mansoor and Quillin 2006; Hausmann and Nedelkoska 2017). In addition, large remittance inflows have generated currency appreciation pressures and further dampened competitiveness of origin countries (World Bank 2017b; Meyer and Shera 2017).

- *Immigration to Russia.* Linguistic, family, cultural, and economic ties with Russia and neighboring countries created strong migration flows to Russia, especially from Central Asia (World Bank 2017s). This has helped slow the decline in working-age population growth in Russia, but accelerated the slowdown in Central Asia. However, immigration to Russia slowed sharply in the steep recession of 2015-16.

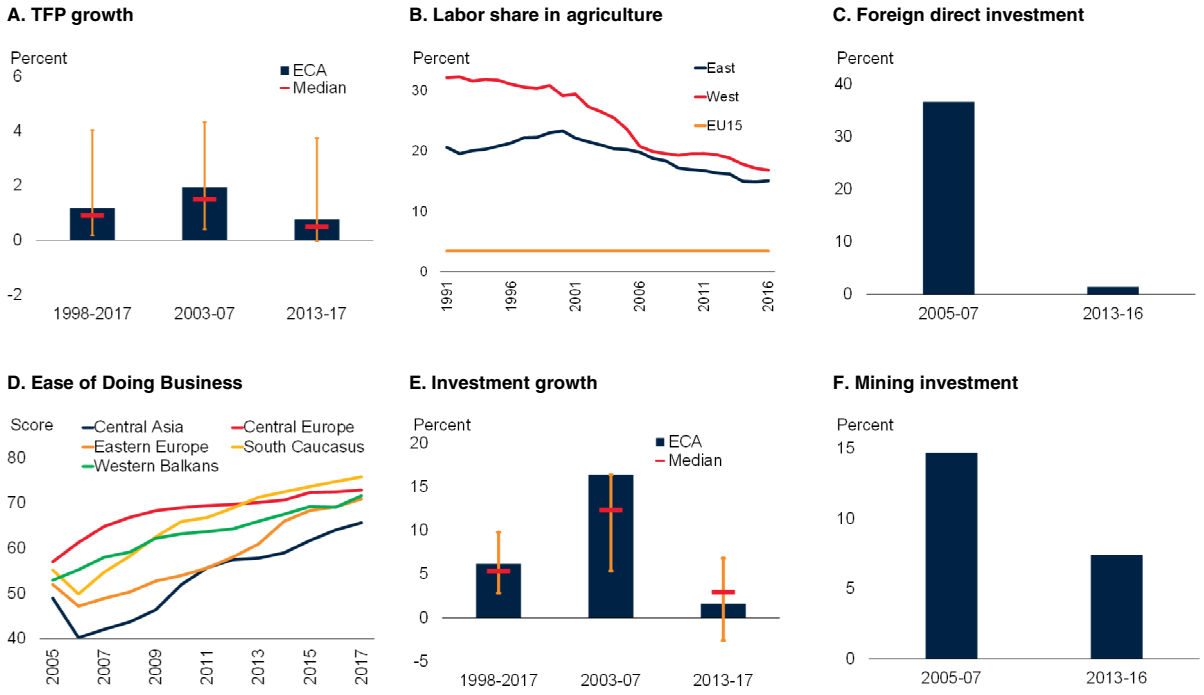
Potential growth prospects

Regional potential growth is expected to remain subdued in 2018-27 at 2.2 percent, slightly down from 2.3 percent in 2013-17 (Figure 2.2.1.4). This reflects a combination of weak productivity growth and unfavorable demographic trends in many countries. Population aging, which leads to

BOX 2.2.1 Potential growth in Europe and Central Asia *(continued)*

FIGURE 2.2.1.2 Factors contributing to the slowdown in productivity

Total factor productivity growth has slowed below its long-term average. In the western part of the region, the reallocation of labor from agriculture to the more productive industry and service sectors slowed, as did FDI inflows. In Central Europe, reform momentum slowed after 2007 as well. Investment growth decelerated sharply following the crisis. Among commodity exporters, a slowdown in the mining sector played a significant role.



Sources: European Bank for Reconstruction and Development, Haver Analytics, International Labor Organization (ILO), Ministry of the National Economy of the Republic of Kazakhstan, Organization for Economic Co-operation and Development, Penn World Tables, Russian Federation Federal State Statistics Service, World Bank.

A. GDP-weighted average of TFP growth from Chapter 3. Blue bars indicate average for 10 ECA countries; vertical lines indicate range of averages for all EMDE regions.

B. Percent of agricultural employment in total employment in each region. "East" includes Armenia, Azerbaijan, Belarus, Georgia, Kazakhstan, the Kyrgyz Republic, Moldova, Russia, Tajikistan, Turkmenistan, Ukraine, and Uzbekistan. "West" include Albania, Bosnia and Herzegovina, Bulgaria, Croatia, Hungary, FYR Macedonia, Poland, Montenegro, Romania, Serbia, and Turkey. "EU15" includes Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, Netherlands, Portugal, Spain, Sweden, and the United Kingdom.

C. Average annual growth in FDI inflows to Belarus, Croatia, Georgia, Hungary, Kazakhstan, FYR Macedonia, Moldova, Poland, Russia, Romania, and Ukraine.

D. Distance to frontier in Doing Business Indicators, with a higher index denoting easier business environments. Central Asia includes Kazakhstan, the Kyrgyz Republic, Tajikistan, and Uzbekistan. Central Europe includes Bulgaria, Croatia, Hungary, and Romania. Eastern Europe includes Belarus, Moldova, Russia, and Ukraine. South Caucasus includes Armenia, Azerbaijan, and Georgia. Western Balkan includes Albania, Bosnia and Herzegovina, Kosovo, FYR Macedonia, Montenegro, Serbia, and Turkey.

E. GDP-weighted average annual growth rates.

F. Average annual growth rates of mining sector investment in Kazakhstan and Russia.

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both a shrinking labor force and a growing share of older workers, will weigh particularly heavily on potential growth in the Eastern part of the ECA region. Increasing share of older workers tends to reduce aggregate labor market participation rate and productivity growth. A notable exception is Turkey, where continued strong growth in the working-age population supports a positive outlook for potential growth.

Among commodity-exporting economies, limited prospects of the substantial recovery in commodity prices could continue to adversely affect investment. In turn, lower investment growth would cap potential growth through slower capital deepening and embodied technological improvements.

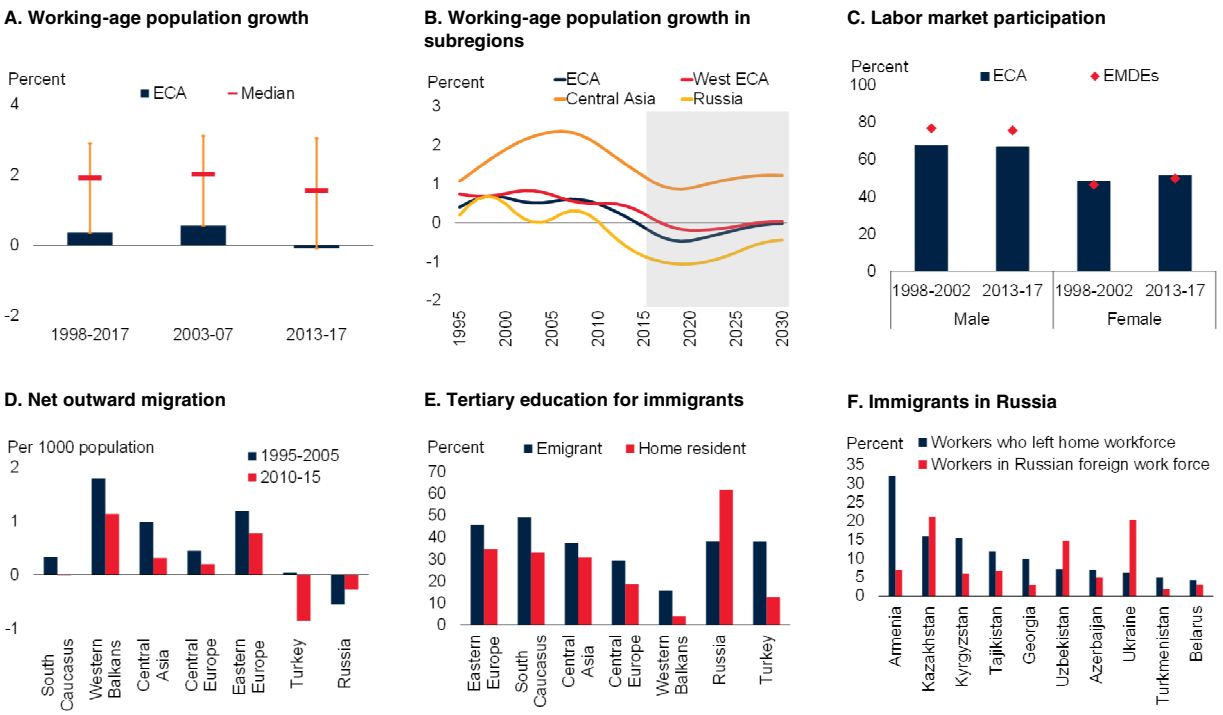
Policy options to lift potential growth

A wide range of policy options is available to help stem the decline in potential growth in the ECA region. A simulation suggests that increasing investment and labor market reforms can reverse the expected slowdown (Figure 2.2.1.5).

BOX 2.2.1 Potential growth in Europe and Central Asia *(continued)*

FIGURE 2.2.1.3 Labor supply

Working-age population growth, which has long been well below the EMDE average, declined across the region in the late 2000s. Rising female labor force participation has only partially mitigated the effects of unfavorable demographic trends and outward migration (except Russia). People who live outside their native country are better educated than those who remain. Russia saw net immigration from neighboring countries.



Sources: International Labor Organization, Organization for Economic Co-operation and Development, Russian Federation Federal State Statistics Service, United Nations, World Bank.

A. GDP-weighted average shares of population aged 15-64 years as a percent of total population.

B. Annual growth rate of total population aged 15-64 aggregated by subregions. ECA includes Albania, Armenia, Azerbaijan, Belarus, Bulgaria, Bosnia and Herzegovina, Georgia, Croatia, Hungary, Kazakhstan, the Kyrgyz Republic, Moldova, FYR Macedonia, Montenegro, Poland, Romania, Russia, Serbia, Tajikistan, Turkmenistan, Turkey, Ukraine, and Uzbekistan. West ECA includes Albania, Bosnia and Herzegovina, Bulgaria, Croatia, Hungary, FYR Macedonia, Montenegro, Poland, Romania, Serbia, and Turkey. Central Asia include Kazakhstan, the Kyrgyz Republic, Tajikistan, Turkmenistan, and Uzbekistan. Shaded areas indicate forecasts.

C. Simple average of 24 ECA countries. EMDE average includes 151 countries.

D. -E. Central Asia includes Kazakhstan, the Kyrgyz Republic, Tajikistan, Turkmenistan, and Uzbekistan. Central Europe includes Bulgaria, Croatia, Hungary, Poland, and Romania. Eastern Europe includes Belarus, Moldova, and Ukraine. South Caucasus includes Armenia, Azerbaijan, and Georgia. Western Balkans includes Albania, Bosnia and Herzegovina, FYR Macedonia, Montenegro, and Serbia.

D. Number of total emigrants per 1,000 population during the sample period. Number is simple average across countries in each sub-region.

E. Percentage of the population above age 24 who completed some tertiary education in 2010 or closet year available. Emigrant is defined as a person who lives outside of their birth country. Numbers are simple averages across birth countries in the sub-region.

F. Number of total immigrant workers who arrived in Russia during 1997-2016 divided by the total labor force of the origin country in 2016. Number of total immigrant workers who arrived in Russia from each country during 1997-2016 divided by total immigrant workers who arrived in Russia during 1997-2016. For Tajikistan, data suggested by the domestic survey may differ from the data used here. For details, see Strokova and Ajwad 2017.

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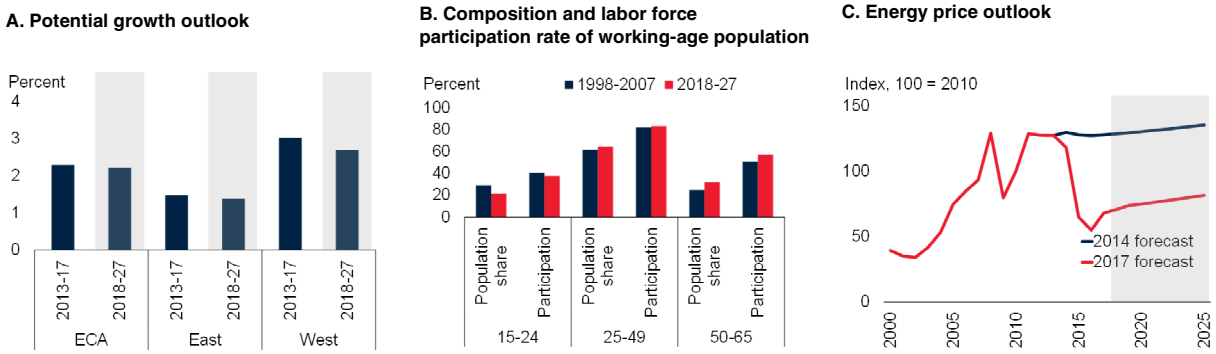
Raise capital accumulation

Increase public investment efficiency. Infrastructure needs are sizable in the ECA region. Investment gaps are estimated to be the equivalent to 1.3 percent of GDP (EBRD 2015). Although there is limited fiscal space available for governments to fill these gaps, there is scope to improve the efficiency of public investment (World Bank 2017p). This could be achieved with more strategic, rigorous, and transparent project selection mechanisms, and by strengthening the institutional capacity to fund, manage, execute, and monitor project implementation. For example, by introducing a rate-of-return criterion for public investment, Azerbaijan has reduced the completion time of key projects by 26 percent (World Bank 2016h).

BOX 2.2.1 Potential growth in Europe and Central Asia *(continued)*

FIGURE 2.2.1.4 Regional potential growth outlook

Regional potential growth is expected to slow marginally to 2.2 percent in 2018-27 from 2.3 percent in 2013-17. The raising share of older workers will result in lower labor participation and could contribute to slower productivity growth. The lower energy price outlook could further weigh on investment and capital accumulation in energy exporters.



Sources: International Labor Organization, World Bank.

A. GDP-weighted averages. East includes 12 countries in Central Asia and Western Balkan. West includes 11 countries in Eastern Europe, South Caucasus, and Central Asia.

A. C. Shaded areas indicate forecasts.

B. Population share refers to the average share of the population of certain age ranges over the total population aged 15-65, weighted by the population of each country. Participation is a simple average of the labor market participation rate.

C. Index of energy prices and outlook published in "Commodity Markets Outlook" (World Bank 2014, 2017q).

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Increase savings. The financing available for private investment could be expanded by raising household savings. In the western part of the region, for example, household savings rates are low by EU standards. Pension reforms, development of the mutual fund industry, and efficiency improvements in pension administration would yield benefits (IMF 2016c; World Bank 2011b).

Expand labor supply

Raise labor force participation. Male labor force participation in ECA lags behind that in other EMDE regions; female labor force participation, while higher than the EMDE average, lags behind that in advanced economies. Female labor force participation is responsive to steps to improve the educational attainment of women and to better access to child care services (Chapter 3). In Western Balkan countries, where multiple barriers and disincentives discourage female labor force participation, increased parental leave, decreased labor taxes, and lower childcare costs could significantly increase female labor force participation rates (World Bank 2016i, 2016j, 2017r; Atoyan and Rahman 2017).

Attract and retain skilled labor. Brain drain is a significant problem in the ECA region, especially in the Western Balkans where rates of emigration among the highly educated are high. Steps to mitigate the loss of skilled workers could pay considerable dividends (IMF 2016c; World Bank 2017s). Several countries have launched initiatives to retain skilled workers or to encourage their return after years of absence. In 2006, Albania implemented a "brain gain" program to promote return migration by offering employment in public administration and improving the work environment in universities and research institutions (Agolli and Gugu 2010). Youth workforce development projects, such as entrepreneurship training programs and provision of micro credits, have created opportunities for skilled young people in the Western Balkans, the South Caucasus, and Central Asia (International Labor Organization 2017; World Bank 2013b).

Increase productivity

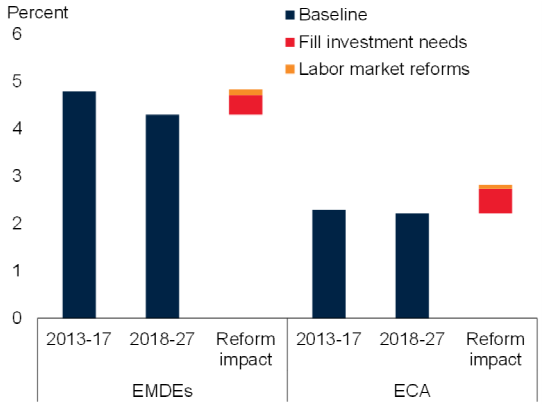
Reform state-owned enterprises. Public firms tend to be less efficient than private firms in ECA (Böwer 2017). While Central European has attained a private sector share of the economy similar to that in advanced economies, the private sectors for the rest of the region account for considerably smaller shares of the economy. Further privatization in these regions presents an opportunity to raise economy-wide productivity, especially if it is accompanied by improved management and corporate governance, open access to world markets, and well-functioning legal and institutional frameworks (Estrin et al. 2009). Short of privatization, there are important

BOX 2.2.1 Potential growth in Europe and Central Asia *(continued)*

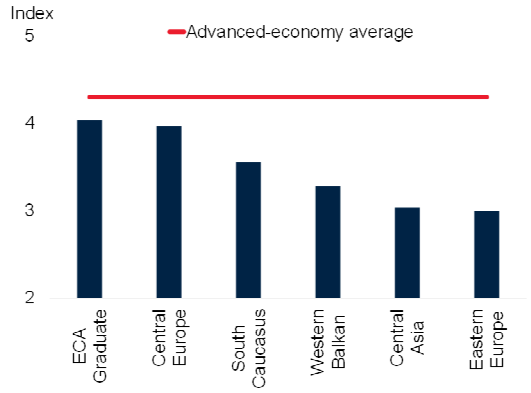
FIGURE 2.2.1.5 Policies to stem declining potential growth

A range of policy options is available to help stem the decline in potential growth in the ECA region, including measures to raise capital and increase labor force participation. Privatization in the ECA region continues to lag behind advanced economies, particularly countries in Eastern Europe.

A. Potential growth under reform scenarios



B. Privatization



Sources: European Bank for Reconstruction and Development, World Bank.
A. GDP-weighted averages. Derived using the methodology described in Chapter 3.
B. Privatization index from EBRD. "ECA graduate" refers to regional economies no longer categorized as "emerging and development economies." These include Estonia, Latvia, Lithuania, Slovak Republic, and Slovenia.
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opportunities to strengthen the governance and therefore the productivity of state-owned enterprises, as illustrated by the efforts being made by Romania and FYR Macedonia.[2]

Make more business-friendly environments. Efforts to improve the business environments in commodity-importing Central European economies to EU15 standards stalled after the global financial crisis (World Bank 2017l; IMF 2016c). International integration or external standards such as the Doing Business Index can anchor reforms. Improvement in local-level transparency and accountability standards can be politically easier than national-level reform and can lead to national-level reform (EBRD 2014).

Integrate into global value chains. Cross-country evidence shows that exporting firms tend to benefit from faster productivity growth, especially through their participation in global value chains (Ruta, Constantinescu, and Mattoo 2017).[3] Over the past two decades, Central European countries have developed a comparative advantage in knowledge-intensive manufacturing, including as part of the German supply chain (Figure 2.2.1.6; IMF 2013). Policies to foster the integration of domestic industry into global supply chains go beyond tariffs and quotas. They include coordination of intellectual property rights protection, competition laws, FDI frameworks, and transportation infrastructure (Baldwin and Lopez-Gonzalez 2015). Moreover, manufacturing productivity can also be improved by lowering barriers to services trade (Beverelli, Fiorini, and Hoekman 2017). For countries in the South Caucasus and Central Asia, the Eurasian Economic Union and China's Belt and Road Initiative present opportunities to adopt a regional approach to building productivity-enhancing value chains (Ustyuzhanina 2016).

[2] In Romania, a number of state-owned enterprises depoliticized and professionalized their boards in 2013-16. Romania also passed a law on state-owned enterprise governance (Law 111/2016), which improved the criteria for the selection and evaluation of state-owned enterprise managers and introduced performance monitoring for others (Capannelli 2017). However the implementation of the law is lagging behind and resistance to change is significant. In FYR Macedonia, institutional and organizational reform combined with capital investment improved the operational effectiveness of the state-owned railway company (World Bank 2012).

[3] In the ECA region, a positive relationship between exports and productivity has been documented for Poland, Romania, and Russia. Cross-country studies in the region also find a positive relationship. (Goldberg, Goddard, and Kuriakose 2011; Gabrielczak and Serwach 2014; Stefanescu and Dumitriu 2014; Krasnopeeva et al. 2016).

BOX 2.2.1 Potential growth in Europe and Central Asia *(concluded)*

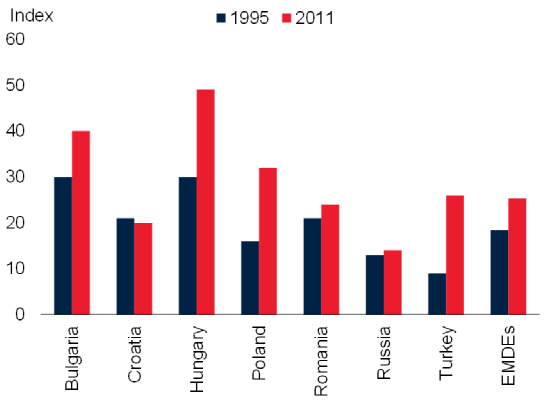
Promote FDI. Inward FDI stands to boost productivity in ECA by accelerating technology absorption. In Serbia, for example, firms with foreign capital have more efficient production technology, better foreign marketing, and more research and development activity than firms that do not have foreign capital. Foreign-owned firms initiated greater plant modernization and automation than domestically-owned firms, raising labor productivity (Goldberg, Goddard, and Kuriakose 2011). Such productivity-enhancing foreign investment can be encouraged by liberalizing FDI and merger and acquisition rules. Moreover, spillovers to domestically-owned firms can be encouraged by building public research and development infrastructure that bridges the gap between foreign entrants and domestic research capacity. In addition, improving domestic human capital by training and high-quality education encourages technological transfer to domestic firms that received FDI (Fu 2008; Teixeira and Fortuna 2010).

Diversify resource-intensive economies. Increasing specialization in global trade raised the share of commodities in exports for commodity-exporting ECA countries (van Eeghen et al. 2014). Reliance on natural resources poses several policy challenges. By concentrating on a few commodities, economies remain vulnerable to negative prices shocks. Even positive price shocks can be disruptive by weakening the competitiveness of other sectors in resource-intensive economies ("Dutch disease"). Strong policy frameworks to manage commodity revenues can promote long-term investment and job creation by reducing cyclical fluctuations and mitigating the adverse effects of Dutch disease. For example, in Russia, new public spending rules based on oil prices should help reduce pressures for procyclical fiscal policy responses to commodity price shocks from 2019 onwards. Moreover, governments in commodity-dependent economies are often slow to promote competition and entrepreneurship, favoring a known revenue stream over that which may develop from non-commodity sectors (van Eeghen et al. 2014). Creating a level playing field by improving the rule of law, reducing corruption, and broadening access to finance can help creating more resilient and balanced growth.

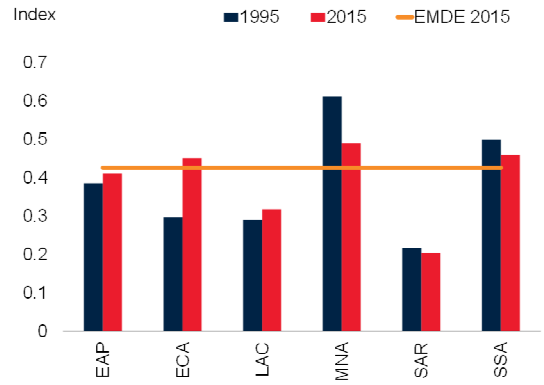
FIGURE 2.2.1.6 Policies for more connected economy

Commodity dependence for ECA countries increased most among EMDE regions, reflecting the increased participation and specialization in global trade. Global value chain integration substantially increased in most of the countries.

A. Global value chain integration



B. Commodity dependence



Sources: Organization for Economic Co-operation and Development, United Nations Conference on Trade and Development (UNCTAD).

A. Backward participation index in global value chains from OECD. It is measured by share of foreign value added content in gross exports.

B. Average trade concentration index for commodity exporters in each region. The trade concentration index is a measure of the degree of product concentration from UNCTAD. An index value closer to 1 indicates higher concentration. EAP = East Asia and Pacific, ECA = Europe and Central Asia, LAC = Latin America and the Caribbean, MNA = Middle East and North Africa, SSA = Sub Saharan Africa, and EMDE = Emerging Market and Developing Economies.

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LATIN AMERICA and THE CARIBBEAN

The region has begun to recover from a two-year contraction, growing by an estimated 0.9 percent in 2017, supported predominantly by private consumption. Growth is expected to accelerate in coming years, reaching 2.7 percent in 2020, as conditions in commodity exporters continue to improve. Several downside risks could derail the recovery, however, including economic spillovers from domestic policy uncertainty, additional disruptions from natural disasters, and negative spillovers from international financial market disruptions or a rise in U.S. trade protectionism.

Recent developments

Growth in Latin America and the Caribbean (LAC) is estimated to have reached 0.9 percent in 2017, the first positive rate since 2014. The recovery was broadly in line with expectations in June 2017, as stronger-than-expected growth in Brazil was offset by a much deeper-than-expected contraction in República Bolivariana de Venezuela and more modest shortfalls in the Caribbean subregion and Peru.

Private consumption was the main contributor to activity in the region in 2017. Investment has been slower to recover in LAC than in other commodity-reliant emerging market and developing economy (EMDE) regions, where investment growth picked up in 2017 after years of weakness. Notably, fixed investment is estimated to have contracted for four consecutive years through 2017 in Brazil and Peru (Figure 2.3.1). Investment also fell in Mexico in 2017, likely reflecting uncertainty with respect to the U.S. commitment to the North American Free Trade Agreement (NAFTA) and possible domestic policy shifts following the 2018 presidential elections. Political and policy uncertainty is viewed to have weighed on investment in several countries (e.g., Brazil, Venezuela; World Bank 2017p). The extended slump in commodity prices has also required cuts in public investment in commodity-exporting economies in response to weaker government revenues.

In South America, a cyclical recovery is underway in Brazil following a deep, two-year-long recession. Brazil's economy is estimated to have expanded by 1.0 percent in 2017. Retail trade and industrial production growth have picked up, despite a continued contraction in the construction sector, while consumer confidence was stable in 2017 and labor market conditions began to improve. Growth in Argentina recovered in 2017 from a recession in 2016, driven by a strong rebound in investment, particularly public investment, and rising private consumption, supported by higher real wages. However, in a number of commodity-reliant economies, weak or contracting production in the extractive industries held back growth, reflecting subdued oil prices and oil field maturation (e.g., Colombia), labor strikes (e.g., Chile), policy uncertainty (e.g., Chile, Peru), and major floods early in the year (e.g., Peru).

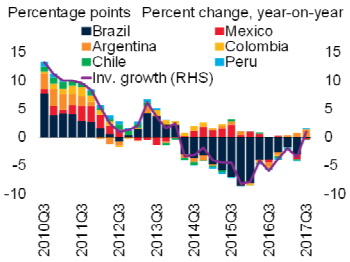
Growth in Mexico in 2017 is estimated to have been 1.9 percent, slightly stronger than expected in June, despite the effects of two powerful earthquakes in September. Activity was supported primarily by private consumption, which was resilient in light of a healthy labor market and rising remittances, offsetting weak investment. Net exports are estimated to also have contributed positively to growth. The rise in remittances

Note: This section was prepared by Dana Vorisek. Shituo Sun provided research assistance.

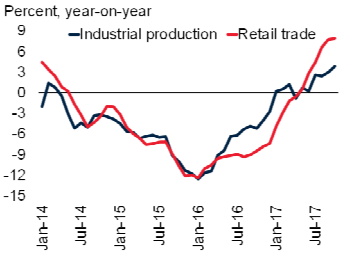
FIGURE 2.3.1 LAC: Recent developments

Legacies of a two-year recession in LAC are fading. Investment started to recover. Consumer confidence improved in the largest economies in 2017, despite policy uncertainty in Brazil and Mexico. Remittance inflows to Mexico and several Central American countries continued to rise in 2017, perhaps reflecting fears of changes in U.S. immigration policy. Inflation eased in most countries in the region and has been accompanied by broadly accommodative monetary policy. Output gaps are nearly closed in most countries.

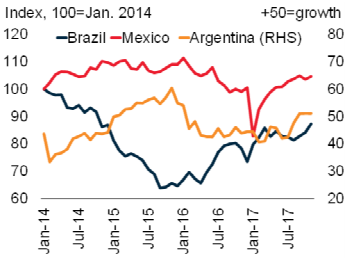
A. Regional investment growth



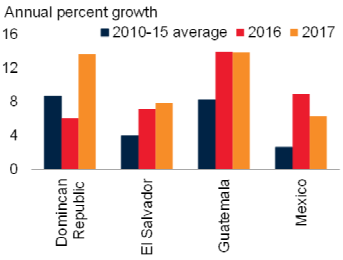
B. Industrial production and retail trade, Brazil



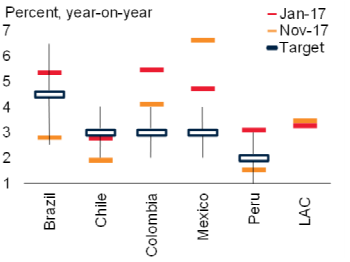
C. Consumer confidence



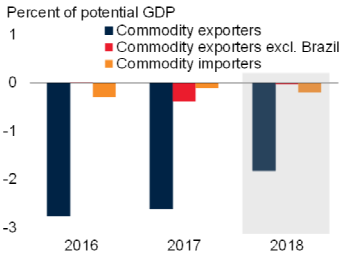
D. Remittance inflows



E. Consumer price inflation



F. Output gaps



Sources: Haver Analytics, World Bank.

A. Line shows GDP-weighted average of gross fixed capital formation growth in Argentina, Brazil, Chile, Colombia, Mexico, and Peru using non-seasonally-adjusted data. Bars show contribution of each of the six economies to regional investment growth. The six economies represent 85 percent of regional GDP.

B. Lines show 3-month moving averages using non-seasonally-adjusted data. Last observation is October 2017.

C. Data for Brazil and Mexico are seasonally adjusted. Last observation is November 2017.

D. Last observation is November 2017 for Guatemala, October 2017 for El Salvador and Mexico, and September 2017 for the Dominican Republic. Annual growth rates for 2017 are estimates based on available data.

E. Blue boxes show central inflation targets; vertical lines show target bands. LAC shows median inflation in Argentina, Belize, Bolivia, Brazil, Chile, Colombia, Costa Rica, Dominican Republic, Ecuador, Guatemala, Honduras, Jamaica, Mexico, Nicaragua, Panama, Paraguay, Peru, Trinidad and Tobago, and Uruguay.

F. Output gaps estimated using multivariate filter. Bars show GDP-weighted averages of individual country output gap estimates using, as weights, real GDP at 2010 prices and market exchange rates. Economies include Argentina, Bolivia, Brazil, Chile, Colombia, Mexico, and Peru.

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during 2017 to Mexico and several Central American countries has been at least partly ascribed to precautionary flows in anticipation of possible changes in U.S. immigration policy, and so may not be sustained (World Bank 2017t).

Natural disasters had a massive impact on the Caribbean in the second half of 2017, destroying infrastructure and lowering growth prospects. Hurricanes Irma and Maria devastated Dominica, and Antigua and Barbuda (in particular, Barbuda), and caused severe damage in the British Virgin Islands, the Dominican Republic, Guadeloupe, St. Kitts and Nevis, Turks and Caicos, the U.S. territories of Puerto Rico and the Virgin Islands.

Inflation in the region was low in 2017 and trended downward in most major economies, underpinned by prior exchange rate appreciations and, in Brazil, food price deflation. Inflation is now below or at the lower bound of target ranges in a number of countries (e.g., Brazil, Chile, Paraguay). The central bank of Brazil announced in June that its target band would be lowered in 2019, while historically low levels of inflation in Honduras caused the central bank to lower its target band in the same month. A key exception was Mexico, where inflation rose for on a reduction of fuel subsidies early in the year and increasing agricultural prices later in the year. With aggregate output gaps in most of the region nearly closed (an exception is Brazil, where the negative gap is still large), the monetary policy stance may become more neutral, following easing across the region in 2017. The major exception is Venezuela, which continues to experience extremely high inflation and severe policy imbalances.

With benign external financing conditions extending through the second half of 2017, capital inflows to LAC are estimated to have risen in 2017. After easing in the second half of the year in most large economies in the region, especially in Argentina, sovereign bond spreads were at or below the average since 2010.

Fiscal conditions in the region reflect the impact of previous policy decisions and trends in commodity prices in recent years. In commodity exporters, especially oil exporters, fiscal

sustainability has deteriorated sharply due to falling commodity prices and, in many cases, inadequate policy responses, leaving considerable scope for growth-enhancing fiscal reforms (as discussed in the EMDE fiscal policy section of Chapter 1 and Special Focus 1). Fiscal deficits also reflect procyclical public spending in the leadup to the commodity price downturn several years ago (Végh, Lederman, and Bennett 2017).

Although the median government debt burden as a share of GDP in the South America and Mexico and Central America subregions is similar to that in other EMDEs, government debt levels have risen since the financial crisis. Government debt has increased markedly in several large economies (e.g., Argentina, Brazil, Colombia, Mexico), although in all of these cases except Brazil the debt-to-GDP ratio is estimated to have fallen in 2017. Government debt is particularly high in the Caribbean region: above 60 percent as of 2017 in 11 of 15 countries, and 90 percent or above in three countries. The buildup reflects years of fiscal slippage following post-natural-disaster reconstruction, assumption of new debt to service existing debt, and the assumption of previously unrecognized contingent liabilities, notwithstanding restructuring and fiscal consolidation that have reduced debt loads in several countries (e.g., Grenada, Jamaica, and St. Kitts and Nevis; Rustomjee 2017).

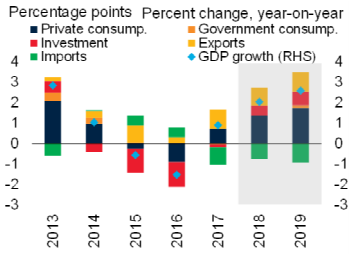
Outlook

Regional growth is projected to gather momentum, rising to 2.0 percent in 2018 and 2.6 percent in 2019 (Figure 2.3.2, Tables 2.3.1 and 2.3.2). With the external drivers of growth for the region expected to be decreasingly supportive—the large gains in some commodity prices in 2016 are not envisaged to continue, while growth in the United States and China is projected to decelerate in 2019 and 2020—the region will need to rely on domestic sources of growth more than in the past (Végh et al. 2017). Indeed, the baseline outlook of accelerating regional growth is supported by strengthening private consumption and investment, particularly in commodity-exporting countries in the region. Domestic demand is expected to respond to strengthening

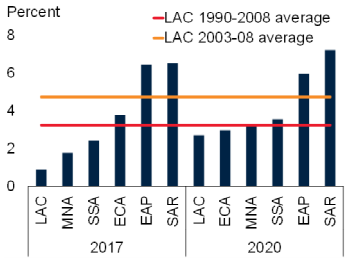
FIGURE 2.3.2 LAC: Outlook and risks

Growth in Latin American and the Caribbean is expected to accelerate, driven by private consumption and, to a lesser degree, investment. Despite the steady recovery, growth in the region is expected to continue to be weaker than both historical averages for the region and growth in all other EMDE regions. Fiscal sustainability has deteriorated in commodity exporters in the region, particularly oil-exporting countries, and government debt, already at high levels in the Caribbean, may expand in the aftermath of the natural disasters. Together with fiscal vulnerabilities, domestic policy uncertainty and natural disasters could undermine regional growth.

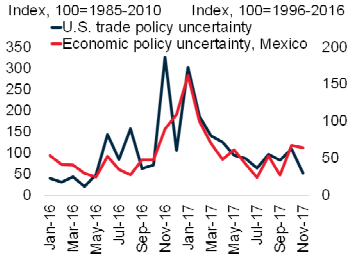
A. Regional growth



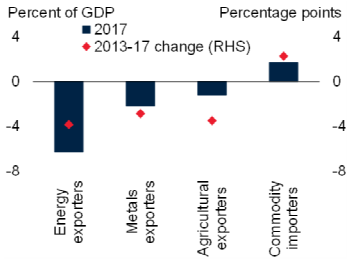
B. Growth compared to other regions and historical levels



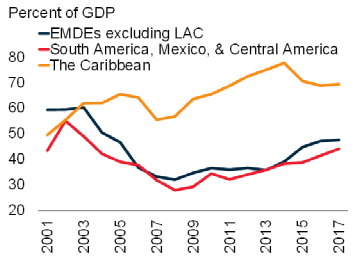
C. Economic and trade policy uncertainty



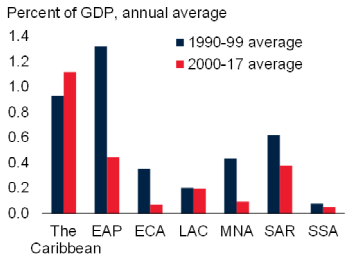
D. Fiscal sustainability gap in LAC



E. Gross government debt



F. Damage from natural disasters



Sources: Baker, Bloom, and Davis (2015); Centre for Research on the Epidemiology of Disasters; Haver Analytics; International Monetary Fund; national statistical agencies, World Bank.

A. Bars show contribution of each of the selected components of GDP to regional growth.

A. B. GDP-weighted averages.

B. F. EAP = East Asia and Pacific, ECA = Europe and Central Asia, MNA = Middle East and North Africa, SAR = South Asia, and SSA = Sub-Saharan Africa.

C. Policy uncertainty indexes are constructed using the methodology in Baker, Bloom, and Davis (2015) and are based on the frequency of relevant articles in domestic newspapers.

D. GDP-weighted averages. Sustainability gap is measured as the difference between the primary balance and the debt-stabilizing primary balance, assuming historical median (1990–2016) interest rates and growth rates. A negative gap indicates that government debt is on a rising trajectory; a positive gap indicates government debt is on a falling trajectory. Energy exporters include Bolivia, Colombia, Ecuador, Trinidad and Tobago, and Venezuela; metals exporters include Chile and Peru; agricultural exporters include Argentina, Belize, Brazil, Costa Rica, Guatemala, Honduras, Paraguay, and Uruguay; and commodity importers include the Dominican Republic, El Salvador, Jamaica, Mexico, and Panama.

E. Lines show medians of respective country groups. Country groups are as given in notes below Table 2.3.1.

F. Simple average during year spans of aggregate regional damages per year.

Click here to download data and charts.

confidence, relatively low inflation and still supportive, if somewhat tighter, global financing conditions.

In Brazil, the recovery is expected to solidify in 2018, with growth reaching 2 percent, as improving labor market conditions and low inflation support private consumption, the residual effects of the deep recession fade, and policy conditions become more supportive of investment.

Investment is also envisaged to be a key driver of accelerating growth in several other South American economies during the forecast period, supported by a push to upgrade infrastructure in Argentina, recovery efforts in Peru following major floods in early 2017, and construction of a third paper pulp mill and transportation upgrades in Uruguay. Growth in Colombia is expected to pick up through the forecast period as moderating inflation supports private consumption, export growth recovers on rising oil prices, the 4G road infrastructure program is executed, and structural reforms to enhance competitiveness and foster diversification are implemented. In Chile, rising disposable incomes and mining exports, together with supportive financial conditions, are expected to support faster private consumption and investment growth in 2018, underpinned by a sharp rise in copper prices in the second half of 2017.

Growth in Mexico is forecast to be moderately higher in 2019 and 2020, at 2.6 percent, as investment picks up following the fading of uncertainty related to the renegotiation of NAFTA and the outcome of July presidential elections. Growth in Central America is projected to remain stable, at 3.8–3.9 percent.

In the Caribbean, post-hurricane reconstruction is expected to support a recovery in growth to 3.5 percent in 2018 and 2019, from an estimated 2.3 percent in 2017. The vital importance of tourism to Caribbean economies underscores the need to target infrastructure and services that support this industry as part of reconstruction.

Despite the projected growth acceleration in LAC, regional growth is expected to continue to be lower than the historical (1990–2008) average for the region. Furthermore, a slowdown in potential growth in commodity exporters in the region raises questions about the sustainability of an expected regional recovery driven by accelerating activity in these economies. Weak productivity growth in the region has long held back potential growth (Box 2.3.1).

Risks

The regional growth outlook continues to be subject to considerable downside risks. A further rise in policy uncertainty, additional disruptions from natural disasters, negative spillovers from international financial market disruptions or a rise in U.S. trade protectionism, and further deterioration in fiscal conditions could all knock the regional growth trajectory off course.

Persistent domestic policy uncertainty (e.g., Brazil, Guatemala, Peru) and poor economic policy management (e.g., Venezuela) may negatively impact confidence and growth in some countries. Policy uncertainty stemming from forthcoming legislative and presidential elections in a number of economies in 2018 is a short-term downside risk for growth in a number of large (e.g., Brazil, Colombia, Mexico) and small (e.g., Costa Rica, El Salvador, Paraguay) economies.

Natural disasters—including drought, earthquakes, floods, hurricanes, and wildfires—have had a significant impact on activity in the LAC region, especially in the Caribbean, suggesting the risk that these shocks could become more commonplace in the medium term if climate conditions remain adverse (Acevedo 2016).

Further risks stem from international trade and finance channels. Notably, a contentious or prolonged completion of NAFTA renegotiations—or, in an extreme case, the collapse of the agreement—could derail growth in Mexico in the medium term through decreased trade. A disorderly adjustment of long-term interest rates in major advanced economies or a downturn in global foreign direct investment flows would weigh on fixed investment and growth in the region. A sharp tightening of financing conditions,

stemming from faster-than-expected interest rate hikes in advanced economies or significant appreciation of the U.S. dollar, in which much of LAC's debt is still denominated, would increase debt service costs in the region and potentially require tightening of fiscal policies in the context of already-constrained fiscal space.

The Caribbean faces not only the challenge of reducing government debt from high levels, but, in several countries, the need to accommodate post-hurricane reconstruction costs even as government revenues fall due to the disruption of economic activity. For Brazil, an improvement in fiscal sustainability depends on pension reform.

For Mexico and Central America, an envisaged slowing of potential growth in advanced economies represents a downside risk for growth in the medium and long term (Chapter 3).

TABLE 2.3.1 Latin America and the Caribbean forecast summary

(Real GDP growth at market prices in percent, unless indicated otherwise)

	2015	2016	2017e	2018f	2019f	2020f	Percentage point differences from June 2017 projections: 2017e	2018f	2019f
EMDE LAC, GDP[1]	**-0.6**	**-1.5**	**0.9**	**2.0**	**2.6**	**2.7**	**0.1**	**-0.1**	**0.1**
(Average including countries with full national accounts and balance of payments data only)[2]									
EMDE LAC, GDP[2]	-0.6	-1.5	0.9	2.0	2.6	2.7	0.1	-0.1	0.1
GDP per capita (U.S. dollars)	-1.7	-2.6	-0.1	1.0	1.6	1.7	0.1	-0.1	0.1
PPP GDP	0.0	-0.9	1.2	2.2	2.7	2.8	0.1	0.0	0.1
Private consumption	-0.4	-1.4	1.1	2.1	2.7	2.9	0.3	0.0	0.0
Public consumption	0.3	0.1	-0.2	0.0	0.9	0.7	-0.7	-0.9	0.0
Fixed investment	-5.7	-6.1	-0.8	2.6	3.6	3.7	-0.2	0.3	0.3
Exports, GNFS[3]	4.0	1.4	4.1	3.9	4.0	3.8	-0.1	0.7	0.8
Imports, GNFS[3]	-2.3	-2.2	4.0	3.5	4.2	4.0	1.1	0.9	0.8
Net exports, contribution to growth	1.3	0.8	0.1	0.1	0.0	0.0	-0.2	-0.1	0.0
Memo items: GDP									
South America[4]	-2.0	-3.2	0.4	1.9	2.5	2.7	0.1	0.0	0.2
Mexico and Central America[5]	3.4	3.0	2.2	2.4	2.8	2.7	0.1	0.0	0.1
Caribbean[6]	3.4	2.7	2.3	3.5	3.5	3.4	-1.0	-0.3	-0.2
Brazil	-3.5	-3.5	1.0	2.0	2.3	2.5	0.7	0.2	0.2
Mexico[7]	3.3	2.9	1.9	2.1	2.6	2.6	0.1	-0.1	0.1
Argentina	2.6	-2.2	2.7	3.0	3.0	3.2	0.0	-0.2	-0.2

Source: World Bank.
Notes: e = estimate; f = forecast. EMDE = emerging market and developing economy. World Bank forecasts are frequently updated based on new information and changing (global) circumstances. Consequently, projections presented here may differ from those contained in other Bank documents, even if basic assessments of countries' prospects do not differ at any given moment in time.
1. GDP at market prices and expenditure components are measured in constant 2010 U.S. dollars. Excludes Cuba.
2. Aggregate includes all countries in notes 4, 5, and 6 except Grenada, St. Kitts and Nevis, and Suriname, for which data limitations prevent the forecasting of GDP components.
3. Exports and imports of goods and non-factor services (GNFS).
4. Includes Argentina, Bolivia, Brazil, Chile, Colombia, Ecuador, Paraguay, Peru, Uruguay, and Venezuela.
5. Includes Costa Rica, El Salvador, Guatemala, Honduras, Mexico, Nicaragua, and Panama.
6. Includes Antigua and Barbuda, The Bahamas, Barbados, Belize, Dominica, Dominican Republic, Grenada, Guyana, Haiti, Jamaica, St. Kitts and Nevis, St. Lucia, St. Vincent and the Grenadines, Suriname, and Trinidad and Tobago.
7. Recent statistical changes in the measurement of Mexico's GDP, including a change rebasing from 2008 to 2013, has resulted in significant changes to historical growth rates compared to June 2017.
For additional information, please see www.worldbank.org/gep.

TABLE 2.3.2 Latin America and the Caribbean country forecasts[1]

(Real GDP growth at market prices in percent, unless indicated otherwise)

	2015	2016	2017e	2018f	2019f	2020f	Percentage point differences from June 2017 projections: 2017e	2018f	2019f
Argentina	2.6	-2.2	2.7	3.0	3.0	3.2	0.0	-0.2	-0.2
Belize	2.9	-0.8	0.8	2.2	1.7	1.7	-1.3	0.2	-0.3
Bolivia	4.9	4.3	3.9	3.8	3.4	3.3	0.2	0.1	0.0
Brazil	-3.5	-3.5	1.0	2.0	2.3	2.5	0.7	0.2	0.2
Chile	2.3	1.6	1.7	2.4	2.7	2.8	-0.1	0.4	0.4
Colombia	3.1	2.0	1.8	2.9	3.4	3.4	-0.2	-0.2	0.0
Costa Rica	4.7	4.3	3.9	3.6	3.5	3.5	0.1	0.0	0.0
Dominican Republic	7.0	6.6	4.5	4.9	4.7	4.7	-0.8	-0.1	-0.1
Ecuador	0.2	-1.5	1.4	0.8	0.9	1.0	2.7	1.2	0.6
El Salvador	2.3	2.4	2.1	1.8	1.8	1.9	0.1	0.0	0.1
Grenada	6.2	3.9	2.4	2.2	2.1	2.1	-0.8	-0.6	-0.6
Guatemala	4.1	3.1	3.2	3.4	3.5	3.5	-0.3	-0.1	-0.1
Guyana	3.1	3.4	2.9	3.8	3.7	3.7	-0.6	0.2	0.0
Haiti[2]	1.2	1.4	1.1	2.2	2.5	2.5	0.6	0.5	0.2
Honduras	3.6	3.6	4.1	3.6	3.5	3.5	0.7	0.3	0.2
Jamaica	0.9	1.4	1.4	1.8	2.0	2.0	-0.6	-0.3	-0.3
Mexico[3]	3.3	2.9	1.9	2.1	2.6	2.6	0.1	-0.1	0.1
Nicaragua	4.9	4.7	4.5	4.4	4.4	4.4	0.2	0.2	0.2
Panama	5.8	4.9	5.5	5.6	5.6	5.7	0.3	0.2	-0.2
Paraguay	3.0	4.0	3.8	4.0	4.0	4.0	0.2	0.2	0.2
Peru	3.3	4.0	2.6	3.8	3.8	4.0	-0.2	0.0	0.2
St. Lucia	2.0	0.9	2.0	2.2	1.8	1.8	1.5	1.5	1.1
St. Vincent and the Grenadines	1.4	1.9	2.5	2.7	2.8	2.8	0.0	-0.1	-0.1
Suriname	-2.7	-5.1	0.0	2.2	1.2	1.2	-0.9	0.0	0.0
Trinidad and Tobago	-0.6	-5.4	-3.2	1.9	2.2	1.6	-3.5	-1.5	-1.1
Uruguay	0.4	1.5	2.5	2.8	3.2	3.2	0.9	0.4	-0.2
Venezuela, RB	-8.2	-16.1	-11.9	-4.2	0.6	0.9	-4.2	-3.0	-0.1

Source: World Bank.

Notes: e = estimate; f = forecast. World Bank forecasts are frequently updated based on new information and changing (global) circumstances. Consequently, projections presented here may differ from those contained in other Bank documents, even if basic assessments of countries' prospects do not differ at any given moment in time.

1. GDP at market prices and expenditure components are measured in constant 2010 U.S. dollars.

2. GDP is based on fiscal year, which runs from October to September of next year.

3. Recent statistical changes in the measurement of Mexico's GDP, including a change rebasing from 2008 to 2013, has resulted in significant changes to historical growth rates compared to June 2017.

For additional information, please see www.worldbank.org/gep.

BOX 2.3.1 Potential growth in Latin America and the Caribbean

A sharp growth slowdown in Latin America and the Caribbean during the past five years has been accompanied by weak and slightly decelerating potential growth, in turn reflecting slowing productivity and less supportive demographic conditions. Trends in the underlying drivers of potential growth suggest that the modest slowdown in potential growth in LAC will persist during the next decade. This outlook underscores the necessity of policy actions that lift physical and human capital and improve productivity.

Introduction

Growth slowed sharply in Latin America and the Caribbean (LAC) in recent years, falling from a most recent high of 6 percent in 2010 to -1.5 percent in 2016, in response to the precipitous drop in global commodity prices and domestic challenges in some of the region's largest economies. Although the slowdown, which began to fade in 2017, appears to have been almost entirely due to cyclical factors, there are worrisome signs that underlying potential growth has also fallen in recent years compared to the long-term (1998–2017) and pre-crisis (2003–07) averages.

This slowdown in LAC's potential growth rate raises questions about the sustainability of the expected regional growth recovery, and doubts about the region's ability to deliver sustained progress on economic well-being and per capita income convergence with advanced economies. In light of the important policy implications of the slowdown in potential growth, this box addresses the following questions:

- How has potential growth evolved in the region and what were its main drivers?
- What are prospects for potential growth?
- What are the policy options to lift potential growth?

The box finds that the recent slowdown in potential growth in LAC was due to weakening productivity growth and less favorable demographic conditions, which hit South America the hardest. More worryingly, it concludes that adverse trends are likely to cause a further slowdown in the coming decade. Reforms to boost investment and female labor force participation and to improve education and health outcomes could help offset the expected deceleration in potential growth, but productivity-enhancing reforms may be the most effective policy approach given the longstanding weakness of total factor productivity (TFP) in the region.

Evolution of potential growth and its drivers

During 2013–17, potential growth in LAC is estimated to have averaged only around 2.7 percent, slightly less than the long-term (1998–2017) average of 2.9 percent and further below the pre-crisis (2003–07) average of 3.1 percent (Figure 2.3.1.1; Chapter 3).[1] The recent deceleration, which is robust to the choice of measure, reflects a shrinking contribution of both TFP and labor supply to potential growth, rather than a shortfall in capital accumulation.

Total factor productivity growth. Potential TFP growth in LAC, which has long been below that in other emerging market and developing economy (EMDE) regions, has steadily slowed since last peaking in 2007 due to a combination of temporary and long-term factors. Weak investment during the past five years, as commodity-exporting economies struggled to adapt to falling commodity prices, held back the absorption of productivity-enhancing new technologies (OECD 2016b). Worsening terms of trade, a consequence of the downturn in commodity prices during most of 2013–17, may have also dampened TFP growth in commodity exporters in the region, by slowing the pace of technology adoption and reducing spending on research and development (Aslam et al. 2016). This hypothesis is supported by evidence that the positive terms-of-trade shock during 2001–07 explained more than one-quarter of the average growth rate of TFP in Mexico, Chile, and Peru (Castillo and Rojas 2014).

Education- and skills shortcomings have had a long-term dampening effect on productivity growth in LAC. Although school enrollment and completion rates have steadily risen in recent decades, completion rates, particularly at the tertiary level, remain poor (OECD/ECLAC/CAF 2016). Moreover, the low quality of primary and secondary education in the region relative to international standards and to countries with similar levels of per-capita income hinders productivity gains from increased access to education (OECD 2015; OECD/

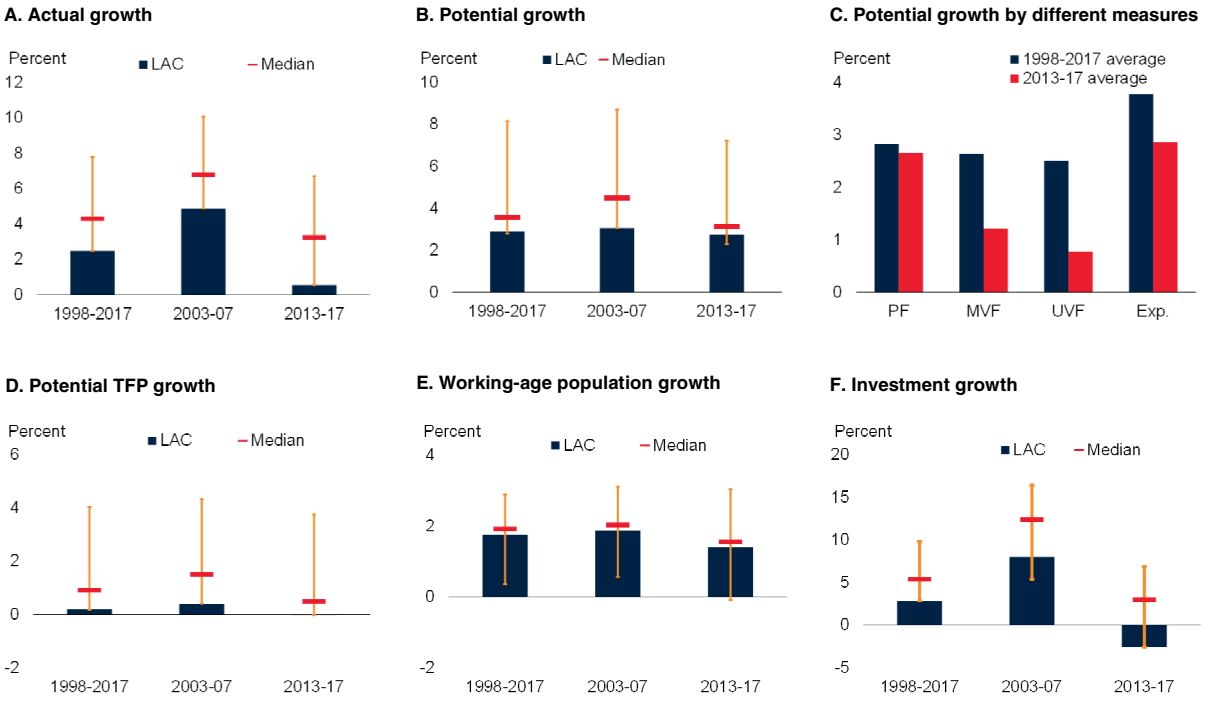
Note: This box was prepared by Dana Vorisek. Shituo Sun provided research assistance.

[1] Details on the production function approach to estimating potential growth are provided in Annex 3.1.

BOX 2.3.1 Potential growth in Latin America and the Caribbean *(continued)*

FIGURE 2.3.1.1 Regional growth and drivers of potential growth

Growth in LAC during 2013–17 was sharply lower than in the pre-crisis (2003–07) period or the long term (1998–2017). The growth slowdown was accompanied by weak and slightly decelerating potential growth, reflecting decreasingly favorable trends in its fundamental drivers.



Sources: Haver Analytics, national statistical agencies, Penn World Tables, UN Population Prospects, World Bank.

A. B. D.-F. Blue bars show simple averages during year spans of annual GDP-weighted averages of LAC countries. Red markers show median GDP-weighted averages of the six EMDE regions and vertical lines denote range of regional GDP-weighted averages.

B. Potential growth is measured using the production function approach. GDP-weighted averages for a sample of 15 LAC economies and 49 EMDE economies.

C. Bars reflect estimates based on different potential growth measures. "PF" stands for potential growth estimates using the production function approach, "MVF" stands for those derived using the multivariate filter, "UVF" for those derived using the Hodrick-Prescott filter, and "Exp." for those based on 5-year-ahead IMF *World Economic Outlook* forecasts. Details on the production function approach to estimating potential growth are provided in Annex 3.1; details on statistical filter approaches are provided in Annex 3.2. Sample includes a consistent set of five economies: Argentina, Brazil, Chile, Mexico, and Peru.

Click here to download data and charts.

ECLAC/CAF 2016). Weak productivity growth in LAC also reflects still-stringent labor and product market regulations and a high level of informality (IDB 2013).

Numerous studies have documented that weak TFP growth has been the principal factor explaining low potential growth in the region (Loayza, Fajnzylber, and Calderón 2005; IMF 2017f) and in individual countries.[2] During the nearly half-century leading up to the financial crisis, low TFP growth, rather than weak capital or labor accumulation, has been the main reason for a widening income gap between most LAC countries and the United States (Daude and Fernández-Arias 2010).

Labor supply. Although the working-age share of the population in LAC continues to expand marginally, the rate of working-age population growth was slower during the past five years than during the pre-crisis years or the long term. On the other hand, female labor force participation in LAC has risen rapidly relative to other EMDE regions, from an average of 47 percent in 1998–2002 to 53 percent in 2013–17. Over the long term (1998–2017), the rise in female labor force participation contributed 0.3 percentage point to potential growth in LAC.

Physical capital accumulation. Fixed capital investment contracted each year between 2014 and 2017 in LAC and, in particular, South America. The deterioration in terms of trade was a key factor underlying the investment decline,

[2] See, for instance, Faal (2005) on Mexico, and Ollivaud, Guillemette, and Turner (2016) on Chile.

BOX 2.3.1 Potential growth in Latin America and the Caribbean *(continued)*

but policy uncertainty and bouts of tightening of financial conditions have also been important (IMF 2015, 2016d; World Bank 2016b, 2017p). These factors were compounded in some commodity-exporting countries by the impact of low global commodity prices on fiscal revenues, which led to cuts in public capital expenditures.

Comparison to other EMDE regions. Decreasingly favorable trends in the main drivers have resulted in potential growth in LAC lagging that of most other EMDE regions in the past five years (Figure 2.3.1.2). Similar to other commodity-reliant regions, such as the Middle East and North Africa and Sub-Saharan Africa (SSA), productivity in LAC contributes very little to potential growth, and in the most recent five years has contributed almost nothing. At the same time, labor has begun contributing less to potential growth in LAC as working-age population growth has decelerated, albeit much less strongly than in East Asia and Pacific (EAP) and in Europe and Central Asia (ECA). Like in other EMDE regions where large post-crisis investment stimulus was implemented, such as in SSA and ECA, capital accumulation still contributed more to potential growth in LAC in 2013–17 than during previous periods.

Subregional patterns. The recent slowdown of potential growth in LAC was predominantly due to the South America subregion—by far the largest of the three subregions in economic size, and where half of the countries experienced a slowdown. Potential growth in Mexico and Central America has been comparatively stable over the past two decades. Although the contribution of TFP to potential growth in Mexico and Central America remains low relative to that in other EMDE regions, and was slightly negative in 2013–17, this LAC subregion avoided the slowdown in potential TFP growth that lowered potential growth in South America, commodity-exporting EMDEs, and EMDEs as a whole. TFP made a notably higher contribution to potential growth in the Caribbean than in other LAC subregions.

Potential growth prospects

In the years ahead, potential growth in LAC appears set to continue to decelerate modestly. Demographic trends will continue to become less favorable. Investment growth is expected to recover but not rapidly and not to the stimulus-fueled rates of the early 2010s. Thus, without significant policy changes or a major productivity breakthrough, potential growth in LAC is expected to continue to weaken, to an average of 2.4 percent in the coming decade, approximately 0.4 percentage point below the rate achieved in the past five years (Figure 2.3.1.3).

The deceleration of potential growth in 2018–27 would result from weaker capital accumulation and labor force growth, which would shave off slightly less than 0.3 and 0.2 percentage point, respectively, of the 2.7 percent potential growth in 2013–17, while TFP contributes slightly more positively. The contribution of labor to potential growth will be constrained not only by a working-age population share that is expected to peak around 2020, but also by limited capacity for an additional increase in region-wide female labor force participation given already relatively high rates compared to other EMDE regions (Sosa, Tsounta, and Kim 2013). While investment growth is projected to recover from the recent period of weakness, it is not expected to return to the rates observed prior to the oil price plunge in mid-2014, partly due to a recent rise in policy uncertainty.

Despite the continued weakness in potential growth in LAC, a more supportive demographic profile relative to most other regions will help LAC avoid a large slowdown of the sort in store for EAP. The prospect of decelerating potential growth in South America raises concerns about the sustainability of an expected recovery in actual growth in LAC driven by accelerating activity in the South America subregion, and suggests that per capita income convergence with advanced economies will be further delayed.

Policy options to lift potential growth

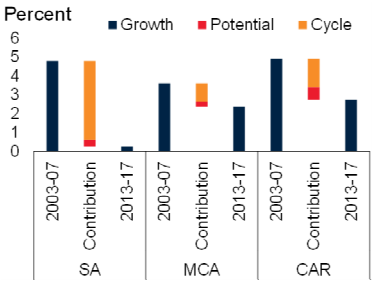
The analysis in Chapter 3 can be used to illustrate the impact of policies to improve physical capital and human capital and increase labor supply (Annex 3.1). In a scenario in which the largest 10-year improvements on record in education and health outcomes, investment, and female labor force participation are repeated, potential growth in LAC could be lifted by about 0.6 percentage point in the coming decade, more than enough to offset the projected deceleration in potential growth (Figure 2.3.1.4). The bulk of the impact would result from filling investment needs, which remain large in LAC and are constrained by limited public funds to expand investment spending (Vashakmadze et al. 2017). In such an environment, increasing the efficiency of public investment, perhaps through additional use of public-private partnerships or by implementing reforms that improve the business environment, is key.

BOX 2.3.1 Potential growth in Latin America and the Caribbean *(continued)*

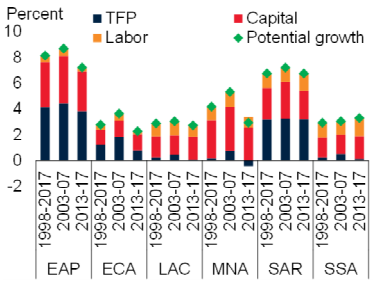
FIGURE 2.3.1.2 Regional potential growth

The growth slowdown in LAC in recent years, although almost entirely due to cyclical factors, was also accompanied by a modest slowdown in already-weak potential growth. The slowdown in potential growth in LAC in 2013–17, which is robust to the choice of measure, reflected a falling contribution of labor supply and TFP. The potential growth slowdown was stronger in South America than in other subregions.

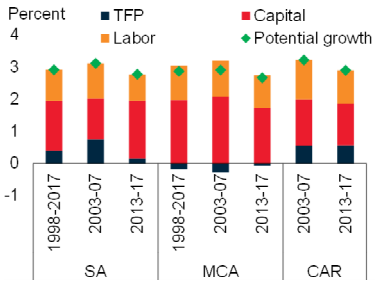
A. Contribution of potential growth and business cycle to actual growth



B. Contributions to regional potential growth



C. Contributions to subregional potential growth



Sources: Haver Analytics, Penn World Tables, UN Population Prospects, World Bank.
A. -C. Simple averages during year spans of annual GDP-weighted averages. Potential growth is measured using the production function approach.
A. C. SA = South America, MCA = Mexico and Central America, and CAR = the Caribbean. SA includes eight economies (Argentina, Brazil, Chile, Colombia, Ecuador, Paraguay, Peru, and Uruguay), MCA includes five economies (Costa Rica, Guatemala, Honduras, Mexico, and Panama), and CAR includes three economies (Antigua and Barbuda, Dominican Republic, and Jamaica).
B. EAP = East Asia and Pacific, ECA = Europe and Central Asia, MNA = Middle East and North Africa, SAR = South Asia, and SSA = Sub-Saharan Africa. GDP-weighted averages for a sample of four EAP economies, 10 ECA economies, 15 LAC economies, five MNA economies, two SAR economies, and 13 SSA economies.
C. The 1998-2017 bar for the Caribbean is missing due to data availability for the Dominican Republic, the largest economy in the subregion.
Click here to download data and charts.

In some cases, the gains from reforms in the areas considered by the scenario analysis could be considerably larger given relatively unsupportive current conditions. In Mexico and a number of Central American economies, for instance, female labor force participation is well below that of male participation. Measures to improve access to childcare and parental leave have been found to raise female labor force participation in Latin America (Novta and Wong 2017). Moreover, since Central American economies have some of the highest child dependency ratios and worst education attainment within LAC, this subregion would likely benefit significantly from investments in education and health care. In many countries in the region, students from the poorest households are substantially less competent than those from the richest households in reading and mathematics (World Bank 2017j). Targeting improved skills absorption by poor students may improve productivity.

Reforms in several areas beyond the scope of the scenario analysis also stand to boost potential growth by raising productivity growth:

Improve labor market functioning. Labor markets in the LAC region have long been less flexible than in other EMDEs. Reforms to deregulate labor markets, including in the areas of wage determination, hiring and firing constraints, reduction of mismatches between skills and jobs, and improved alignment of compensation with productivity, would likely pay important productivity dividends. Moreover, improving the quality of education could also raise labor productivity (Ferreyra et al. 2017).

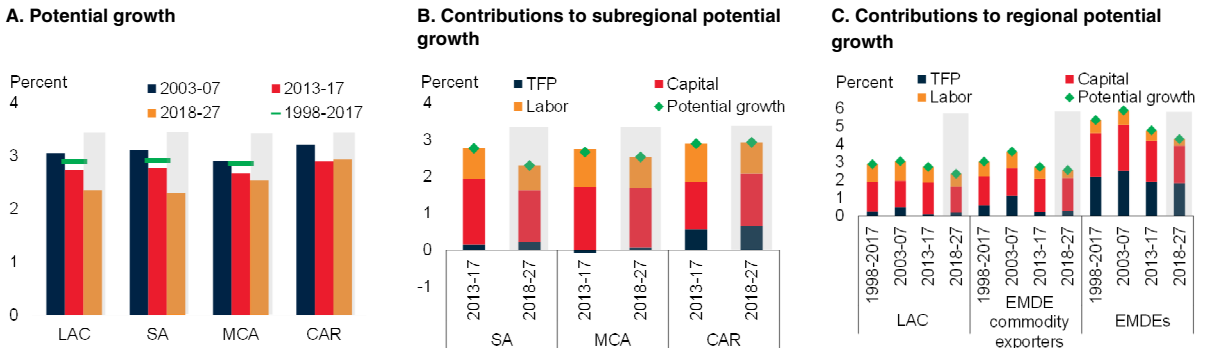
Lower informality. A key priority for the LAC region should be to encourage a shift of resources from the informal economy, where productivity is lower than in the formal economy (La Porta and Shleifer 2014). Indeed, a 1-percentage-point drop in the share of the informal economy has been associated with a 0.5-percentage-point narrowing of the gap between TFP in LAC and the United States (IDB 2013). Together with better-functioning labor markets, policy interventions that simplify business licensing and tax procedures, increase access to social security systems, and lower tax rates for small and micro enterprises would also help reduce informality (Garcia-Saltos, Teodoru, and Zhang 2016; OECD 2017).[3] The

[3] For a number of countries in LAC, not only tax system reform but also comprehensive pension system reform would strengthen potential growth, by freeing fiscal resources for other uses and encouraging investment through improved investor confidence.

BOX 2.3.1 Potential growth in Latin America and the Caribbean *(continued)*

FIGURE 2.3.1.3 Regional potential growth prospects

Trends in the underlying drivers suggest that the modest slowdown in potential growth in LAC will continue during the next decade, particularly in South America, owing to slowing labor supply growth and capital accumulation. The weakness is expected to be broad based, with potential growth in about four out of five economies in the region expected to be below the long-term average. Although potential growth in LAC is expected to continue to be well below the EMDE average, it is likely to be on par with that in commodity-exporting EMDEs.



Sources: Haver Analytics, Penn World Tables, UN Population Prospects, World Bank.

A. B. Simple averages during year spans of annual GDP-weighted averages. Potential growth is measured using the production function approach. SA = South America, MCA = Mexico and Central America, and CAR = the Caribbean. GDP-weighted averages for a sample of eight economies in South America, five economies in Mexico and Central America, and three economies in the Caribbean (as given in note below Figure 2.3.1.2).

A. The 1998-2017 average for the Caribbean is missing due to data availability for the Dominican Republic, the largest economy in the subregion.

C. Simple averages during year spans of annual GDP-weighted averages of 15 LAC economies, 29 commodity-exporting economies, and 49 EMDE economies.

Click here to download data and charts.

experience of several LAC countries in recent years suggests that creating conditions conducive to economic growth is also key to lowering informality (OECD 2017).

Foster innovation. There are important opportunities to spur innovation in LAC, which underperforms other EMDE regions in its capacity to innovate (World Economic Forum 2017). For example, ensuring that the education system prepares students to identify opportunities for innovation, supporting collaboration between institutions where innovation occurs (firms, universities, research institutes), and ensuring that financing for innovation is accessible could be beneficial (Vostroknutova et al. 2015). Creating incentives for firms to invest in knowledge may also boost productivity. Latin American firms that invest in knowledge are found to be better able to innovate than those that do not, and firms that innovate are in turn found to have significantly higher labor productivity than firms that do not (Crespi and Zuñiga 2012; Crespi, Tacsir, and Vargas 2016).

Deepen trade integration. Despite the existence of several extra- and intra-regional trade agreements, LAC is less open to trade than most of the six EMDE regions (World Bank 2016b). Trade (exports plus imports) represented one-third of regional GDP in LAC in 2016, compared to a median of more than two-fifths in all EMDE regions. Nor is the region deeply integrated into global supply chains (Estevadeordal 2012; de la Torre et al. 2015). LAC also has one of the lowest intra-regional trade intensities, partly because of a sparse regional road and rail network and mediocre-quality logistical services relative to other regions. Increasing trade integration, whether through formal trade agreements or otherwise, could lift productivity by increasing competition and providing opportunities for firms to specialize and to benefit from economies of scale. In the medium to long terms, increased trade linkages can facilitate knowledge and technology transfer through traded goods (Bown et al. 2017). This transfer of embedded knowledge and technology is key especially for the large number of small and medium enterprises in the region (OECD 2016). Policy interventions that enhance upstream participation in global value chains could also improve firm productivity (Montalbano, Nenci, and Pietrobelli 2016).

Conclusion

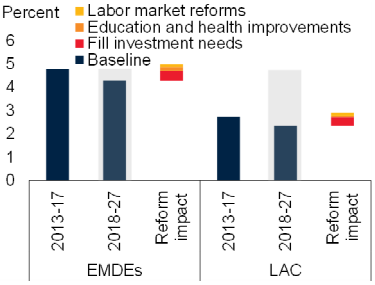
At an average of 2.7 percent in 2013–17, potential growth in LAC was weak and slightly lower than during the long-

BOX 2.3.1 Potential growth in Latin America and the Caribbean *(concluded)*

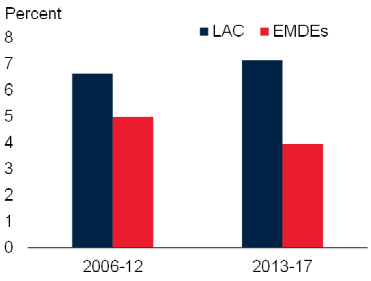
FIGURE 2.3.1.4 Policies to raise potential growth

The prospect for a further slowdown in potential growth in LAC underscores the necessity of reforms, especially reforms that increase productivity. A combination of additional investment, education and health improvements, and labor force participation could raise potential growth by about 0.6 percentage point. Productivity could be accelerated by reducing informality, improving labor market flexibility, fostering innovation, and deepening trade integration.

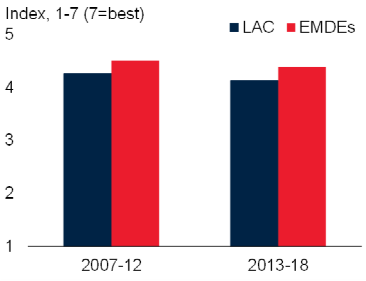
A. Potential growth under reform scenarios



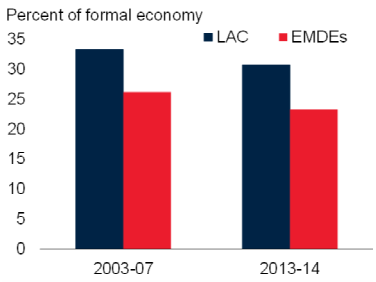
B. Firms identifying inadequately educated workforce as biggest obstacle



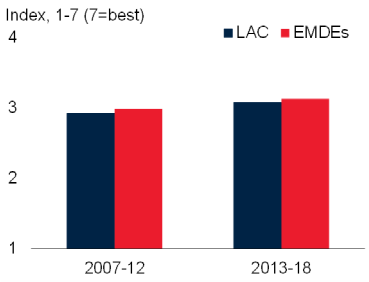
C. Labor market flexibility



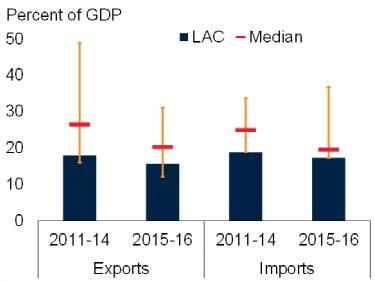
D. Informal economy



E. Innovation



F. Trade



Sources: IMF Direction of Trade Statistics, World Economic Forum Global Competitiveness Index, World Bank Enterprise Surveys, World Bank.
A. Simple averages during year spans of GDP-weighted averages for 15 LAC economies and 49 EMDE economies in each year. Derived using the methodology described in Annex 3.1.
B. Simple averages during year spans of simple averages of rates in each year. Sample includes seven LAC economies and 65 EMDE economies.
C. E. Simple averages during year spans of simple averages of scores in each year. Sample includes 26 LAC economies and 115 EMDE economies.
D. Simple averages during year spans of GDP-weighted averages in each year. Sample includes 25 LAC economies and 125 EMDE economies.
F. Blue bars show simple averages during year spans of GDP-weighted average of LAC countries in each year. Red markers show median GDP-weighted averages of the six EMDE regions and vertical lines denote range of regional GDP-weighted averages. Sample includes 32 LAC economies and 155 EMDE economies.
Click here to download data and charts.

term (1998–2017) and pre-crisis (2003–07) periods, reflecting slowing productivity and less supportive demographic conditions. Trends in the underlying drivers of potential growth suggest that the modest slowdown will persist during the next decade, particularly in South America, owing to falling labor supply growth and capital accumulation. Policy actions, including those targeting longstanding weakness in TFP growth, may counter the projected slowdown in potential growth.

MIDDLE EAST and NORTH AFRICA

Growth in the Middle East and North Africa region is estimated to slow sharply from 5.0 percent in 2016 to 1.8 percent in 2017, 0.3 percentage point lower than June projections. The impact of oil production cuts and heightened geopolitical tensions on oil exporters has more than offset a pickup among oil importers. Regional activity is forecast to strengthen gradually over the medium term, in response to policy reforms and easing fiscal adjustments. Key downside risks to the outlook include continued conflicts in the region, weakness in oil prices, and obstacles to reform progress, which are only partly offset by the effects of possible stronger-than-expected Euro Area activity.

Recent developments

Growth in the Middle East and North Africa (MENA) region is estimated to have declined markedly to 1.8 percent in 2017 from 5.0 percent in the previous year, contributed by hydrocardon-sector-led growth decelerations among regional oil exporters.[1] In contrast, growth in oil importers in 2017 has strengthened to 3.7 percent from the previous year, supported by reforms and improved competitiveness. Growth in both groups of economies continue to face headwinds from fiscal consolidation plans and geopolitical tensions.

Growth among the oil exporters was affected by OPEC oil production cuts and fiscal consolidation (Figure 2.4.1). Besides the effect of a slowdown in its oil sector following an exceptionally high 2016 surge, activity in the Islamic Republic of Iran was dampened by weak foreign investor confidence associated with geopolitical tensions (including new sanctions and hardened nuclear-deal stance by the United States). Algeria and Iraq's growth are also estimated to have decelerated in response to fiscal consolidation, moderating hydrocarbon sector growth, and weak non-oil activity. Lower growth among the Gulf Cooperation Council (GCC) members mainly reflects lower oil output from production cuts. Data for first half of 2017 and purchasing managers' indexes point to a modest recovery of the non-oil sector in the GCC.

In June 2017, Bahrain, Saudi Arabia, the United Arab Emirates, and the Arab Republic of Egypt cut diplomatic and economic ties with Qatar. All seaborne and air travel links from the involved countries to Qatar were shut and bank lending to Qatar was restricted. This led to financial market disruptions in Qatar, where non-resident deposits have fallen by 27 percent, although the government has intervened heavily by injecting public sector deposits to the banking system. The diplomatic rift is estimated to have weighed somewhat on activity in Qatar in 2017, but its impact on other neighboring economies has been limited.

Among the region's oil importers, growth improved in 2017, including as a result of reforms and improved competitiveness. Egypt experienced strong industrial production, investment, and exports, supported by the effects of the exchange rate devaluation on competitiveness. In Morocco, a strong rebound in agricultural production in the

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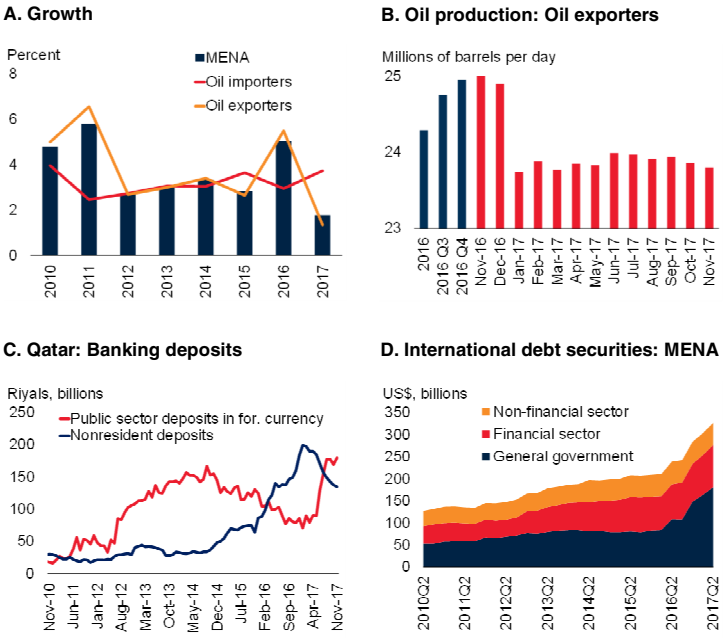
Note: This annex was prepared by Lei Sandy Ye. Research assistance was provided by Ishita Dugar and Shituo Sun.

[1] The World Bank's Middle East and North Africa aggregate includes 16 economies, and is grouped into three subregions. Bahrain, Kuwait, Oman, Qatar, Saudi Arabia, and the United Arab Emirates comprise the Gulf Cooperation Council (GCC); all are oil exporters. Other oil exporters in the region are Algeria, the Islamic Republic of Iran, and Iraq. Oil importers in the region are Djibouti, the Arab Republic of Egypt, Jordan, Lebanon, Morocco, Tunisia, and West Bank and Gaza. The Syrian Arab Republic, the Republic of Yemen, and Libya are excluded from regional growth aggregates due to data limitations.

FIGURE 2.4.1 MENA: Recent developments

Growth in MENA is expected to decelerate in 2017, driven by weakness in oil exporters. The latest oil production data show significant reductions associated with OPEC agreement among major oil exporters. The onset of the Qatar diplomatic rift led to Qatari nonresident deposit outflows and interventions through public sector deposits injections. Large recent sovereign bond financing has contributed to a rapid expansion in international debt securities raised by MENA economies.



Sources: Bank for International Settlements, Haver Analytics, International Energy Agency, World Bank.
Notes: MENA = Middle East and North Africa.
A. Weighted average growth of real GDP.
B. Sum of daily crude oil productions of the Islamic Republic of Iran, Iraq, Kuwait, Saudi Arabia, and the United Arab Emirates. Red columns denote months since November OPEC agreement. Blue columns denote 2016 annual, Q3, and Q4 average daily productions. Last observation is November 2017.
C. Data for commercial banks. Last observation is November 2017.
D. Sum of international debt securities outstanding for 14 MENA countries. Last observation is 2017Q2.
Click here to download data and charts.

first three quarters of 2017 from severe droughts in the previous year further supported the economy's recovery. Tunisia has experienced gradual recoveries in agricultural and manufacturing sectors. Policy reforms in the region have helped boost domestic business confidence and foreign investment. Coupled with an improvement in net exports, foreign reserves have risen and current account deficits appear to have remained stable in 2017 for some oil importers.

Inflation is generally well-contained across the MENA region, averaging less than 3 percent (monthly y-on-y) in the GCC, as well as easing in most other countries. An important exception is Egypt, where inflation has risen rapidly from 2016 and remains elevated (above 25 percent, y-on-y, by November 2017). This has reflected the effects of the currency float in November 2016, higher food prices, and administered price hikes, prompting the central bank to hike interest rates twice in 2017, taking its overnight rate to 18.75 percent. These inflationary pressures have eased somewhat, however, towards the end of 2017.

Financial sector developments within the MENA region have been generally favorable. Equity market indexes in the GCC remained stable in 2017, notwithstanding the effects of the dispute with Qatar. And despite the shadow of geopolitical tensions, long-term investor confidence has been bolstered by reforms to foreign investment accessibility and capital market development (e.g., leading to the potential inclusion of Saudi Arabia in the MSCI EM index in 2018 and supporting the economy's planned IPO of Aramco), as well as large sovereign issuances, contributing to a rapid expansion in international debt securities (Lorente, Ismail, and Schmukler 2016). Banking sector liquidity in oil exporters has generally eased in 2017 relative to the previous year, as higher oil prices have supported higher government deposits.

Fiscal and structural weaknesses remain key challenges in many MENA countries. However, supported by IMF and World Bank programs, many economies (e.g., Egypt, Morocco) have improved their fiscal positions. These efforts were accompanied by broader reforms, such as steps to improve the functioning of labor markets, which promise to boost overall and female labor force participation in the region and spur stronger long-term growth (Chapter 3). Business climate reforms, such as measures to ease business registration and to strengthen investor protection, have also been introduced across both oil exporters and importers.

Outlook

Regional growth is projected to increase steadily after 2017, to 3.0 percent in 2018 and 3.2 percent by 2020, reflecting accelerations among both oil

exporters and importers. This forecast reflects assumption of a moderation of geopolitical tensions as well as a modest rise in oil prices.

The pickup in growth among oil exporters would be led by the GCC economies. Growth in the GCC is expected to reach 2.7 percent by 2020, supported by easing fiscal adjustments, infrastructure investment (e.g., Dubai Expo 2020; Qatar World Cup 2022), and reforms to promote non-oil sector activity. Equity market indexes in the GCC suggest stable business prospects in the corporate sector (Figure 2.4.2). Growth in the Islamic Republic of Iran, the second largest economy in the region, is expected to reach 4.3 percent by 2020, with higher investment growth offset by lower oil production and limited access to finance. In Algeria, new government investment spending associated with the 2018 budget and a more expansionary fiscal stance than previously planned is expected to raise growth in the short-term. Iraq's activity is expected to improve amid more favorable security conditions.

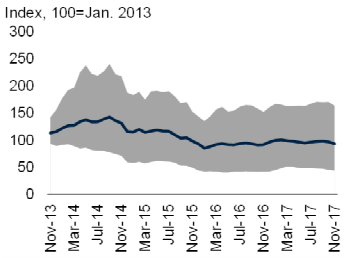
Growth among oil importers is expected to further improve over 2018-20, as business and consumer confidence are boosted by reforms and as external demand improves. A key challenge to growth among these countries stems from their elevated levels of public debt, which will require cuts in public spending and infrastructure investment. The collapse in world oil prices has helped spur needed reforms of energy subsidies and other fiscal adjustments (see Special Focus 1). Moreover, in Egypt, the move to a floating exchange rate has improved competitiveness and provided a needed boost to industrial activity and exports, which are expected to strengthen further as the business climate improves. Lastly, there is scope for a further recovery of tourism, an important revenue source in oil importers (e.g., Egypt and Morocco), if geopolitical tensions remain contained.

Fiscal balances are expected to improve further over 2018-2020, reflecting plans for reducing subsidies and tax increases in many economies (e.g., a GCC-wide VAT tax of 5 percent is scheduled to launch in 2018), as well as the effects of somewhat higher oil prices on revenues among the oil exporters. Current account balances in the MENA region are also expected to strengthen as a

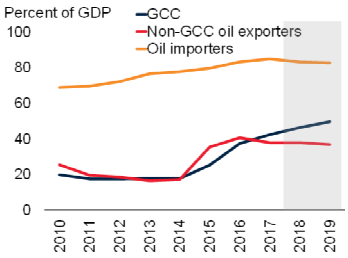
FIGURE 2.4.2 MENA: Outlook and risks

Forward-looking indicators suggest stable momentum in the corporate sector of the GCC. Elevated debt burdens of oil importers serve as a headwind to medium-term growth for the region. Potential growth in the region is expected to be supported by reforms, but is limited by a range of obstacles to private sector activity. The region faces downside risks from heightened geopolitical tensions, which may deter tourism, and upside risks from stronger-than-expected activity in the Euro Area.

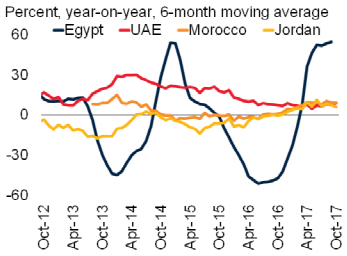
A. Equity market indexes: GCC



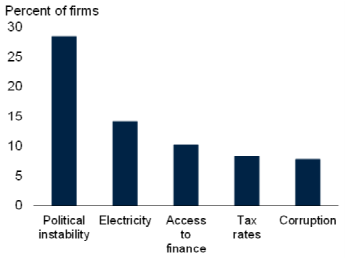
B. Government debt positions



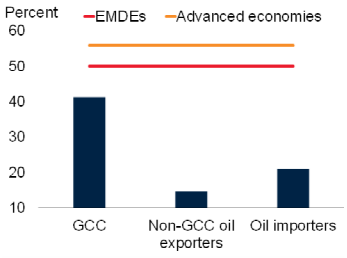
C. Tourism growth



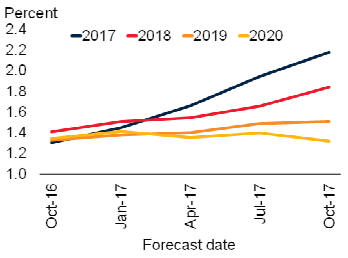
D. Private sector constraints: Enterprise surveys



E. Women labor force participation rate



F. Euro Area consensus growth forecasts



Sources: Consensus Economics, Haver Analytics, International Monetary Fund, World Bank.
A. Sample includes Bahrain, Kuwait, Oman, Qatar, Saudi Arabia, and the United Arab Emirates. Last observation is November 2017. Unweighted average. Shading denotes range.
B. General government gross debt. GCC, non-GCC oil exporters, and oil importers include 6, 3, and 6 economies, respectively. Unweighted averages. Shaded area denotes forecasts.
C. Growth of tourist arrivals for Egypt, Jordan, and Morocco. Data for the United Arab Emirates denote hotel guest arrivals in Abu Dhabi.
D. Percent of firms citing each noted indicator as biggest obstacle. Unweighted averages. Based on the World Bank's enterprise surveys for 9 MENA economies and latest available data since 2011 for each country.
E. Workforce as a percent of female population ages 15+. Unweighted average of 5 GCC economies, 2 Non-GCC oil exporters, and 5 oil importers. Based on latest available data since 2010 for each country.
F. Annual consensus growth forecasts for each year denoted in the legend. 2017 denotes estimates. X-axis denotes the date for which the forecast is conducted.
Click here to download data and charts.

result of stronger external demand, higher oil prices (for oil exporters), and the effects of fiscal consolidation. Remittance inflows are expected to be supported by strength in Euro Area activity and confidence in exchange rate stability in Egypt (World Bank 2017t).

Risks

The risks to the outlook, while varying between oil exporters and importers, are generally to the downside. The regional outlook faces four main risks: amplification of geopolitical tensions, weak momentum in oil prices, obstacles to reform progress, and stronger-than-expected Euro Area activity. Geopolitical risks remain elevated, and are complicated by a variety of intra-regional diplomatic tensions. These risks may weigh on growth prospects and may harm investor confidence in the MENA region, reducing investment, driving up sovereign bond spreads, and complicating the prospects for achieving needed fiscal adjustments.

While economic conditions appear to be improving among the oil importers, their prospects are vulnerable to spillovers from armed conflicts in fragile economies (e.g., Libya, Syrian Arab Republic, Republic of Yemen), such as via disruptions of trade routes or reduction of cross-border investment. These conflicts have also challenged residents' basic access to food services, education, and health (e.g., cholera outbreak in the Republic of Yemen). Furthermore, the protracted displacement of people in the fragile economies has generated a refugee crisis that not only raised the macroeconomic challenges (e.g., structural changes to labor markets) for host countries like Djibouti, Jordan, and Lebanon, but also amplified fundamental development challenges in education, health, jobs, water, and livelihood for refugees, such as through expansion of health service delivery (World Bank 2017u).

Weaker-than-expected global oil prices may further cloud growth prospects for the MENA region's oil exporters. It remains to be seen whether OPEC and non-OPEC production cuts will affect prices in light of the fact that U.S. oil inventories remain at high levels, despite stabilizing recently. This suggests the risk that if compliance with the agreement waivers, world oil prices could fall, complicating the ability to achieve planned fiscal adjustments and weakening growth.

Although reforms are expected to support potential growth and enhance the business climate environment, the pace of improvement may be constrained by obstacles to private sector activity, such as political instability and electricity deficiencies (World Bank 2016k). This is further complicated by high youth unemployment and low labor force participation rates, especially among women (Box 2.4.1 and Chapter 3; Schiffbauer et al. 2015). Multi-year public-private financing initiatives in the region, such as the International Finance Corporation's new investment and technical assistance in Egypt's solar capacity, are expected to alleviate these constraints by facilitating private sector participation.

On the upside, stronger-than-expected economic activity in the Euro Area would provide an important support to growth in the MENA region. A number of economies in North Africa (e.g., Tunisia) are heavily dependent on the European Union (EU) for trade, remittances, or financial flows, and stronger-than-expected activity in the Euro Area is already expected to support the recovery of these economies (World Bank 2017p; chapter 1). It is also capable of offsetting the potential negative spillovers of weak growth in the GCC, from which some (e.g., Jordan, Lebanon) are also dependent on remittances and foreign direct investment.

TABLE 2.4.1 Middle East and North Africa forecast summary

(Real GDP growth at market prices in percent, unless indicated otherwise)

	2015	2016	2017e	2018f	2019f	2020f	Percentage point differences from June 2017 projections 2017e	2018f	2019f
EMDE MENA, GDP[1]	**2.8**	**5.0**	**1.8**	**3.0**	**3.2**	**3.2**	**-0.3**	**0.1**	**0.1**
(Average including economies with full national accounts and balance of payments data only)[2]									
EMDE MENA, GDP[2]	2.6	4.8	2.0	2.9	3.3	3.3	-0.2	0.0	0.1
GDP per capita (U.S. dollars)	0.7	3.0	0.3	1.3	1.8	1.9	-0.3	-0.1	0.0
PPP GDP	2.6	5.1	2.2	3.1	3.5	3.5	-0.2	0.1	0.2
Private consumption	-0.2	4.2	2.3	3.0	3.3	3.3	0.0	0.0	0.1
Public consumption	0.3	-5.0	1.5	1.6	1.9	1.8	0.5	0.0	0.3
Fixed investment	1.2	-1.4	2.9	5.1	6.1	6.0	0.0	0.5	0.5
Exports, GNFS[3]	2.5	6.4	2.1	3.7	3.6	3.7	-0.2	0.0	-0.3
Imports, GNFS[3]	-2.3	-1.9	2.9	3.3	3.3	3.3	-0.1	0.3	-0.1
Net exports, contribution to growth	2.1	3.7	0.0	0.6	0.5	0.6	0.0	0.0	0.0
Memo items: GDP									
Oil exporters[4]	2.6	5.5	1.3	2.8	3.0	2.9	-0.5	0.3	0.2
GCC countries[5]	3.6	2.5	0.7	2.0	2.7	2.7	-0.6	-0.3	0.2
Saudi Arabia	4.1	1.7	0.3	1.2	2.1	2.2	-0.3	-0.8	0.0
Iran, Islamic Rep.	-1.3	13.4	3.6	4.0	4.3	4.3	-0.4	-0.1	0.1
Oil importers[6]	3.6	2.9	3.7	3.9	4.3	4.5	0.0	-0.2	-0.1
Egypt, Arab Rep.	4.4	4.3	4.4	4.9	5.6	5.8	0.1	-0.1	0.3
Fiscal year basis[7]	4.4	4.3	4.2	4.5	5.3	5.8	0.3	-0.1	0.0

Source: World Bank.

Notes: e = estimate; f = forecast. EMDE = emerging market and developing economy. World Bank forecasts are frequently updated based on new information. Consequently, projections presented here may differ from those contained in other Bank documents, even if basic assessments of countries' prospects do not differ at any given moment in time.

1. GDP at market prices and expenditure components are measured in constant 2010 U.S. dollars. Excludes Libya, the Syrian Arab Republic, and the Republic of Yemen due to data limitations.
2. Aggregate includes all countries in notes 4 and 6 except Djibouti, Iraq, Qatar, and West Bank and Gaza, for which data limitations prevent the forecasting of GDP components.
3. Exports and imports of goods and non-factor services (GNFS).
4. Oil exporters include Algeria, Bahrain, Iraq, the Islamic Republic of Iran, Kuwait, Oman, Qatar, Saudi Arabia, and the United Arab Emirates.
5. The Gulf Cooperation Council (GCC) includes Bahrain, Kuwait, Oman, Qatar, Saudi Arabia, and the United Arab Emirates.
6. Oil importers include Djibouti, Egypt, Jordan, Lebanon, Morocco, Tunisia, and West Bank and Gaza.
7. The fiscal year runs from July 1 to June 30 in Egypt; the column labeled 2017 reflects the fiscal year ended June 30, 2017.

For additional information, please see www.worldbank.org/gep.

TABLE 2.4.2 Middle East and North Africa economy forecasts[1]

(Real GDP growth at market prices in percent, unless indicated otherwise)

	2015	2016	2017e	2018f	2019f	2020f	Percentage point differences from June 2017 projections: 2017e	2018f	2019f
Algeria	3.7	3.3	2.2	3.6	2.5	1.6	0.4	2.6	1.0
Bahrain	2.9	3.2	2.4	2.0	1.6	1.7	0.5	0.1	-0.7
Djibouti	6.5	6.5	7.1	7.0	7.0	7.0	0.1	0.0	-0.2
Egypt, Arab Rep.	4.4	4.3	4.4	4.9	5.6	5.8	0.1	-0.1	0.3
Fiscal year basis[2]	4.4	4.3	4.2	4.5	5.3	5.8	0.3	-0.1	0.0
Iran, Islamic Rep.	-1.3	13.4	3.6	4.0	4.3	4.3	-0.4	-0.1	0.1
Iraq	4.8	11.0	-0.8	4.7	1.7	1.9	2.3	2.1	0.6
Jordan	2.4	2.0	2.1	2.2	2.4	2.5	-0.2	-0.4	-0.6
Kuwait	0.6	3.6	-1.0	1.9	3.5	3.5	-1.2	-0.8	0.6
Lebanon	0.8	2.0	2.0	2.2	2.0	2.0	-0.5	-0.4	-0.6
Morocco	4.5	1.2	4.1	3.1	3.2	3.2	0.3	-0.6	-0.4
Oman	4.7	5.4	0.7	2.3	2.5	2.5	-0.2	-0.1	-0.4
Qatar	3.6	2.2	1.7	2.6	3.0	3.0	-1.5	0.0	0.5
Saudi Arabia	4.1	1.7	0.3	1.2	2.1	2.2	-0.3	-0.8	0.0
Tunisia	1.1	1.0	2.0	2.7	3.3	4.0	-0.3	-0.3	-0.2
United Arab Emirates	3.8	3.0	1.4	3.1	3.3	3.3	-0.6	0.6	0.1
West Bank and Gaza	3.4	4.1	3.0	3.0	2.9	2.9	-0.5	-0.4	-0.5

Source: World Bank.

Notes: e = estimate; f = forecast. World Bank forecasts are frequently updated based on new information. Consequently, projections presented here may differ from those contained in other Bank documents, even if basic assessments of countries' prospects do not differ at any given moment in time.

1. GDP at market prices and expenditure components are measured in constant 2010 U.S. dollars. Excludes Libya, the Syrian Arab Republic, and the Republic of Yemen due to data limitations.

2. The fiscal year runs from July 1 to June 30 in Egypt; the column labeled 2017 reflects the fiscal year ended June 30, 2017.

For additional information, please see www.worldbank.org/gep.

BOX 2.4.1 Potential growth in the Middle East and North Africa

The Middle East and North Africa's (MENA) potential growth has been held back by structural challenges over the past decade. These include low labor force participation (especially of women), low economic diversification outside of oil production, and weak private sector dynamism. Potential growth in the region is expected to strengthen somewhat in the coming years, supported by recovery in investment and productivity growth. Continued commitment to reforms, such as those aimed at encouraging diversification, improving governance and business climates, and strengthening fiscal management, has the potential to further improve potential growth.

Introduction

Growth has been uneven over the past decade in the Middle East and North Africa (MENA) region. Like other emerging market and developing economies (EMDEs), the region experienced high growth during 2003-07, which in MENA's case was supported by rising oil prices. However, growth slowed during 2010-14, mainly in response to the effects of political turmoil and military conflict, including Arab Spring revolutions in Egypt, Tunisia, Libya, and Yemen and associated conflict spillovers to neighboring countries, civil wars in Iraq and Syria, and the war on ISIS that halted economic activity and trade. Growth performance decelerated further after the oil price collapse of 2014 (Figure 2.4.1.1).

A key policy question for the region is whether this slowdown has been a temporary phenomenon or reflects deeper-seated structural impediments that will need to be tackled, especially in the context of subdued oil prices. Against this backdrop, this box will discuss the following questions:

- How has potential growth evolved in the MENA region and what were its main drivers?
- What are the prospects for potential growth?
- What are the policy options to lift potential growth?

The literature covering these issues is sparse, but has documented a broad-based decline in potential growth within the MENA region, including both oil exporters and oil importers. Moreover, relative to the EMDE average, this deterioration has been more severe, reflecting low total factor productivity growth and labor supply growth (Mitra et al. 2015; Alkhareif and Alsadoun 2016; IMF 2016e; IMF 2017g). These studies have underscored that reversing these trends requires policies to boost investment, especially in oil importers, as well as steps to improve the business environment, strengthen worker skills, and deepen financial markets (Mitra et al. 2016; World Bank 2017v).

The analysis here also highlights that the MENA region's poor growth performance in recent years has been largely driven by a slowdown in its potential growth, in turn driven by broad-based decelerations in capital stock growth, weak total factor productivity (TFP) growth relative to other regions, and slowing working-age population growth. It highlights, however, that a commitment to structural reforms would help improve potential growth and provide greater scope for improvements in living standards within the region.

Evolution of potential growth and its drivers

Growth in the MENA region declined sharply from 6 percent prior to the global financial crisis (2003-2007) to about 3 percent in 2013-17, and empirical analysis suggests that this was in large part the result of a deceleration of the region's potential growth, a slowdown that was more severe than those experienced by other EMDEs. A production function approach and an alternative estimate based on long-term (5-year-ahead) growth expectations suggest that potential growth during 2013-17 has fallen below its long-term average (1998-2017) rate of about 4 percent (Figure 2.4.1.2).

The recent decline in potential growth occurred against the backdrop of high geopolitical tensions, volatile oil prices, high structural imbalances, and conflict within the region, factors that have contributed to the region's relatively lackluster potential growth performance for at least two decades. However, an important factor behind the more recent slowdown has been investment growth, which more than halved in recent years. In fragile areas of the region, this was compounded by the outright destruction of capital (World Bank 2017w).[1] Also

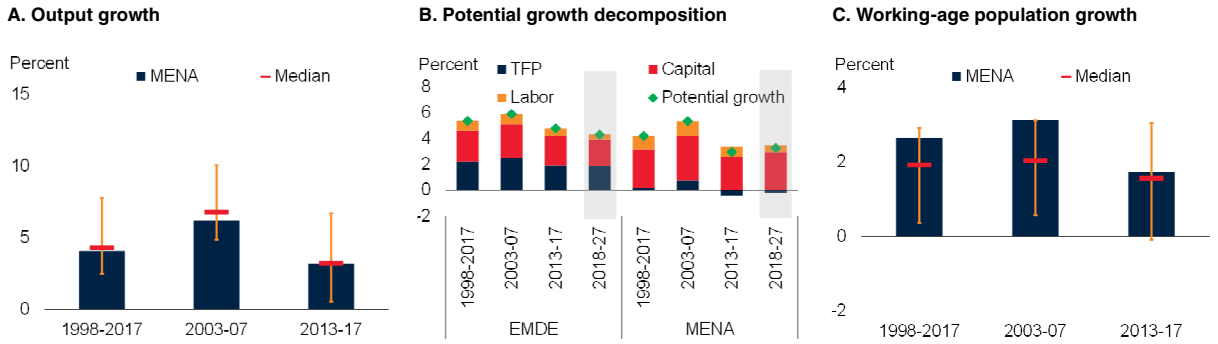
Note: This box was prepared by Lei Sandy Ye, Sinem Kilic Celik, and Modeste Some. Ishita Dugar and Shituo Sun provided research assistance.

[1] In the fragile areas, prolonged crises impose large negative impact on potential output in the short run, followed by a prolonged period of slow growth as economies adjust to their post-crisis growth paths. These countries face a "permanent level loss" in the potential output meaning that the economy eventually would return to its pre-crisis potential growth rate but would fail to recoup all of the lost output.

BOX 2.4.1 Potential growth in the Middle East and North Africa *(continued)*

FIGURE 2.4.1.1 MENA potential growth

The slowdown of MENA's regional output growth in recent years has partly resulted from a decline in its potential growth rate. A wide range of factors have underpinned this slowdown, including weak investment, persistently low productivity growth, and slowing working-age population growth.



Sources: International Monetary Fund, Penn World Tables, United Nations, World Bank estimates.
Notes: GDP-weighted averages.
A. C. Red markers show median GDP-weighted averages of the six EMDE regions and whiskers denote range of regional GDP-weighted averages.
B. Estimates based on the production function approach for 50 EMDEs and 7 MENA economies. See Annex 3.1 for more details.
C. Working-age population refers to population of ages 15-64.
Click here to download data and charts.

contributing were a continued slowdown in labor supply growth and stagnant TFP, the latter related to the region's high reliance on oil production and corresponding lack of economic dynamism.

While the slowdown in potential growth is broad-based across oil exporters and importers, the relative importance of contributing factors varies. In oil exporters, TFP growth has been negative (partly reflecting low labor market efficiency and subsidized energy), capital growth is weak, and employment growth is declining. In oil importers, while TFP, labor supply, and capital growth are all slowing, low investment growth is especially a concern.

However, common to the entire region are female labor force participation rates that are among the lowest in the world. For example, women make up half the population in the GCC and yet represent only about one-fourth of the labor force (Constant 2016). Overall labor force participation rates are also very low outside of the GCC. Moreover, while educational attainment has risen during the post-crisis period, the quality of education, such as measured by primary school proficiency tests, remains low compared to most other regions (World Bank 2017j).

Potential growth: prospects and policy options

Over the coming years, potential growth in the region is expected to strengthen somewhat from its 2013-17 average rate of 2.9 percent. This is predicated upon trend improvements in educational and health outcomes, median fertility projections in population dynamics (as in the UN Population Projections), and continued investment growth at its long-term average rate (Annex 3.1). While projected change in demographic structure is expected to weigh on potential growth, the long-term trajectory of potential growth is marked by considerable uncertainty. For example, unlike many other EMDEs, the youth share of population is currently high (more than a third of the region's population is under the age of 25). This generates a large potential pool of new entrants into the labor force as well as a large consumer base for innovative activity, despite an aging population structure. But such capacity can only be realized to boost potential growth if the private sector is sufficiently vibrant, such as having a flexible labor market and more educated workforce, to create new jobs.

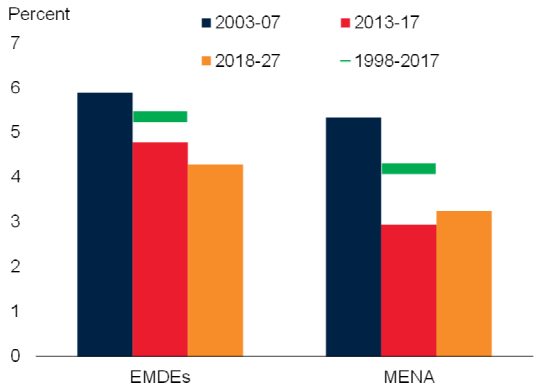
Raising private-sector participation. Looking ahead, the challenge for the region is to tackle the deep-seated structural impediments to sustained and private sector-led growth, the type of growth that allows job creation to support higher per-capita living standards. This will require policies to promote economic diversification; measures to improve the business climate (e.g., the recent introduction of the investment law and industrial licensing act in Egypt and a bankruptcy protection law in the United Arab

BOX 2.4.1 Potential growth in the Middle East and North Africa *(continued)*

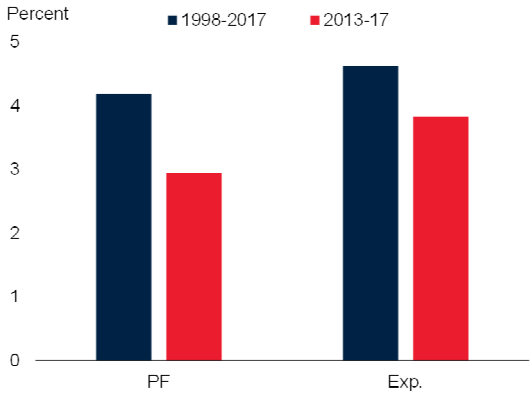
FIGURE 2.4.1.2 MENA potential growth

The slowdown in MENA's potential growth coincided with that of other EMDEs. Both production function and expectations-based measures suggest that post-crisis potential growth was substantially weaker than long-term average potential growth.

A. Potential growth



B. MENA potential growth: Alternative estimates



Sources: International Monetary Fund, World Bank estimates.
Notes: GDP-weighted averages.
A. Production function approach based on 50 EMDEs and 7 MENA economies. See Annex 3.1 for more details.
B. "PF" refers to production function approach (7 economies). "Exp." refers to potential growth based on long-term IMF WEO (5-year-ahead) growth expectations (16 economies).
Click here to download data and charts.

Emirates); financial sector deepening; and policies to promote education and skills development.

Reconstruction investment. In fragile economies of the region, reconstruction investment that maintains adequate provision of health, education, electricity, water and sanitation services, remains a high priority (World Bank 2017w). In host countries of refugees, these efforts require adapting to the structural changes that the refugee crisis has brought to their economies, such as adopting more innovative financing mechanisms to fund higher demands for health service delivery (World Bank 2017u).

Improving public sector efficiency. Improving the quality and effectiveness of government will have to be an important part of the reform effort, especially in an environment where fiscal space is limited, public sector employment is excessive, revenue systems are over reliant on oil revenues, and energy subsidies are high. This will require measures to improve the efficiency of public investment, ensuring that broader spending programs deliver "value for money," and a careful review of revenue systems to enhance tax administrations, improve compliance, and cut wasteful and ineffective tax incentives.

Improving governance. Strengthening potential growth also relies on improving the governance environment, as weak governance in the MENA region has been found to crowd-out private investment and discourage private-sector growth (Nabli 2007; Benhassine et al. 2009). Improved governance, such as more structured measurement of results in training and educational programs, enhances the match of skills across workers and employers and may provide more quality jobs in the private sector (Gatti et al. 2013). Weak governance may also be reflected in perceived corruption, which is among a highly-cited constraint to business activity in MENA based on the World Bank's Enterprise Surveys. Higher levels of corruption are associated with lower employment and productivity and may discourage interactions between private firms and public authorities, subsequently deterring allocative efficiency (World Bank 2016k). Strengthening the legal framework, including in areas such as corporate governance and bankruptcy resolution, can alleviate these constraints and facilitate market transactions.

Cross-country experience suggests that education, health, and labor market reforms can yield significant benefits in terms of higher potential growth (Chapter 3). A scenario analysis applied to the MENA region suggests that labor market policies to raise the female labor force participation rates by its largest 10-year improvement historically could

BOX 2.4.1 Potential growth in the Middle East and North Africa *(concluded)*

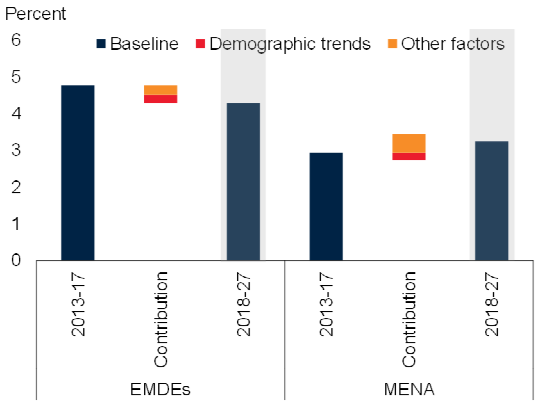
lift potential growth by 0.1 percentage point, while similar steps to address gaps in investment could yield a further 0.5 percentage point (Figure 2.4.1.3). If policy reforms were stronger than historical improvements, the gains realized from these policies could be substantially greater.

The MENA region has made substantial progress in structural reforms in recent years, including the formulation of national development plans to encourage inclusion of women in the workforce (Constant 2016).[2] Multi-pronged approaches through diagnostics, investment climate assessment, value-chain analysis, and labor skills review in areas like North Lebanon may also help lay the foundation for job creation (World Bank 2017x). Early childhood education programs in Morocco are expected to help boost educational attainment. The continued commitment to implementing these reforms will be critical for realizing higher potential growth dividends in the coming years.

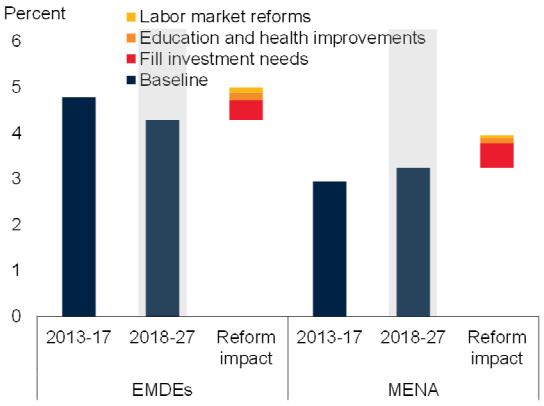
FIGURE 2.4.1.3 Policies to stem weakness in potential growth

Potential growth in MENA is expected to strengthen somewhat over the coming years, partly reflecting improvements in investment and productivity. However, reforms that boost investment, labor market participation, or educational and health outcomes have the capability to further improve potential growth.

A. MENA potential growth



B. MENA potential growth under reform scenarios



Source: World Bank estimates.
Notes: GDP-weighted averages. Derived using the production function-based estimates of potential growth (see Annex 3.1).
A. "Other factors" reflects changes unrelated to population structure. See Annex 3.1. for methodology.
B. Policy scenarios are described in methodological Annex 3.1.
Click here to download data and charts.

[2] The World Bank and other international financial institutions have also participated in these efforts, such as by adopting the Women Entrepreneurs Finance (We-Fi) initiative, a multilateral financing facility; the Tunisia Youth Economic Inclusion Project to boost young workers' prospects; the Jordan Innovative Startups Fund Project to boost entrepreneurship; or the Concessional Financing Facility (WB-UN-Islamic Development Bank) to facilitate refugee host country development.

SOUTH ASIA

In South Asia, growth slowed to a still strong 6.5 percent in 2017, below the June forecast, in part reflecting adjustment in India to the new Goods and Services Tax and the adverse impact of natural disasters across the region. Growth is expected to stabilize around 7 percent a year over 2018-2020, with private consumption remaining strong and investment recovered by infrastructure projects and reforms. Main risks to the outlook include setbacks in reviving investment, fiscal slippages, and disruptions to activity resulting from natural disasters.

Recent developments

In South Asia, growth slowed to an estimated 6.5 percent in 2017, marginally below the June 2017 forecast owing to temporary disruptions from adverse weather conditions across the region and, in India, businesses' adjustment to the newly introduced Goods and Services Tax (GST). Domestic demand continued to drive growth, with strong private consumption and a public infrastructure spending push in India while net exports subtracted slightly from GDP growth. Elevated credit growth continued to support investment in some countries (e.g., Bangladesh, Pakistan).

In India, growth slowed for the fifth consecutive quarter to 5.7 percent (year-on-year) in the first quarter of FY2017/18 (April-June 2017), partly reflecting adjustments by businesses to the prospective introduction of the GST in July 2017. In addition, protracted balance sheet weaknesses—in particular, a corporate debt overhang and elevated non-performing loans in the banking sector—continued to weigh on already weak private investment (World Bank 2017y). Weak private investment was only partly mitigated by a public infrastructure investment push and a surge in current expenditures after recent public pay hikes. In the second quarter of FY2017/18 (July-September 2017), the slowdown in economic activity bottomed out by a still weak 6.3 percent (year-on-year) growth. The manufacturing Purchasing Managers' Index (PMI) and industrial production growth remained broadly expansionary after they temporarily weakened as producers reduced inventories amid uncertainty relating to the implementation of the GST (Figure 2.5.1). Despite a recent uptick, inflation remained within the Reserve Bank of India's (RBI) target band of 2-6 percent, following a steady decline over the past year to 1.3 percent in July amid weak food prices. Fiscal consolidation has continued in the central government, but subnational fiscal deficits have risen, partly reflecting debt payments taken over through Ujwal Discom Assurance Yojana (UDAY) and a broader shift in public expenditures from central to state governments, and recent public pay hikes.[1]

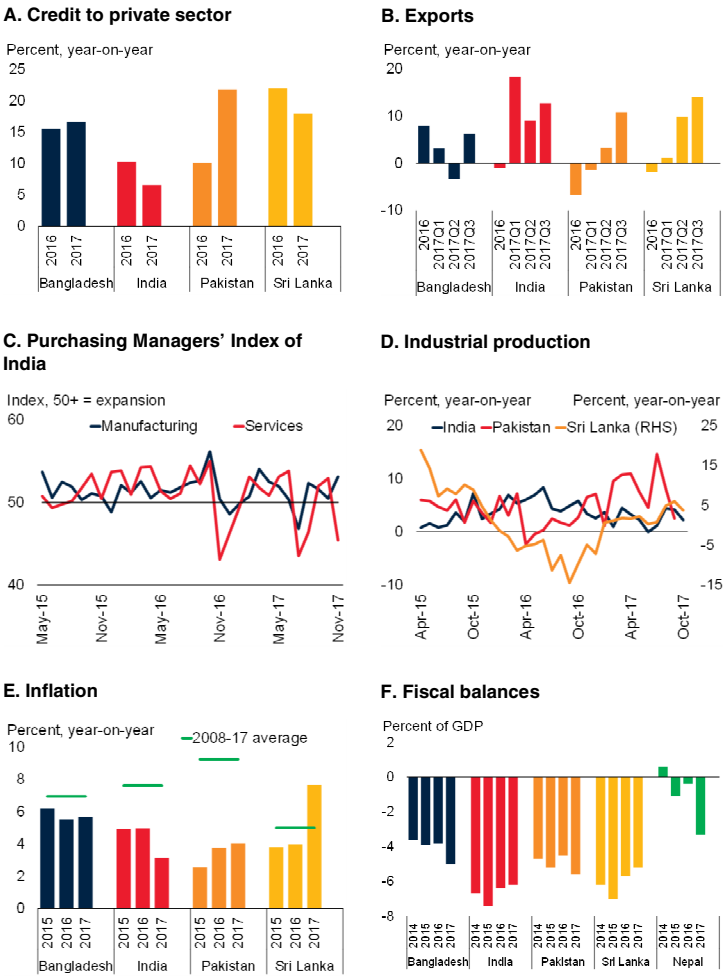
In Pakistan, growth continued to accelerate in FY2016/17 (July-June) to 5.3 percent, somewhat below the government's target of 5.7 percent as industrial sector growth was slower than expected. Activity was strong in construction and services, and there was a recovery in agricultural production with a return of normal monsoon rains. In the first half of FY2017/18, activity has continued to expand, driven by robust domestic demand supported by strong credit growth and investment

Note: This section was prepared by Temel Taskin. Research assistance was provided by Anh Mai Bui, Ishita Dugar, and Jinxin Wu.

[1] UDAY is a financial turnaround and operational improvement program for power sector in India. It was approved by the Government of India on November 5, 2015.

FIGURE 2.5.1 SAR: Recent developments

Credit growth has remained broadly robust and has supported investment in the region. Exports have picked up amid stronger global demand. Purchasing Manager Surveys suggest strengthening activity, especially in manufacturing. Inflation rates are below historical averages. Progress in fiscal consolidation has been mixed.



Sources: Haver Analytics, World Bank.
A. 2017 data represent average year-on-year growth. Last observation is October 2017 for Bangladesh, India and Pakistan, and November 2017 for Sri Lanka.
B. Last observation is Q3 2017.
C. Index values higher than 50 indicate expansion. Last observation is November 2017.
D. Last observation is October 2017 for India and Sri Lanka, and September 2017 for Pakistan.
E. Last observation is November 2017 for India and Pakistan, and October 2017 for Bangladesh and Sri Lanka. Due to lack of data, average for Bangladesh is 2009-17 and average for Sri Lanka is 2015-17.
F. 2017 data are estimated values.
Click here to download data and charts.

projects related to the China-Pakistan Economic Corridor. Meanwhile, the current account deficit widened to 4.1 percent of GDP compared to 1.7 percent last year, amid weak exports and buoyant imports.

Bangladesh's growth in FY2016/17 (July-June) was 7.2 percent, exceeding the June forecast owing to higher-than-expected outturns in the manufacturing and services sectors. Robust private consumption was complemented by strong public investment growth.

In Sri Lanka, activity expanded at an estimated 4.1 percent in 2017, below the June forecast as a result of disruptions from droughts and floods. Despite monetary policy tightening to ease inflationary pressures in the first half of 2017, credit growth remained strong, supporting private consumption and investment.

Elsewhere in the region, activity in 2017 was underpinned by strong construction in Bhutan and the Maldives as large-scale infrastructure projects were implemented. In Nepal, floods in more than one-third of the country disrupted the strong post-earthquake recovery in the second half of 2017. Security concerns continued to weigh on activity in Afghanistan, with the number of civilian casualties and displaced people reaching record levels in 2017.

Inflation has been well below its historical average in the region, except for a drought-related temporary rise in 2017 in Sri Lanka. Outside India, fiscal consolidation slowed in 2017 as a result of revenue shortfalls and increased government spending (e.g., Maldives, Pakistan). Current account deficits gradually widened across the region (e.g., India, Bangladesh, Pakistan). Balance sheet weakness for corporates (e.g., India) and financial sectors (e.g., Bangladesh, India) continued to weigh on private investment. In particular, non-performing loan ratios remained high, at around 10 percent, despite progress in some countries (e.g., Maldives, Pakistan, Afghanistan).

Outlook

The region's growth prospects appear robust, with household consumption expected to remain strong, exports expected to recover, and investment projected to revive with the support of policy reforms and infrastructure improvements (Figure 2.5.2). Growth in the region is expected to pick up to 6.9 percent in 2018, and stabilize around 7.2 percent over the medium term, but remain slightly below June projections due to the weaker-than-expected recovery in domestic

demand (World Bank 2017e). The forecast assumes strengthening external demand as the recovery firms in advanced economies, and supportive global financing conditions. Monetary policy is assumed to remain accommodative as modest fiscal consolidation proceeds in some countries (e.g., India).

India's GDP is forecast to grow 6.7 percent in FY2017/18, below June projections due to short-term disruptions from the newly introduced GST. Growth will pick up to 7.3 percent in 2018/19, and to 7.5 percent a year in the medium term. Strong private consumption and services are expected to continue to support economic activity. Private investment is expected to revive as the corporate sector adjusts to the GST; infrastructure spending increases, partly to improve public services and internet connectivity; and private sector balance sheet weaknesses are mitigated with the help of the efforts of the government and the Reserve Bank of India (RBI 2017). Over the medium term, the GST is expected to benefit economic activity and fiscal sustainability by reducing the cost of complying with multiple state tax systems, drawing informal activity into the formal sector, and expanding the tax base.[2] The recent recapitalization package for public sector banks announced by the Government of India is expected to help resolve banking sector balance sheets, support credit to the private sector, and lift investment.[3] The global trade recovery is expected to lift exports.

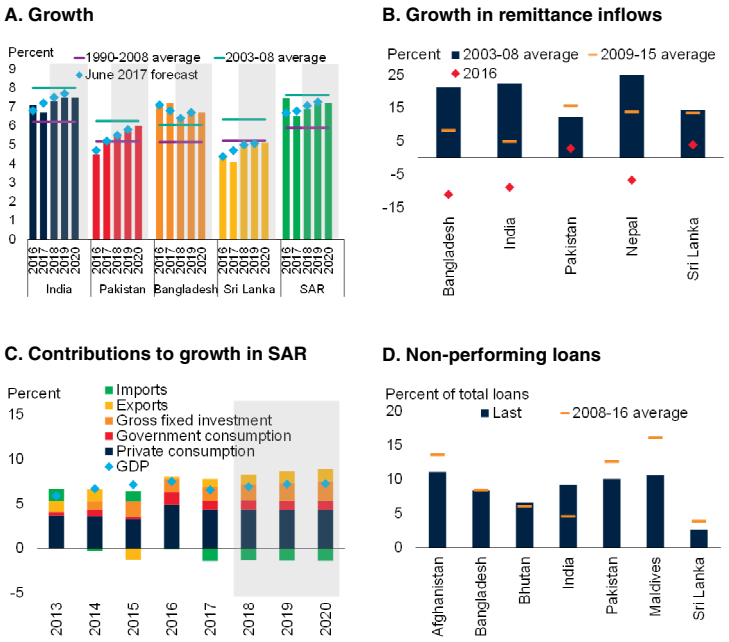
Growth in the region excluding India is expected to remain stable at an average 5.9 percent a year over the medium term, broadly consistent with the June projections, as domestic demand remains robust and exports recover. In Pakistan, growth is forecast to pick up to 5.5 percent in FY2017/18, and reach at an average 5.9 percent a year over the medium term on the back of continued robust domestic consumption, rising investment, and a recovery in exports. Activity in Bangladesh will grow at an average of 6.7 percent a year over FY2018-2020, benefiting from strong domestic demand and strengthening exports. Low interest rates and improved infrastructure are expected to lift investment. Remittances are expected to rebound as the growth firms in Gulf Cooperation Council (GCC) countries and support private consumption.

Growth in Sri Lanka is forecast to average 5.1 percent a year over 2018-2020, mainly reflecting strong private consumption and investment growth. Exports will be supported by the reinstatement of the Generalised Scheme of Preferences (GSP+) with the European Union.

Elsewhere in the region, Bhutan's GDP is expected to expand 6.7 percent in FY2017/18 and reach an average 7.6 percent a year toward 2020, supported by hydropower-related construction and policies supporting the private sector, such as

FIGURE 2.5.2 SAR: Outlook and risks

Growth in the region is forecast to pick up to 6.9 percent in 2018, and stabilize around 7 percent a year over the medium term. Domestic demand will continue to be the main driver of the growth in the region. Non-performing loans remain high in South Asia.



Sources: Haver Analytics, International Monetary Fund, World Bank.
A. Shaded area indicates forecasts.
B. Last observation is 2016.
C. SAR = South Asia Region. Shaded area indicates forecasts.
D. Last observation is 2015 for Bhutan and Bangladesh, and 2016 for the others.
Click here to download data and charts.

[2] A more detailed discussion on the policies to lift growth over the medium-to-long-term growth is provided in Box 2.5.1 and Chapter 3.

[3] The Government of India announced a large recapitalization program ($ 32 billon) for public sector banks in October. The program is expected to be implemented within two years and planned to be financed by recapitalization bonds and budget support.

improving the ease of doing business, supporting research and development, promoting public-private partnerships in infrastructure projects, and improving access to skilled labor (RGOB 2016). Activity in Maldives is forecast to expand by 4.9 percent a year, on average, over the medium term, mainly driven by strong construction, tourism, and FDI inflows. In Nepal, growth is expected to settle at 4.5 percent a year, on average, in the medium term as post-earthquake reconstruction winds down. Growth in Afghanistan is forecast at 3.4 percent in 2018 to and average around 3.1 percent a year over the medium term, assuming no further deterioration in the security situation.

Risks

The main risks to the outlook are domestic, including fiscal slippages (e.g., Bangladesh, Maldives, Pakistan), setbacks to reforms to resolve corporate and financial sector balance sheet deterioration (e.g. Bangladesh, India), disruptions due to natural disasters, and persistent security challenges weakening domestic demand (e.g., Afghanistan). As an external risk, an abrupt tightening of global financing conditions or a sudden rise in financial market volatility could set back regional growth. On the other hand, stronger -than-expected global growth could benefit the more open economies in the region in the near term (Chapter 1).

Increasing contingent liabilities related to infrastructure projects (e.g., Pakistan), debt write-offs for farmers (e.g., India), and slippages relating to upcoming elections and weak tax revenues (e.g., Bangladesh, Nepal, Pakistan) could derail fiscal consolidation efforts. Weaker debt sustainability could weigh on confidence, financial markets and already-weak investment (World Bank 2017z).

Corporate debt overhangs and high levels of non-performing loans have been long-standing concerns in some countries (e.g. Bangladesh, India). Setbacks in efforts to resolve these domestic bottlenecks would continue to weigh on investment, and more broadly on medium-term growth prospects in the region.

Recent adverse weather conditions have reduced agricultural output in some cases (e.g. Nepal, Sri Lanka). Such developments continue to pose risks to regional growth (World Bank 2017e, 2017ac).

Recently, remittance inflows have been subdued due to fiscal consolidation and growth slowdowns in the Middle East, which constitutes roughly half of remittances to South Asia. A protracted slowdown in remittance inflows would weigh on domestic consumption (e.g., Bangladesh, Sri Lanka; World Bank 2017ac).

TABLE 2.5.1 South Asia forecast summary

(Real GDP growth at market prices in percent, unless indicated otherwise)

	2015	2016	2017e	2018f	2019f	2020f	Percentage point differences from June 2017 projections: 2017e	2018f	2019f
EMDE South Asia, GDP[1, 2]	**7.1**	**7.5**	**6.5**	**6.9**	**7.2**	**7.2**	**-0.3**	**-0.2**	**-0.1**
(Average including countries with full national accounts and balance of payments data only)[3]									
EMDE South Asia, GDP[3]	7.1	7.5	6.6	6.9	7.1	7.2	-0.2	-0.2	-0.2
GDP per capita (U.S. dollars)	5.8	6.2	5.3	5.7	5.9	6.0	-0.2	-0.1	-0.1
PPP GDP	7.1	7.5	6.6	6.9	7.1	7.2	-0.2	-0.2	-0.2
Private consumption	5.4	8.4	7.3	7.1	7.0	6.9	0.6	0.2	-0.1
Public consumption	2.6	13.8	12.0	11.3	9.5	9.6	-0.3	-0.5	-0.7
Fixed investment	5.5	4.7	5.9	7.5	8.5	9.1	0.0	0.2	0.5
Exports, GNFS[4]	-5.2	1.2	5.0	5.8	6.6	6.7	-1.0	-0.5	0.4
Imports, GNFS[4]	-4.0	0.3	5.3	5.1	5.7	5.8	0.9	-0.8	-0.6
Net exports, contribution to growth	-0.1	0.2	-0.3	-0.1	0.0	0.0	-0.5	0.1	0.3

Memo items: GDP[2]	15/16	16/17	17/18e	18/19f	19/20f	20/21f	17/18e	18/19f	19/20f
South Asia excluding India	5.4	5.7	5.7	5.8	5.9	6.0	0.0	0.0	-0.1
India	8.0	7.1	6.7	7.3	7.5	7.5	-0.5	-0.1	-0.2
Pakistan (factor cost)	4.5	5.3	5.5	5.8	6.0	6.0	0.0	0.0	0.0
Bangladesh	7.1	7.2	6.4	6.7	6.7	6.7	0.0	0.0	-0.3

Source: World Bank.

Notes: e = estimate; f = forecast. EMDE = emerging market and developing economy. World Bank forecasts are frequently updated based on new information and changing (global) circumstances. Consequently, projections presented here may differ from those contained in other Bank documents, even if basic assessments of countries' prospects do not differ at any given moment in time.

1. GDP at market prices and expenditure components are measured in constant 2010 U.S. dollars.

2. National income and product account data refer to fiscal years (FY) for the South Asian countries, while aggregates are presented in calendar year (CY) terms. The fiscal year runs from July 1 through June 30 in Bangladesh, Bhutan, and Pakistan, from July 16 through July 15 in Nepal, and April 1 through March 31 in India.

3. Sub-region aggregate excludes Afghanistan, Bhutan, and Maldives, for which data limitations prevent the forecasting of GDP components.

4. Exports and imports of goods and non-factor services (GNFS).

For additional information, please see www.worldbank.org/gep.

TABLE 2.5.2 South Asia country forecasts

(Real GDP growth at market prices in percent, unless indicated otherwise)

	2015	2016	2017e	2018f	2019f	2020f	Percentage point differences from June 2017 projections: 2017e	2018f	2019f
Calendar year basis [1]									
Afghanistan	1.1	2.2	2.6	3.4	3.1	3.1	0.0	0.0	0.0
Maldives	3.3	4.7	4.8	4.9	5.0	5.0	0.3	0.3	0.4
Sri Lanka	4.8	4.4	4.1	5.0	5.1	5.1	-0.6	0.0	0.0

Fiscal year basis[1]	15/16	16/17	17/18e	18/19f	19/20f	20/21f	17/18f	18/19f	19/20f
Bangladesh	7.1	7.2	6.4	6.7	6.7	6.7	0.0	0.0	-0.3
Bhutan	6.6	8.0	6.7	6.9	7.6	7.6	-0.1	-0.8	-2.9
India	8.0	7.1	6.7	7.3	7.5	7.5	-0.5	-0.1	-0.2
Nepal	0.4	7.5	4.6	4.5	4.5	4.5	-0.9	0.0	0.0
Pakistan (factor cost)	4.5	5.3	5.5	5.8	6.0	6.0	0.0	0.0	0.0

Source: World Bank.

Notes: e = estimate; f = forecast. World Bank forecasts are frequently updated based on new information and changing (global) circumstances. Consequently, projections presented here may differ from those contained in other Bank documents, even if basic assessments of countries' prospects do not differ at any given moment in time.

1. Historical data is reported on a market price basis. National income and product account data refer to fiscal years (FY) for the South Asian countries with the exception of Afghanistan, Maldives, and Sri Lanka, which report in calendar year (CY). The fiscal year runs from July 1 through June 30 in Bangladesh, Bhutan, and Pakistan, from July 16 through July 15 in Nepal, and April 1 through March 31 in India.

For additional information, please see www.worldbank.org/gep.

BOX 2.5.1 Potential growth in South Asia

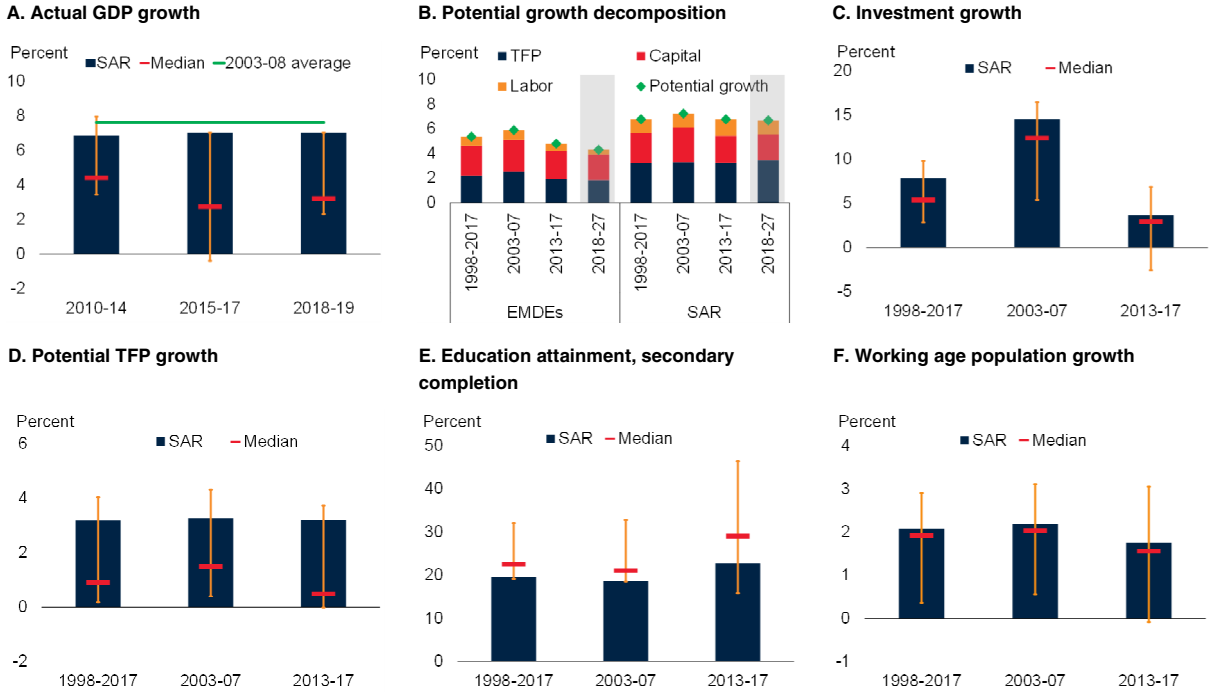
Potential growth in South Asia has slowed from around 7.2 percent just prior to the global financial crisis to an average of 6.8 percent in recent years, reflecting the effects of a sharp investment slowdown. Over the medium-term, South Asia's potential growth is expected to stabilize around 6.7 percent. Achieving faster sustained growth will require structural reforms such as improving human capital, enhancing female labor force participation, strengthening corporate and banking sector balance sheets, and promoting greater integration of the region into global and regional value chains.

Introduction

Although South Asia was the fastest growing emerging market and developing economy (EMDE) region in recent years, it still slowed compared with the rapid pace set prior to the global financial crisis (Figure 2.5.1.1). This slowdown was mainly driven by stalled investment in India, and it appears also to reflect a more broad-based easing of potential growth within the region, from 7.2 percent pre-crisis to around 6.8 percent. Other studies have estimated potential growth in the region. In the case of India, potential growth is estimated within the range of 6-8 percent in the post-crisis period (Bhoi and Behera 2016; Mishra 2013; Blagrave et al. 2015). Similarly, Ding et al. (2014) estimate Sri Lanka's potential growth between 6 and 8 percent after the global financial crisis.[1] Looking forward, achieving faster sustained growth in the region, with a corresponding improvement in living standards,

FIGURE 2.5.1.1 Regional growth

The slowdown of regional GDP growth in recent years has coincided with a decline in potential growth, which has mainly reflected weak investment.



Sources: Haver Analytics, Penn World Tables, World Bank Estimates, and World Development Indicators.
A. C.-F. Blue bars show GDP-weighted average of SAR countries. Markers show median GDP-weighted averages of the six EMDE regions and vertical lines denote range of regional GDP-weighted averages.
B. Potential growth estimates based on production function approach for India and Sri Lanka. See Annex 3.1 for more details.
Click here to download data and charts.

Note: This box was prepared by Temel Taskin, Sinem Kilic Celik, and Yirbehogre Modeste Some. Anh Mai Bui, Jinxin Wu, and Ishita Dugar provided research assistance.

[1] This estimate does not reflect the GDP revision of 2015, and might be biased upward.

BOX 2.5.1 Potential growth in South Asia *(continued)*

will require identifying and addressing the structural factors that are constraining the region's potential.

Against this backdrop, this Box will discuss the following questions:

- How has potential growth evolved in South Asia and what were its main drivers?
- What are prospects for potential growth?
- What are the policy options to lift potential growth?

This Box concludes that, in the absence of policy action, South Asia's potential growth is likely to remain broadly steady at its current rate. However, there is scope to boost the region's potential growth significantly through product and labor market reforms as well as through investment in human capital.

Evolution of potential growth and its drivers

Estimates based on the analysis in Chapter 3 suggest that the decline in potential growth in South Asia reflected slowing capital accumulation which outweighed the acceleration in TFP growth and improved educational attainment. A number of factors appear to have been at work, including heightened regulatory and policy uncertainties, delayed project approvals and implementation, continued bottlenecks in the energy sector, as well as reform setbacks (Anand et al. 2014). Large corporate debt overhang and non-performing assets in the banking sector further weighed on credit growth and investment within the region.

Potential growth prospects

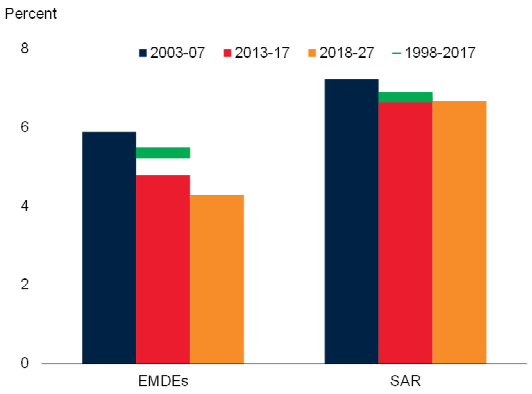
Over the medium-term, potential growth in South Asia is expected to average around 6.7 percent in the next decade. Although this would be well below the high rates achieved just before the global financial crisis, it compares favorably with other EMDEs, where potential growth is expected to slow even further (Figure 2.5.1.2).

Potential growth in South Asia will be underpinned mainly by a recovery in Total Factor Productivity (TFP)—in part owing to the effects of improvements in educational attainment, which will help offset a moderation in the growth of the working age population, similar to other EMDEs where aging already weighs heavily on potential growth.

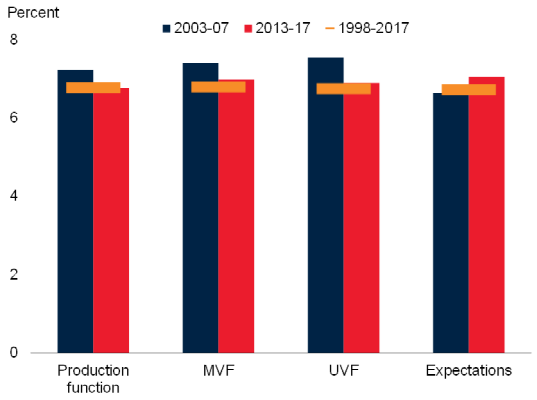
FIGURE 2.5.1.2 Regional potential growth estimates

South Asia's potential growth has slowed from around 7.2 percent just prior to the global financial crisis to an average of 6.8 percent in recent years, according to the baseline measure (production function).

A. Potential growth



B. Regional potential growth by different estimates



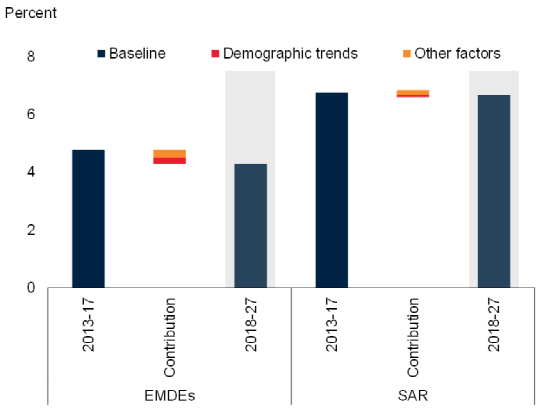
Source: World Bank estimates.
Notes: Lines and bars denote averages of different periods.
A. Based on the production function approach for India and Sri Lanka, as defined in Annex 3.1.
B. MVF stands for multivariate filter-based potential growth estimates; UVF stands for univariate filter-based potential growth estimates (specifically, the Hodrick-Prescott filter); Expectations stands for potential growth proxied by five-year-ahead *World Economic Outlook* growth forecasts. Sample includes India and Sri Lanka in the PF estimates, India in the MVF and UVF estimates and India, Pakistan, Bangladesh, Sri Lanka, Nepal, Maldives, Bhutan, and Afghanistan in the Expectations.
Click here to download data and charts.

BOX 2.5.1 Potential growth in South Asia *(continued)*

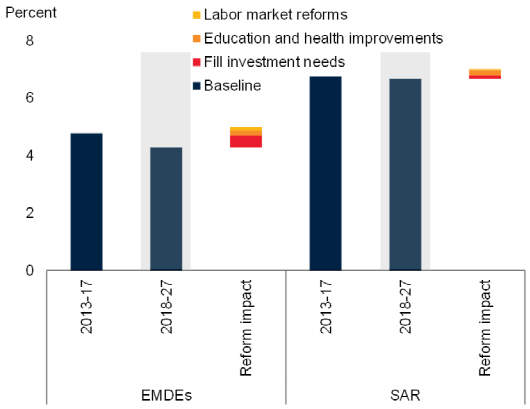
FIGURE 2.5.1.3 Policies to stem declining potential growth

Potential growth in South Asia is expected to average around 6.7 percent between 2018-27, slightly below its recent average rate. Labor market, education, and health reforms, along with investment, could boost the region's potential growth by 0.4 percentage points.

A. Baseline potential growth



B. Potential growth under reform scenarios



Source: World Bank estimates.
Notes: GDP weighted averages. Derived using the production function approach for India and Sri Lanka. Details are described in Annex 3.1.
A. "Other factors" reflects declining population growth, trend improvements in human capital, and a slowdown in investment growth to output growth.
B. Policy scenarios are described in Annex 3.1.
Click here to download data and charts.

India's recent reforms, such as the "Make in India" initiative and demonetization, are expected to encourage formal sector activity, broaden the tax base, and improve long-term growth prospects despite short term disruptions in the case of demonetization. For instance, the "Make in India" initiative, which began in late-2014, aims to improve investment and innovation as well as develop skills to meet the demand for skilled labor. To achieve these goals, the government has taken various steps to improve the business climate, such as shortening approval times for trademarks and patents to enhance property right protection, lowering restrictions on foreign direct investment (including foreign ownership restrictions) in various sectors, and accelerating investment in energy and transport infrastructure, which helped improve the ease of doing business (World Bank 2017l).

The July 2017 introduction of the Goods and Services Tax (GST) in India has caused temporary disruptions in manufacturing, and is linked to the recent weakness in the Purchasing Managers' Index and industrial production growth. However, eventually, it is expected to simplify tax compliance, deepen economic linkages between Indian states, broaden the tax base and improve revenue collections. In turn, this is expected to enhance the broader business environment and help foster investment and employment (IMF 2017).

Significant vulnerabilities have been recognized in the Indian banking and corporate sectors that may weigh on medium-to-long-term growth prospects unless they are addressed. Encouragingly, several steps have been taken on this front. For example, the Asset Quality Review initiated by the RBI in 2015 has led to an increase in the recognition of non-performing assets on financial sector balance sheets. More recently, the government announced a large recapitalization package ($ 32 billion) for public sector banks to be implemented over two years. Over the medium to long term, these measures are expected to help resolve private sector balance sheet weaknesses and unlock lending for private investment. Infrastructure spending in recent years partly addressed supply side bottlenecks. However, weaknesses on corporate balance sheets remain as firms are highly indebted. As corporate lending still accounts for a significant part of banks' assets, their ability to finance future business investments will require the restructuring of this debt, as well as a broader deleveraging in the corporate sector.

Sri Lanka's economic reform agenda, supported by World Bank and IMF programs, is expected to sustain

BOX 2.5.1 Potential growth in South Asia *(concluded)*

macroeconomic stability and support potential growth over the medium term (World Bank 2017ab). Public debt is expected to decline amid ongoing fiscal consolidation, which will open fiscal space and enable the country to allocate public spending toward human capital investments that support potential growth. The government recently adopted the new Inland Revenue Act, which aims to simplify tax compliance, but which could also mobilize additional revenue that could support growth-enhancing spending, including infrastructure investment.

Policy options to lift potential growth

As illustrated in Chapter 3, structural reforms can provide a significant boost to productivity, employment, and potential growth. Indeed, this analysis illustrates that steps to reform labor markets, as well as education and health systems, and policies to encourage private sector investment could boost potential growth. (Figure 2.5.1.3).

One area that could encourage higher private investment in South Asia would be steps to enhance its integration in global value chains. Studies show that this has been associated with higher growth, but South Asia region lags behind other EMDE regions in terms of the integration of its trade and investment flows, both globally and within the region (Farole and Pathikonda 2016). Closer trade and investment ties could be supported by closing infrastructure gaps, removing regulatory and other impediments to businesses, as well as by promoting a shift towards higher-value added manufacturing industries (Lopez Acevedo and Robertson 2016).

Addressing corporate and banking sector balance sheet issues could lift investment and potential growth prospects in the region. Recent steps taken by the government such as the recapitalization package for public sector banks are expected to support credit growth and investment.

Investment in human capital may also help lift productivity, labor incomes, and potential output, including by fostering a shift toward higher-value added and innovative industries (Aturupane et al. 2014). Policies that can help facilitate this shift include steps to improve the share the participation of women in the workforce, increase access to higher and better education, and investing in vocational training programs (World Bank 2017p).

SUB-SAHARAN AFRICA

A modest recovery is underway in Sub-Saharan Africa, supported by an improvement in commodity prices. Although growth rebounded in Angola, Nigeria, and South Africa—the region's largest economies—it remained low. Metals exporters in the region experienced a moderate rebound, partly reflecting an uptick in mining output amid rising metals prices. Growth was stable in non-resource-intensive countries, supported by infrastructure investment. The region is projected to see a pickup in activity over the forecast horizon, on the back of firming commodity prices and gradually strengthening domestic demand. However, given demographic and investment trends, structural reforms would be needed to boost potential growth over the next decade. Downside risks continue to predominate, including the possibilities that commodity prices will remain weak, global financing conditions will tighten disorderly, and regional political uncertainty and security tensions will intensify. On the upside, a stronger-than-expected pickup in global activity could further boost exports, investment, and growth in the region.

Recent developments

Growth in Sub-Saharan Africa (SSA) is estimated to have rebounded to 2.4 percent in 2017, after slowing sharply to 1.3 percent in 2016, as commodity prices recovered, global financing conditions remained favorable, and slowing inflation lifted household demand (Figure 2.6.1). However, the recovery was slightly weaker than forecast in June, and was marked by still-negative per capita income growth, low investment, and a decline in productivity growth (Box 2.6.1).

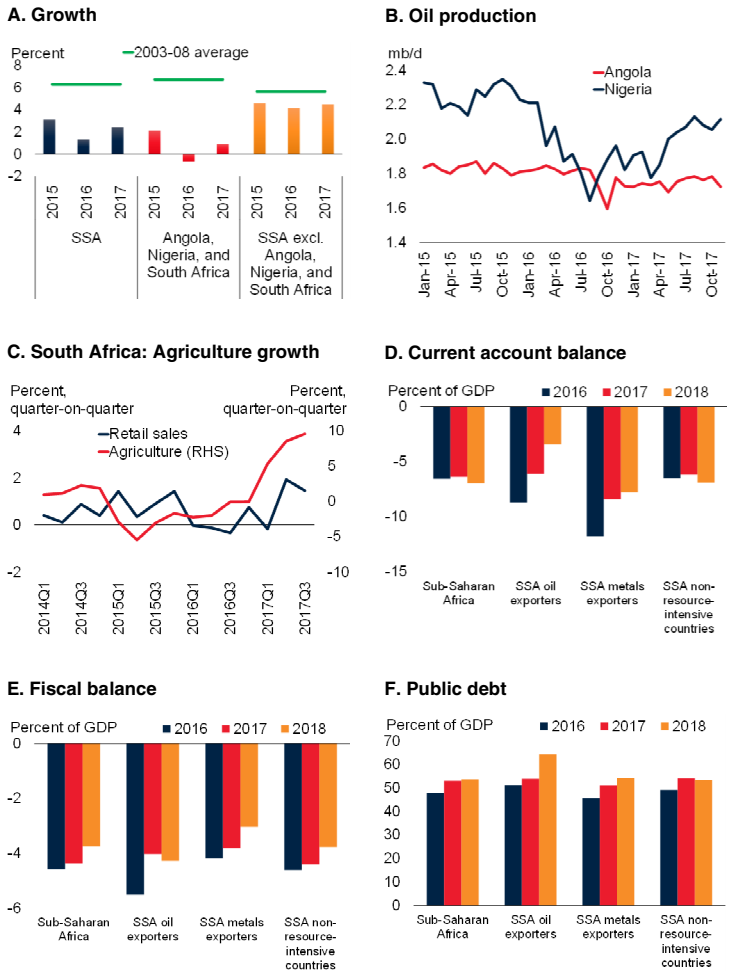
In particular, the rebound in the region's largest economies—Angola, Nigeria, and South Africa—was modest. A recovery in the oil sector, partly due to a decline in militants' attacks on oil pipelines, helped bring Nigeria back to positive GDP growth. The performance of the agricultural sector was relatively solid. However, activity remained weak in the non-oil industrial sector, as inadequate power generation hurt the manufacturing and construction industries. Strong growth in the agricultural sector, due to improved rainfalls, helped South Africa exit recession. The mining sector expanded at a solid pace and manufacturing activity rebounded. However, growth in the rest of the economy was subdued amid elevated policy uncertainty, which continued to weigh on business confidence. In Angola, a challenging operational environment limited investment in the oil sector. Prolonged low growth and high unemployment has weighed on social progress in all three countries, with per capita GDP falling and the poverty headcount rising in Nigeria and South Africa. In South Africa, the proportion of poor individuals in the total population rose across all poverty lines between 2011 and 2015. Using the upper bound poverty line (R1,138 per person per month), the proportion of poor individuals increased from 53.1 percent of the population in 2011 to 55.5 percent in 2015 (Statistics South Africa 2017).

Elsewhere in the region, activity was weak among oil producers in the Central African Economic and Monetary Community (CEMAC), as they continued to deal with the effects of the earlier oil price collapse (Special Focus 1). By contrast, growth rebounded in the metals-exporting

Note: The author of this section is Gerard Kambou. Research assistance was provided by Xinghao Gong.

FIGURE 2.6.1 SSA: Recent developments

Regional growth rebounded in 2017, reflecting a modest recovery in Angola, Nigeria, and South Africa—the region's largest economies. Regional activity was also supported by an increase in commodity prices, a rebound in oil production in Nigeria, and strong agricultural growth in South Africa. The current account deficits narrowed in oil and metals exporters, but remained elevated in the non-resource-intensive countries due to strong import growth. Fiscal deficits narrowed slightly in 2017, reflecting large expenditure cuts in some oil exporters. Government debt continued to rise across the region.



Sources: Haver Analytics, International Energy Agency, Statistics South Africa, World Bank, World Economic Outlook.
A. GDP-weighted averages.
B. Last observation is November 2017. "mb/d" stands for million barrels per day.
C. Last observation is 2017Q3.
D. -F. Median of country groups. Data for 2017 are estimates, data for 2018 are forecasts. Non-resource-intensive countries include agricultural exporters and commodity importers.
Click here to download data and charts.

economies, as mining output and investment responded to a rise in metals prices and agricultural sectors recovered. Nonetheless, their rebound was weaker than expected, owing to the effects of a poor business environment in the non-metals sector. Growth in non-resource-intensive countries—which consist mostly of agricultural exporters—was broadly stable, supported by infrastructure investment and crop production. Economies in the West African Economic and Monetary Union (WAEMU) and in East Africa expanded at a robust pace. However, activity slowed in some countries, due to lower cocoa prices (e.g., Côte d'Ivoire), drought (e.g., Kenya, Uganda), and weak execution of the capital expenditure budget (e.g., Tanzania).

Current account deficits and financing

Current account deficits narrowed, but remained elevated, with the median current account deficit estimated at 7 percent of GDP. Oil exporters saw a significant decline in their deficits, as imports remained subdued due to sluggish growth and their terms of trade improved. Deficits narrowed moderately among metal exporters but were still high in the non-resource-intensive countries, due to strong import growth.

Generally accommodative international capital market conditions helped finance these deficits. Sovereign bond issuance rebounded in 2017, and improved global sentiment toward emerging and frontier markets helped narrow sovereign bond spreads. Nigeria experienced a pickup in equity and portfolio flows after the central bank implemented measures to improve access to foreign exchange. However, although firmer commodity prices encouraged foreign investments in the hydrocarbon and mining sectors, foreign direct investment inflows to the region are expected to increase only moderately in 2017 (UNCTAD 2017). As a consequence, the level of foreign exchange reserves in the region continued to be low. The median level of reserves was equivalent to 3 months of imports in 2017, the same as in 2016, but below its peak of 3.9 months of imports in 2014, pointing to the need for countries across the region to rebuild external buffers.

Exchange rates and inflation

Currencies in the region stabilized in real effective terms. For oil exporters, exchange rate pressures eased due to higher oil prices, increased oil

production, and a weaker dollar. The spread between the parallel and official rates narrowed in Nigeria, but import restrictions and multiple exchange rates remained. In May 2017, the Central Bank of Nigeria introduced a new investor and exporter window in an attempt to improve access to foreign exchange.

Headline inflation declined across the region, reflecting the confluence of stable exchange rates and slowing food price inflation. Notably, in South Africa, headline and core inflation moved closer to the middle of the central bank's target range. Easing price pressures created space for several central banks in the region to cut interest rates. However, inflation remained elevated in some countries (e.g., Angola, Nigeria). In the case of Nigeria, this reflected the effects of poor harvests in some parts of the country on food prices. A continued moderation of food price inflation and exchange rate stability are expected to push headline inflation down further, which could provide room for further easing of monetary policy in the region.

Fiscal balance and government debt

Fiscal deficits narrowed slightly. Large spending cuts reduced the overall deficit in CEMAC countries. However, in some oil exporters (e.g., Angola, Nigeria), fiscal policy was loosened in response to higher oil revenues. Fiscal deficits declined in non-resource-intensive countries, but remained at high levels, partly reflecting infrastructure investment. Deficits also narrowed moderately in metals exporters as they continued to struggle to mobilize domestic revenue. In South Africa, national government revenue increased at a slower-than-expected pace, as real economic activity remained weak, making it difficult to attain the budget's deficit target.

Government debt indicators continued to deteriorate in the region in 2017, with the median debt-to-GDP ratio rising to 53 percent from 48 percent in 2016. Government debt rose further in South Africa, owing to fiscal slippages. Concerns about the debt outlook prompted Standard & Poor's to downgrade South Africa's local currency debt to sub-investment grade, bringing it in line with its foreign currency rating. Elsewhere, Mozambique defaulted on portions of its debt. The government debt ratio edged up in non-resource-intensive countries as they continued to borrow (e.g., Burundi, Ethiopia), including on international capital markets (e.g., Côte d'Ivoire, Senegal), to finance public investment. Measures to curtail public spending helped slow the increase in the debt-to-GDP ratio in oil exporters in CEMAC, but government debt in Equatorial Guinea is expected to rise sharply in 2017, due to a build-up in domestic arrears. In the Republic of Congo, the discovery of previously undisclosed debt could push total government debt to 117 percent of GDP, from 115 percent in 2016.

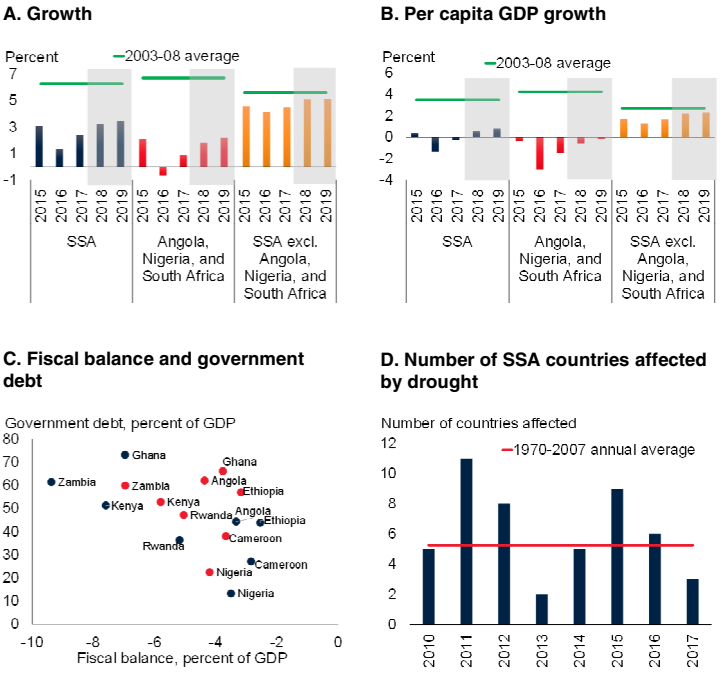
Fiscal sustainability gaps in the region remain sizable, which are contributing to growing debt-to-GDP ratios (World Bank 2017e). On average, fiscal sustainability gaps widened between 2007 and 2016 by 4 percentage points, reflecting both rising debt levels and widening fiscal deficits. The erosion of fiscal sustainability was widespread. The share of countries with sizable deterioration in sustainability gaps (i.e., worsened by 1 percentage of GDP or more) over 2007-16 was 80 percent. Weakening government debt dynamics in the region was also accompanied by a rapid increase in private sector debt. In 2016, private credit by domestic banks averaged 29 percent of GDP. The rapid increase in private sector debt across the region suggests the possibility of growing contingent liabilities for the public sector.

Outlook

Regional growth is projected to rise to 3.2 percent in 2018, and to an average of 3.6 percent in 2019-20 (Figure 2.6.2). These forecasts are broadly unchanged from June, and assume that commodity prices will firm and domestic demand will gradually strengthen, helped by slowing inflation. However, despite the pickup, growth will remain below the rates seen prior to the global financial crisis, partly reflecting the struggle faced by the region's larger economies to boost private investment. Moreover, while per capita growth is expected to turn positive after falling in 2016 and 2017, this would be at a rate that would remain insufficient to reduce poverty.

FIGURE 2.6.2 SSA: Outlook and risks

The region is projected to see a pickup in growth as commodity prices firm, but growth—including in per capita terms—would remain well below its long-term average. Angola, Nigeria, and South Africa will continue to struggle to boost growth, while the performance of the rest of the region will be more favorable. Downside risks to the outlook include the possibility that borrowing costs will begin to rise on the back of a deterioration in global sentiment amid weak commodity prices, and adverse weather conditions.



Sources: Emergency Events Database (www.emdat.be, Brussels, Belgium), Université catholique de Louvain, IMF Regional Economic Outlook for Sub-Saharan Africa, World Bank.
A. B. Shaded areas represent forecasts.
C. Blue data points represent 2015 values; red data points represent 2018 World Bank forecasts.
D. Chart shows number of SSA countries experiencing at least one drought in any given year.
Click here to download data and charts.

Growth in Nigeria is projected to pick up from 1 percent in 2017 to 2.5 percent in 2018 and 2.8 percent in 2019-20. The forecasts for 2018 and 2019 were revised up, reflecting the expectations that oil production will continue to recover and reforms in the foreign exchange market, along with improved supply of electricity, will help lift growth in the non-oil sector. In South Africa, growth in 2017 was upgraded from 0.6 percent to 0.8 percent, as activity strengthened more than expected in the second half of the year. Growth is projected to pick up to 1.1 percent in 2018 and 1.7 percent in 2019-20. However, policy uncertainty is likely to remain and could weigh on investment. Growth in Angola is projected to rise from 1.2 percent in 2017 to 1.6 percent in 2018, as a successful political transition signals the possibility of reforms that can ameliorate the investment climate.

Outside the three largest economies, among oil exporters, growth is forecast to strengthen in Ghana, as increased oil and gas production lifts exports. Growth in CEMAC is expected to remain subdued but improve gradually, as countries continue to adjust to low oil prices. The ongoing recovery in metals exporters is projected to continue. Steadily rising metals prices are expected to encourage further investment in the mining sector. In some metals exporters, a combination of slowing inflation and monetary policy easing is expected to support a pickup in household demand. In others, improved weather conditions will also enhance power generation, supporting greater private sector activity.

Non-resource-intensive countries are projected to expand at a solid pace, helped by robust public investment growth. Economic activity is expected to remain solid in WAEMU, with Côte d'Ivoire and Senegal expanding at a rapid pace. Among East African countries, Ethiopia is likely to remain the fastest growing economy, but growth is expected to soften as it takes measures to stabilize government debt. Growth is expected to recover in Kenya, as inflation eases, and to firm in Tanzania on strengthening investment growth.

Potential growth increased in SSA following the global financial crisis, above its long-term and pre-crisis average rates. By contrast, potential growth in other emerging market and developing economies (EMDE) regions slowed sharply (Chapter 3). The increase in SSA's potential growth reflected the effects of significantly higher public investment and rising labor inputs (Cho and Tien 2014), which offset the headwinds from the commodity price collapse, a slow recovery in the Euro Area following the euro crisis, and a slowdown in economic activity in China as it began rebalancing its economy toward domestic consumption. However, in the absence of reforms, potential growth could slow in the coming decade, owing to a slowdown in the growth of capital stock and labor supply.

Risks

Risks to the regional outlook are, on balance, tilted to the downside. On the upside, stronger-than-expected activity in the United States and Euro Area could push regional growth above the baseline through higher exports, and increased investment flows in mining and infrastructure. On the downside, an abrupt slowdown in China could generate adverse spillovers to the region through lower-than-projected commodity prices, which would exacerbate economic imbalances and complicate adjustment needs in many commodity exporters. Oil producers in CEMAC and metals exporters are particularly vulnerable to this risk.

On the domestic front, excessive external borrowing, in the absence of sound forward-looking budget management, could worsen debt dynamics and cause economic instability. Reforms to contain fiscal deficits and rebuild buffers are particularly needed in CEMAC as well as in the non-resource-intensive countries where government debt is high and rising. A quicker and sharper-than-expected tightening of global financing conditions—triggered, for example, by a reassessment in financial markets of the pace of monetary policy normalization in the United States or other major economies—could lead to a reversal in capital flows to the region. South Africa would be particularly vulnerable to adverse swings in investor sentiment because of its great dependence on portfolio inflows. Moreover, with the increase in sovereign bond issuance in recent years, a sharp increase in global interest rates could also complicate debt dynamics in the region. In the long run, a sharper-than-expected slowdown in potential growth could damage prospects for gains in per capita incomes and poverty reduction.

Other downside risks include a protracted period of heightened political and policy uncertainty, which could further hurt confidence and deter investment. This risk is elevated in South Africa, where the ruling African National Congress's leadership election could lead to deep divisions within the party, and in Zimbabwe, where a political transition is unfolding. Droughts, conflicts, and worsening security conditions would weigh heavily on economic activity in the region, especially in fragile countries. This risk is particularly elevated in West and Central Africa, where militant insurgencies remain a threat.

The risks to the regional outlook underscore the need for policy actions to achieve inclusive growth (Chapter 1). The rising government debt levels highlight the importance of fiscal adjustment to contain fiscal deficits and maintain financial stability. Structural policies—such as improvements in education and health systems, as well as labor market, governance, and business climate reforms—could help bolster potential growth across the region.

TABLE 2.6.1 Sub-Saharan Africa forecast summary

(Real GDP growth at market prices in percent, unless indicated otherwise)

	2015	2016	2017e	2018f	2019f	2020f	Percentage point differences from June 2017 projections: 2017e	2018f	2019f
EMDE SSA, GDP[1]	**3.1**	**1.3**	**2.4**	**3.2**	**3.5**	**3.6**	**-0.2**	**0.0**	**0.0**
(Average including countries with full national accounts and balance of payments data only)[2]									
EMDE SSA, GDP[2]	3.1	1.3	2.4	3.2	3.5	3.5	-0.2	0.0	0.0
GDP per capita (U.S. dollars)	0.4	-1.4	-0.3	0.5	0.8	0.9	-0.2	-0.1	-0.1
PPP GDP	3.3	1.6	2.7	3.5	3.7	3.8	-0.1	0.0	0.0
Private consumption	5.5	1.4	2.1	2.6	2.7	2.8	-0.1	0.0	-0.1
Public consumption	-3.1	2.8	2.3	2.5	2.7	2.7	-0.2	-0.2	-0.1
Fixed investment	1.3	1.6	5.2	6.8	7.1	7.2	0.1	-0.2	-0.1
Exports, GNFS[3]	2.3	0.4	2.5	3.2	3.4	3.5	-0.2	0.2	0.1
Imports, GNFS[3]	0.7	0.0	2.3	2.9	3.1	3.2	-0.6	-0.6	-0.6
Net exports, contribution to growth	0.5	0.1	0.1	0.1	0.1	0.1	0.2	0.3	0.2
Memo items: GDP									
SSA excluding Angola, Nigeria, and South Africa	4.6	4.1	4.5	5.0	5.1	5.2	-0.3	-0.2	-0.1
Oil exporters[4]	2.8	-0.4	1.5	2.8	2.8	3.0	-0.2	0.2	0.1
CFA countries[5]	3.8	2.8	3.2	4.3	4.6	4.9	-0.4	0.2	0.3
CEMAC	1.5	-1.0	-0.4	1.9	2.4	3.0	-1.2	0.2	0.3
WAEMU	6.2	6.6	6.5	6.4	6.4	6.5	0.3	0.2	0.3
SSA3	2.1	-0.6	0.9	1.8	2.2	2.2	0.0	0.1	0.0
Angola	3.0	0.0	1.2	1.6	1.5	1.5	0.0	0.7	0.0
Nigeria	2.7	-1.6	1.0	2.5	2.8	2.8	-0.2	0.1	0.3
South Africa	1.3	0.3	0.8	1.1	1.7	1.7	0.2	0.0	-0.3

Source: World Bank.

Notes: e = estimate; f = forecast. EMDE = emerging market and developing economy. World Bank forecasts are frequently updated based on new information and changing (global) circumstances. Consequently, projections presented here may differ from those contained in other Bank documents, even if basic assessments of countries' prospects do not differ at any given moment in time.

1. GDP at market prices and expenditure components are measured in constant 2010 U.S. dollars. Excludes Central African Republic, São Tomé and Príncipe, Somalia, and South Sudan.
2. Sub-region aggregate excludes Central African Republic, São Tomé and Príncipe, Somalia, and South Sudan, for which data limitations prevent the forecasting of GDP components.
3. Exports and imports of goods and non-factor services (GNFS).
4. Includes Angola; Cameroon; Chad; Congo, Democratic Republic; Congo, Republic; Gabon; Ghana; Nigeria; and South Sudan.
5. Includes Benin; Burkina Faso; Cameroon; Central African Republic; Chad; Congo, Republic; Côte d'Ivoire; Equatorial Guinea; Gabon; Mali; Niger; Senegal; and Togo.

For additional information, please see www.worldbank.org/gep.

TABLE 2.6.2 Sub-Saharan Africa country forecasts[1]

(Real GDP growth at market prices in percent, unless indicated otherwise)

	2015	2016	2017e	2018f	2019f	2020f	Percentage point differences from June 2017 projections: 2017e	2018f	2019f
Angola	3.0	0.0	1.2	1.6	1.5	1.5	0.0	0.7	0.0
Benin	2.1	4.0	5.4	6.0	6.3	6.7	-0.1	0.0	0.0
Botswana[2]	-1.7	4.3	4.5	4.7	4.8	4.8	0.5	0.5	0.5
Burkina Faso	4.0	5.9	6.4	6.0	6.0	6.0	0.3	-0.3	-0.3
Burundi	-3.9	-0.6	0.5	1.5	2.5	2.5	-1.0	-0.5	-0.1
Cabo Verde	0.9	3.8	3.5	3.6	3.8	3.8	0.2	-0.1	0.1
Cameroon	5.8	4.5	3.7	4.1	4.3	4.3	-0.2	-0.3	-0.3
Chad	1.8	-6.4	-2.7	3.7	2.9	6.8	-2.9	0.5	-0.2
Comoros	1.0	2.2	2.5	2.7	2.9	2.9	-0.8	-1.3	-1.1
Congo, Dem. Rep.	6.9	2.4	2.6	3.0	3.3	3.3	-2.1	-1.9	-1.6
Congo, Rep.	2.6	-2.8	-1.1	2.3	1.5	1.5	-2.1	0.8	0.0
Côte d'Ivoire	8.9	8.3	7.6	7.2	7.2	7.2	0.8	0.7	0.9
Equatorial Guinea	-9.1	-9.0	-8.5	-6.0	-4.2	-4.2	-2.6	1.0	1.8
Ethiopia[2]	9.6	7.5	8.5	8.2	7.8	7.8	0.2	0.2	-0.1
Gabon	4.0	2.1	1.1	2.4	3.7	3.7	-0.2	0.0	0.8
Gambia, The	4.1	2.2	3.0	3.5	4.2	4.2	0.5	-0.3	0.2
Ghana	3.8	3.7	6.1	8.3	5.5	5.5	0.0	0.5	-0.7
Guinea	3.5	6.6	6.7	5.8	5.9	5.9	2.3	1.2	1.3
Guinea-Bissau	6.1	5.8	5.5	5.2	5.4	5.4	0.4	0.1	0.3
Kenya	5.7	5.8	4.9	5.5	5.9	5.9	-0.6	-0.3	-0.2
Lesotho	5.6	2.3	4.0	4.0	4.2	4.2	1.0	0.6	0.6
Liberia	0.0	-1.6	2.5	3.9	5.0	6.0	-0.5	-1.4	-0.7
Madagascar	3.1	4.2	4.1	5.1	5.6	5.4	0.6	-1.3	0.9
Malawi	2.8	2.5	4.5	5.0	5.4	5.4	0.1	0.1	0.1
Mali	5.7	5.8	5.3	5.0	4.7	4.7	0.0	-0.2	-0.4
Mauritania	1.4	2.0	3.5	3.0	4.6	4.6	0.0	0.3	0.0
Mauritius	3.5	3.7	3.9	3.8	3.7	3.7	0.5	0.3	0.4
Mozambique	6.6	3.8	3.1	3.2	3.4	3.4	-1.7	-2.9	-3.3
Namibia	6.0	1.1	1.7	3.0	3.5	3.5	-1.3	-1.0	-0.7
Niger	4.0	5.0	5.2	5.2	5.4	5.6	0.0	-0.3	-0.1
Nigeria	2.7	-1.6	1.0	2.5	2.8	2.8	-0.2	0.1	0.3
Rwanda	8.9	5.9	5.2	5.9	6.8	6.8	-0.8	-0.9	-0.2
Senegal	6.5	6.7	6.8	6.9	7.0	7.0	0.1	0.0	0.0
Seychelles	3.5	4.4	4.2	3.8	3.5	3.5	0.0	0.0	0.0
Sierra Leone	-20.6	6.3	5.6	6.3	6.7	6.7	0.2	0.7	0.8
South Africa	1.3	0.3	0.8	1.1	1.7	1.7	0.2	0.0	-0.3
Sudan	4.9	4.7	4.1	3.7	3.7	3.7	0.0	-0.2	-0.2
Swaziland	1.5	1.3	0.9	1.9	1.8	1.8	-0.8	-1.2	-1.4
Tanzania	7.0	7.0	6.6	6.8	6.9	6.9	-0.6	-0.4	-0.5
Togo	5.3	5.0	5.0	5.3	5.4	5.4	0.4	-0.2	-0.1
Uganda[2]	5.2	4.7	4.0	5.1	5.7	6.0	-0.6	-0.1	0.1
Zambia	2.9	3.0	4.2	4.5	5.0	5.0	0.1	0.0	0.3
Zimbabwe	1.4	0.7	2.8	0.9	0.2	0.2	0.5	-0.9	-1.5

Source: World Bank.

Notes: e = estimate; f = forecast. World Bank forecasts are frequently updated based on new information and changing (global) circumstances. Consequently, projections presented here may differ from those contained in other Bank documents, even if basic assessments of countries' prospects do not differ at any given moment in time.

1. GDP at market prices and expenditure components are measured in constant 2010 U.S. dollars. Excludes Central African Republic, São Tomé and Príncipe, Somalia, and South Sudan.

2. Fiscal-year-based numbers.

For additional information, please see www.worldbank.org/gep.

BOX 2.6.1 Potential growth in Sub-Saharan Africa

Sub-Saharan Africa's potential growth rose following the global financial crisis, above its long-term and pre-crisis averages, due to increases in the working-age population and capital stock accumulation. Notwithstanding these recent gains, potential growth could slow in the next decade, as labor force growth stagnates and capital accumulation moderates, which would weigh on per capita incomes and diminish the prospects for poverty reduction. However, structural reforms, including additional investment, stronger health and education improvements, and increased female labor participation, could help ensure that the region's potential growth remains robust.

Introduction

Sub-Saharan Africa (SSA)'s potential growth rose in the post-crisis (2013-17) period, above its long-term (1998-2017) and pre-crisis (2003-07) averages, and also above the regional population growth rate, signaling the prospect of gains in per capita incomes in the medium-term. The acceleration in potential growth was mainly due to increases in labor supply, capital stock, and total factor productivity (TFP) growth. Excluding South Africa, potential growth rose at a faster pace, above the emerging market and developing economies (EMDE) average, reflecting a stronger increase in capital accumulation.

Sustained per capita potential growth is critical for continued income convergence and poverty reduction, which is particularly relevant to countries in SSA where an increasing share of the world's poor reside (World Bank 2015e). SSA's prospects for continued and solid potential growth are favorable when South Africa is excluded, suggesting that the positive demographic trends that have recently boosted labor supply growth are likely to continue in the rest of the region, along with steady growth in capital accumulation and TFP.

Against this backdrop, this box will discuss the following questions:

- How has potential growth evolved in the region and what were its main drivers?
- What are the prospects for potential growth in SSA?
- What are the policy options for boosting the region's potential growth?

The box's main conclusions are that—in the absence of reforms—SSA's potential growth is likely to slow from the 3.3 percent rate achieved in the past five years to 3.2 percent in the next decade (2018-27), as growth in labor force stagnates and the rate of capital accumulation moderates, mainly reflecting a slowdown in employment and capital stock growth in South Africa. Such a decline in potential growth would limit the prospects for further gains in per capita incomes and poverty reduction. Excluding South Africa, potential growth in the rest of the region would remain steady at 5 percent a year. This underscores the importance of structural reforms to boost potential growth, including those that spur private investment, skills development, and female labor force participation.

How has potential growth evolved in Sub-Saharan Africa and what were its main drivers?

Potential growth increased in SSA following the global financial crisis to 3.3 percent a year during 2013-17, above its long-term (1998-17) average of 2.9 percent and pre-crisis (2003-07) average of 3 percent (Figure 2.6.1.1). By contrast, potential growth in other EMDE regions slowed sharply. Excluding South Africa, potential growth in the region rose from 3.6 percent a year in the pre-crisis period to 5 percent during 2013-17, above the EMDE average of 4.8 percent. This acceleration reflected the effects of significantly higher public investment and rising labor inputs, which offset the headwinds from a commodity price collapse (2014-15), and a slowdown in major trading partners, including in the Euro Area following the euro crisis (2010-13), and in China as it began rebalancing its economy toward domestic consumption.

The pickup in potential growth can be decomposed into its principal components:

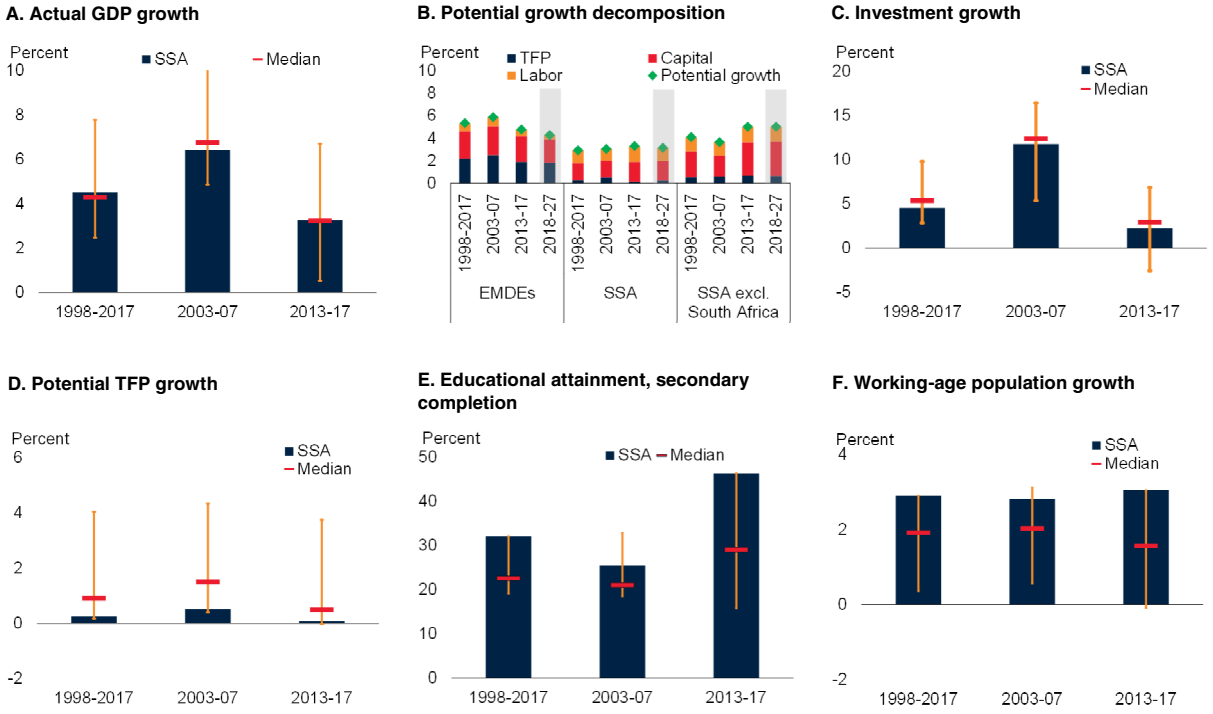
Rapid capital stock growth. Excluding South Africa, capital stock growth rose from 1.8 percent a year in 2003-07 to 2.6 percent in 2008-12. This increase partly reflected the stimulus measures countries in the region adopted to cushion the impact of the global financial crisis and support long-term growth. The impact of the stimulus on investment was amplified by efforts to improve the business environment and support investor confidence (Devarajan and Kasekende 2011). The growth of capital stock picked up to 2.9 percent during 2013-17, reflecting

Note: This box was prepared by Gerard Kambou, Sinem Kilic Celik, and Yirbehogre Modeste Some. Xinghao Gong provided research assistance.

BOX 2.6.1 Potential growth in Sub-Saharan Africa *(continued)*

FIGURE 2.6.1.1 Regional growth and drivers of potential growth

Although growth slowed in Sub-Saharan Africa during 2013-17, its underlying potential accelerated owing to increases in the share of working-age population and capital stock growth. Excluding South Africa, potential growth rose at a faster pace.



Sources: World Bank staff estimates, World Development Indicators, Penn World Tables.
Note: SSA stands for Sub-Saharan Africa.
A. C. -F. Median represents median of the six EMDE regional aggregates. Vertical lines indicate the range of the regional aggregates.
Click here to download data and charts.

a strong public infrastructure investment drive in the fast-growing non-resource-intensive countries as well as an increase in foreign direct investment flows in metals exporters (World Bank 2017p). The contribution of capital stock growth to potential growth was 1.1 percentage points higher than the rates seen prior to the global financial crisis. If South Africa is included, the capital stock growth is more modest, with a 0.3 percentage points contribution to potential growth in 2013-17.

Solid labor supply growth. Labor supply growth picked up to 1.4 percent in the post-crisis period, above its longer-term average of 1.2 percent. This acceleration mainly reflected the effects on the labor supply of a bulge in the working-age population along with an increase in labor force participation rates. As a result, the contribution of labor inputs to potential growth increased by 0.2 percentage points in the post-crisis period, contrasting with other EMDE regions, where population aging has dampened the growth of the workforce. If South Africa is included, the contribution of labor supply growth to potential growth rises to 0.4 percentage points, reflecting stronger growth in the working-age population.

Modest TFP growth. Potential TFP growth rose slightly in 2013-17 from the rates seen prior to the global financial crisis. During 2003-07, TFP growth rose above its long-term average, supported by improvements in health and education outcomes, as well as by a decline in the share of the labor force engaged in agriculture and the associated reallocation of workers to higher productivity sectors (McMillan and Harttgen 2014). However, TFP growth remained subdued in the post-crisis period. TFP growth slows markedly if South Africa is included, reflecting the sharp decline in TFP growth South Africa experienced following the global financial crisis. Overall, the contribution of TFP growth to potential growth during 2013-17 was minimal. The low post-crisis increase in TFP growth in SSA and other EMDE regions has been attributed to a slowdown in convergence to the

BOX 2.6.1 Potential growth in Sub-Saharan Africa *(continued)*

technological frontier after a rapid catch-up in the decade preceding the crisis (Kemp and Smit 2015).

In summary, potential growth in SSA picked up in the post-crisis period, due to increases in the working-age share of the population, which boosted labor supply growth, and to increases in the capital stock from higher investment. TFP growth increased marginally, reflecting an apparent slowdown in the rate of absorption of new technology.

What are the prospects for potential growth in the region?

To examine this question, a baseline projection is constructed that assumes: population and its composition grow in line with a median fertility scenario (as projected in the UN Population Projections); recent trend improvements in education and health outcomes continue; and the investment-to-output ratios remain at their latest five-year average.

Under this scenario, the key determinants of potential growth would evolve as follows:

The underlying growth of the capital stock would remain steady, at around 3 percent a year. If South Africa is included, the capital stock trend growth moderates to 1.8 percent, consistent with a slowdown in investment.

Compared with other EMDE regions, SSA is experiencing a slow decline in fertility rates (Canning et al. 2015). As a result, the youth dependency rate would remain high and the share of working-age population would rise only slowly. Labor supply growth would remain broadly stable, at around 1.4 percent a year. However, if South Africa is included, labor supply growth could slow to 1.1 percent, reflecting declining employment growth in South Africa.

TFP growth would remain steady at 0.6 percent a year. If South Africa is included, TFP growth could rise, owing to South Africa's innovation strengths (World Bank 2017ae).

On balance, these factors suggest that, in the absence of reforms, potential growth would remain steady at 5 percent on average in the next decade, if South Africa is excluded, as the growth of capital stock and labor supply remains stable. The inclusion of South Africa changes the results. Potential growth would remain low at around 3.2 percent by 2027, as a slowdown in the growth of capital stock and labor supply is only partially offset by a modest increase in TFP growth. Potential growth at this rate would mean that GDP per capita in SSA would rise only very modestly, with unfavorable prospects of reducing the region's poverty headcount.

What are the policy options to bolster medium-term potential growth in the region?

This section assesses the benefits from the implementation of key structural reforms using scenario analysis. These include filling the region's investment needs, boosting human capital improvements, and increasing labor supply.

Filling investment needs. Although public investment picked up in the mid-2000s and reached a peak of 5.8 percent of GDP in 2014, this rate was well below the average for other EMDEs (World Bank 2017af).

SSA's infrastructure investment needs are particularly sizable. Increasing public investment would provide a short-run boost to output, but could also have favorable supply-side effects, including by spurring private investment (World Bank 2017af). Although many countries in the region have little fiscal space to raise public spending through deficit financing, there is scope to reallocate resources from less productive spending programs and to mobilize domestic revenues. Tax revenues as a share of GDP are low for most countries in SSA, and could be increased through reforms including broad-based consumption taxes, simplified tax design, and improved tax administration (Mabugu and Simbanegavi 2015).

Simulations based on the analysis presented in Chapter 3 suggests that if, over the next decade, the investment-to-GDP ratio for the region were increased by around 2.7 percentage points by 2027—an increase that is within historical precedent—the region's potential growth would be boosted by around 0.6 percentage points by 2027, and by 0.4 percentage points if South Africa is included.

Increasing human capital accumulation. Further improvements in education and health outcomes could bolster potential growth by raising labor force participation rates and TFP growth. Although the region has achieved significant improvements in these areas, much more remains to be done.

- *Education:* SSA lags in education outcomes. In half of the countries in SSA, less than 50 percent of the youth complete lower secondary education and under 10 percent go on to higher education (World Bank 2017ag). Learning outcomes have been generally poor and gender disparities remain significant at the secondary and tertiary levels (Oyelere 2015). Priorities vary depending on country-specific circumstances, but

BOX 2.6.1 Potential growth in Sub-Saharan Africa *(continued)*

they center on investing in effective teaching, ensuring access to quality education for the poor, and closing gender gaps (World Bank 2017ag).

- *Health*: SSA's average life expectancy of 59 years in 2015 (World Bank 2017ah) also lags other EMDE regions, and falls well short of 80 years in advanced economies. SSA is disproportionally affected by the impact of infectious diseases. Building strong health systems, as well as setting up regional coordination mechanisms, is critical for providing adequate health services to the populations (World Bank 2016l).

To illustrate the benefits of tackling these issues, simulations were conducted that assumed that secondary school and tertiary enrollment rates, and life expectancy will rise over 2018-27 by as much as the largest historical improvement in any ten-year period for SSA. This would imply a rise in secondary school completion rates of 3.7 percentage points, tertiary completion rates of 0.4 percentage points, and life expectancy of 3 years. The effect of these assumptions would be to raise potential growth by around 0.1 percentage points by 2027, compared with 2013-17, the same if South Africa is included.

Increasing labor supply. The labor force participation rate for women in SSA was around 65 percent in 2015 (UNDP 2016), well below the 76 percent rate for men, indicating significant scope for increasing the number of women in the workforce. Studies have shown that gender equality in labor force participation rates in the region is severely affected by the burden of unpaid labor, which is predominantly born by women, as well as by gaps in educational attainment and restrictions in access to credit markets (Seguino and Were 2015). This points to the policy and institutional frameworks that are needed to increase female labor force participation.

To illustrate the possible benefits of such measures, simulations were performed that assumed that the female labor force participation rate rises by 1 percentage points, equivalent to the largest historical ten-year improvement achieved by the region in the past 20 years. The simulations suggest that this would raise potential growth by around 0.1 percentage points by 2027, compared to 2013-17, the same if South Africa is included.

Overall impact on potential growth. Raising the investment-to-GDP ratio, and increasing secondary school and tertiary education completion rates as well as life expectancy closer to advanced-economy levels, as assumed in the scenarios described above, could boost SSA's potential growth by 0.7 percentage points by 2027. Additional gains (0.1 percentage points) could also be expected from labor market policies that encourage female labor force participation. Overall, a combination of additional investment, increased education and health improvements, and higher female labor force participation could raise SSA's potential growth by 0.8 percentage points to 5.8 percent by 2027, excluding South Africa. If South Africa is included, similar reforms would boost potential growth by 0.7 percentage points to 3.8 percent on average by 2027 (Figure 2.6.1.2).

Other productivity-enhancing reforms. In addition to the types of reforms that can be captured in the models described in Chapter 3, there are other productivity-enhancing reforms that could also pay significant dividends (AfDB et al. 2013). These include diversification to reduce reliance on the resource sector; stronger property rights to encourage productivity-enhancing investment; and greater transport connectivity to spur competition. Across the region, there is scope for raising productivity in the formal sector, the agricultural sector, and nonfarm informal sector, which could further boost the region's potential growth (World Bank 2016l).

- *Economic diversification*: Economies in the region are striving to diversify away from natural resource exports, especially by taking steps to make their manufacturing sectors more competitive. Competitiveness within SSA suffers as a result of poor business environments, lack of infrastructure, and high unit labor costs (Bhorat and Tarp 2016). Along with increased human capital and the removal of trade barriers, improvements in transport and energy infrastructure could increase the productivity and competitiveness of the region, and facilitate its integration into global value chains (Allard et al. 2016). While the business environment has improved, there remains considerable scope for simplifying regulations and administrative procedures for starting a business, increasing the efficiency of the legal system, and reducing regulatory uncertainty.

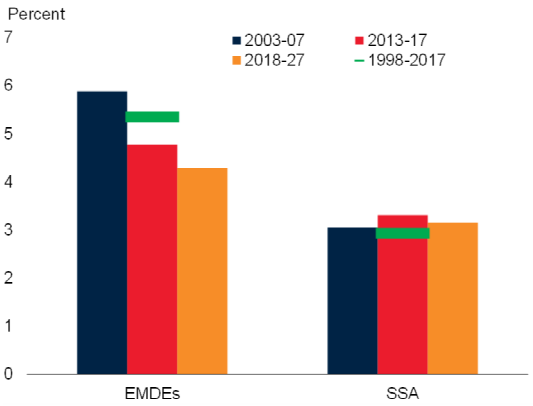
- *Boosting agricultural productivity*: Across the region, the share of employment in low-productivity agriculture remains high. Many countries have substantial scope for raising agricultural productivity, including by taking steps to improve land titles, increasing access to credit for investment in new farming techniques, improving the awareness of modern farming techniques, and improving the infrastructure needed to connect farms to markets. In

BOX 2.6.1 Potential growth in Sub-Saharan Africa *(concluded)*

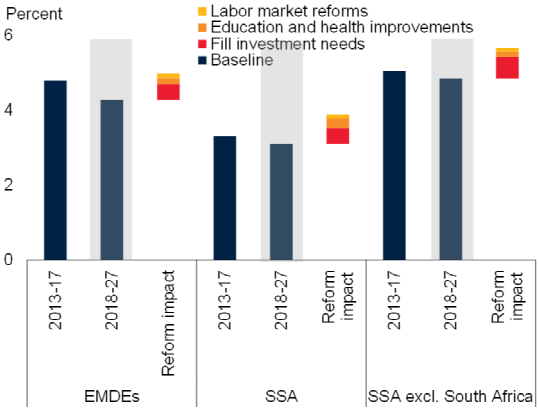
FIGURE 2.6.1.2 Policies to stem declining potential growth

The expected gradual decline in the region's high fertility rates could slow the growth of the working-age population, and a weakening of the investment rate will moderate capital stock growth. In the absence of reforms, a slowing expansion of the labor supply and capital stock could reduce regional potential growth from 3.3 percent in 2017 to 3.2 percent by 2027, below the EMDE average. However, the region's potential growth could be boosted to 3.8 percent by 2027 through policies to spur investment, improve education and health, and boost female participation rates. Excluding South Africa, potential growth could reach 5.8 percent by 2027.

A. SSA potential growth



B. SSA potential growth under reform scenarios



Source: World Bank staff estimates.
Notes: GDP-weighted averages. Derived using the methodology described in Annexes 3.1 and 3.3. Policy scenarios are described in Annex 3.3.
Click here to download data and charts.

Ethiopia, public investments in irrigation, transportation and power have produced a significant increase in agricultural productivity and incomes, which resulted in growth-enhancing structural change (Rodrik 2017).

- *Raising productivity in the nonfarm informal sector*: Recent studies found that in many countries the decline in the share of the labor force engaged in agriculture has been matched by a sizable increase in the share of the labor force employed in the informal sector (Diao et al. 2017). Raising the productivity of the informal sector has become an important policy objective. Fostering a supportive regulatory environment, and promoting investment in basic infrastructure such as electricity, road networks, and information technology, are important areas of reforms that could make the informal sector more dynamic and formal, and increase its contribution to the region's long-run economic growth (Bhorat and Tarp 2016).

Conclusion

Potential growth rose to 3.3 percent in Sub-Saharan Africa in the past five years, above the pre-crisis and longer-term averages, owing to the growth of the working-age population and capital stock. However, in the absence of reforms, SSA's potential growth would remain low at around 3.2 percent by 2027, given likely trends in labor supply and investment, which suggests that per capita income growth would stagnate. The low potential growth rate is mainly due to a moderation in trend growth in South Africa. Excluding South Africa, potential growth rose by 5 percent on average following the global financial crisis, above the EMDE average, reflecting a stronger increase in the rate of capital accumulation.

There is considerable scope for boosting potential growth with structural reforms, including policies to increase investment, improve health and education outcomes, and raise female labor force participation. Bold steps in these areas could boost SSA's potential growth by around 0.8 percentage points to 5.8 percent on average over the next decade. Other productivity-enhancing reforms, including diversification to reduce reliance on commodities, stronger property rights to encourage productivity-enhancing investment, and greater transport connectivity to spur competition, could safeguard and bolster these gains. A robust implementation of such policies would be critical if the region is to take full advantage of its demographic dividend.

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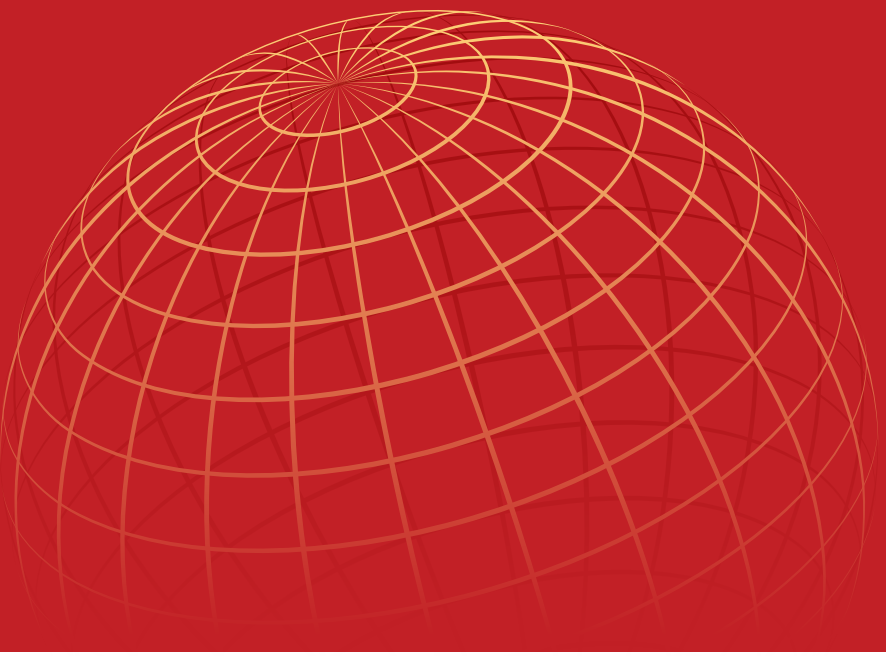


CHAPTER 3

BUILDING SOLID FOUNDATIONS:

How to Promote Potential Growth

Despite a recent acceleration of global economic activity, potential output growth is flagging. At 2.5 percent in 2013-17, post-crisis potential growth is 0.5 percentage point below its longer-term average and 0.9 percentage point below its average a decade ago, with an even steeper decline in emerging market and developing economies. This slowdown mainly reflects weaker capital accumulation, but is also evidence of slowing productivity growth and demographic trends that dampen labor supply growth. These forces will continue and, unless countered, will depress global potential growth further by 0.2 percentage point over the next decade. A menu of policy options could help reverse this trend, including comprehensive policy initiatives to lift physical and human capital, encourage labor force participation, and improve institutions.

Introduction

Although the global economy has regained some strength since mid-2016, potential output growth—the rate at which an economy would grow when labor and capital are fully employed—has continued to decline (Figure 3.1). Post-crisis (2013-17), global potential growth fell short of its long-term average and was well below its pre-crisis average. This weakness was broad-based, affecting both advanced economies, where it was evident even before the financial crisis, and emerging market and developing economies (EMDEs), where there was a short-lived pre-crisis up-tick. The decline raises concerns about the durability of the cyclical recovery described in Chapter 1.

Since the growth rate of per capita potential output is the overriding long-run force for sustained reductions in poverty, this trend is also cause for concern about the world community's ability to meet broader development goals.[1] In some regions, especially commodity-exporting ones such as Eastern Europe and Central Asia, and the Middle East and North Africa, the post-crisis slowdown in potential growth could set back per capita income convergence by more than a decade.

Against this backdrop, this chapter addresses the following questions:

- How has potential growth evolved since the turn of the century?
- What have been the drivers of potential growth?
- What are the prospects for potential growth?
- What policy options are available to lift potential growth?

To help answer these questions, the chapter examines the evolution of potential growth in a large sample of countries, with a strong regional focus. Since potential output is not directly observable, economists estimate it from long time series of actual output, employment, capital stocks, and productivity. The chapter constructs a comprehensive database of potential output growth series using a variety of techniques.[2]

Other studies have documented a potential growth slowdown in advanced economies and Asian economies, while the focus in this chapter is on the broader EMDE universe (IMF 2015; Dabla-Norris et al. 2015; Asian Development Bank 2016; and OECD 2014). There are many ways to estimate potential output. For clarity, and in keeping with a longer-term focus, this chapter uses the production function approach.[3] Second, the

Note: This chapter was prepared by Sinem Kilic Celik, M. Ayhan Kose, Franziska Ohnsorge, and Yirbehogre Modeste Some. Research assistance was provided by Xinghao Gong and Jinxin Wu.

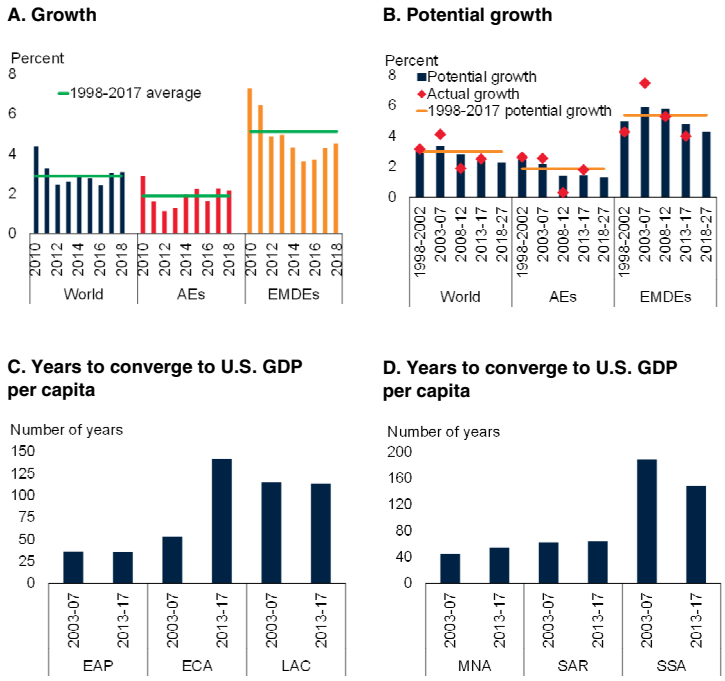
[1] Research suggests that two-thirds of cross-country differences in growth of the poorest households' income are accounted for by differences in average income growth (Dollar, Kraay, and Kleineberg 2013; Barro 2000). Mechanisms by which overall growth helps reduce inequality are varied, but include its impact in raising the demand for agricultural output which helps poor land holders, as well as rising urbanization and higher wages (Yankow 2006; Gould 2007; Ravallian and Datt 2002).

[2] Most of the existing literature on potential growth involves estimating the role of output gaps in driving inflation or domestic monetary policy in the context of individual countries (in about half of 67 publications for individual EMDEs surveyed by the authors).

[3] Other measures of potential growth incorporate short-term supply shocks that dissipate over time (Box 3.1). In this chapter, an exploration of the transition from short-term supply to long-term potential output is confined to the impact of steep output contractions to long-term potential output (Box 3.4).

FIGURE 3.1 Global growth

A cyclical upswing has been underway in the global economy since mid-2016. Global growth is estimated to have strengthened to 3.0 percent in 2017 from a post-crisis low of 2.4 percent in 2016, within reach of long-term average global growth. However, underneath the cyclical upturn, potential growth is slowing, which could set back income convergence by several decades in some regions.



Sources: Penn World Tables, World Bank.
A. Full sample of countries as in Chapter 1.
B. Based on production function approach, GDP-weighted averages for a sample of 30 advanced economies and 50 EMDEs.
C.D. GDP-weighted average of years to converge to U.S. per capita GDP in 2017. The years to converge to U.S. GDP per capita for each country are calculated as the years to close the difference between GDP per capita in 2017 from U.S. GDP per capita in 2017 assuming average potential growth in the period specified. EAP = East Asia and Pacific, ECA = Europe and Central Asia, LAC = Latin America and the Caribbean, MNA = Middle East and North Africa, SAR = South Asia, and SSA = Sub-Saharan Africa.
Click here to download data and charts.

chapter examines trends in the structural drivers of potential growth, including total factor productivity (TFP) growth, labor supply growth, and investment in human and physical capital. It documents how steep output contractions, although typically brief, cast a long shadow on potential growth, in part through an erosion of job skills and discouraged investment. Third, the chapter explores policy options to lift potential growth. These include measures to improve education, reforms to health care and labor markets, and steps to improve governance and business climates. In contrast to earlier studies, the discussion of policy options to lift potential growth is directly derived from the empirical exercise.[4]

The chapter's principal conclusions are as follows:

- The global financial crisis has ushered in a period of persistently weak potential growth. During 2013-17, global potential growth (2.5 percent a year) fell 0.5 percentage point below its longer-term (1998-2017) average, and even further below its average a decade ago (2003-07). EMDE potential growth slowed to 4.8 percent a year, 0.6 percentage point below its longer-term average. This weakness in potential growth has been broad-based, affecting almost half of EMDEs and 87 percent of advanced economies in the sample, together representing 69 percent of global GDP.

- A host of factors have contributed to this post-crisis shortfall in potential growth below longer-term averages. Half of the deceleration reflects weaker-than-average rates of capital accumulation. Just over one-quarter of the slowdown is due to weaker total factor productivity (TFP) growth while just under one-quarter of the moderation is attributable to demographic trends.

- The global financial crisis and subsequent recession weakened productivity-enhancing capital accumulation, and deprived workers of opportunities to gain experience and skills, creating a vicious cycle of subdued growth. Conversely, in the past, cyclical upswings often generated momentum that fed into sustained increases in potential growth.

- The slowdown in potential growth may extend into the next decade. Trends in its fundamental drivers suggest that global potential growth may slow further by 0.2 percentage point on average over 2018-27, while EMDE potential growth could ease by

[4] Other studies have investigated the link between actual growth or productivity growth and structural reforms, focusing on the near-term benefits (Prati, Onorato, and Papageorgiou 2013), productivity effects (Dabla-Norris, Ho, and Kyobe 2015; Adler et al. 2017) or a sample consisting of mostly advanced economies (Banerji et al. 2017; IMF 2015 and 2016b).

BOX 3.1 What is potential growth?

Potential growth is the rate of increase of potential output, the level of output an economy would sustain at full capacity utilization and full employment. Since it is not directly observable, the measurement of potential growth relies on a range of assumptions about its relationship to observable variables. Historical data on the growth of actual output growth, and of the factors of production—the labor force, physical capital, and human capital—provide the main indicators. Numerous methods of assessing potential output are available. The key results pertaining to potential growth in this chapter are robust to the choice of method.

Potential growth is the rate of increase of potential output, defined as the level of output an economy would sustain at full capacity utilization and full employment. Although the concept is of fundamental importance to short- and long-run macroeconomic analyses, it is not directly measurable. Estimates of potential growth may, however, be inferred from the behavior of observable variables. An approach which links potential output to the underlying factor inputs of labor, capital and technology—known as the production function approach—is appropriate for the assessment of long-term growth, the main focus of this chapter.

However, the background analysis is based on a wide range of methodologies. The headline results are robust to the choice of methodology. To set the stage, this box discusses some major conceptual issues. In particular, it addresses the following issues:

- What is potential growth?
- How is potential growth measured?
- Are the results robust to the choice of measure?

What is potential output growth?

Potential output is the level of output an economy would produce at full capacity utilization and full employment. Different estimates of potential output growth capture different time-horizons: "short-term" versus "long-term" (Basu and Fernald 2009).

Short-term potential output growth is the growth of potential output that can be achieved without putting pressure on production capacity and inflation when factors of production cannot immediately relocate in response to shocks (Okun 1962). It can be buffeted by temporary disruptions and boosts to supply that dissipate over the longer-term. For example, a shift in the composition of demand may render part of the existing capital stock obsolete, effectively reducing potential output; over time, firms would adjust to the new requirements, returning potential output toward its previous path. The short-term measure is particularly useful for monetary policy, since supply constraints or adverse demand shocks, even if they are not permanent, reduce the effective slack in the economy, and therefore influence the policy interest rate at a given decision point.

Long-term potential output is a function of the available capital stock, labor input and current technology (Solow 1962). As such, long-term potential output growth captures movements in the slow-moving fundamental drivers of output assuming allocation of all factors of production to their most productive uses, regardless of temporary supply shocks. Long-term potential output sets the underlying trend of short-term potential output as well as actual output.

How is potential growth measured?

Estimates of short-term output may be computed using filtering techniques, including univariate and multivariate filters, while estimates of long-term potential output rest on structural models or long-term growth expectations.

Filtering techniques. *Univariate filters* involve estimates of trend output using only GDP series. *Multivariate* filters take into account the relationship between GDP and other variables (such as inflation or unemployment rates) to help distinguish short-run deviations of output from trends. The database underpinning this chapter employs the Hodrick-Prescott filter, the Baxter-King filter, the Christiano-Fitzgerald filter, the Butterworth filter, an unobserved components model, a multivariate filter that utilizes financial variables and commodity prices, a Phillips curve relationship, and an Okun law (Annex 3.2).

Production function approach. This approach represents potential output as a (Cobb-Douglas) production function of the amount of full-employment capital and labor, as well as technology and efficiency of factor allocation that drive total factor productivity (TFP). Potential TFP growth is estimated as the predicted value of a parsimonious panel regression of five-year averages of trend TFP growth on lagged per capita income relative to

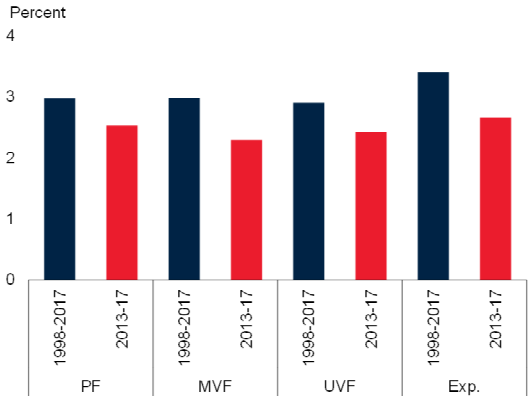
Note: This box was prepared by Sinem Kilic Celik, M. Ayhan Kose, Franziska Ohnsorge, and Yirbehogre Modeste Some.

BOX 3.1 What is potential growth? *(continued)*

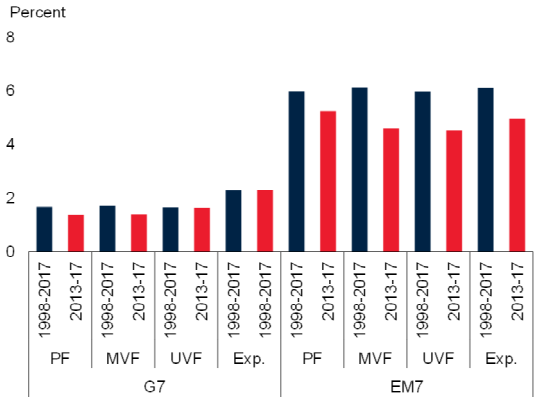
FIGURE 3.1.1 Potential growth estimates

Estimates vary, according to the method of calculation, but suggest that, in 2013-17, global potential output growth fell by about 0.5 percentage point below its longer-term average. This decline is reflected in all measures of potential growth and across country groups.

A. Global potential growth estimates



B. G7 and EM7 potential growth estimates



Source: World Bank.
Notes: "PF" stands for potential growth estimates using the production function approach, "MVF" for those derived using the multivariate filter, UVF for those derived using the Hodrick-Prescott filter, and "Exp." for those based on 5-year-ahead *World Economic Outlook* forecasts. Bars reflect the estimates based on different potential growth measures.
A. To ensure comparability between the measures, the samples are held constant to include 13 advanced economies and 15 EMDEs.
B. EM7: Brazil, China, India, Indonesia, Mexico, Russia, and Turkey; G7: Canada, France, Germany, Italy, Japan, the United Kingdom, and the United States.
Click here to download data and charts.

advanced economies (to proxy for convergence-related productivity catchup), education, demographics, and trend investment.[1] Potential labor supply is estimated as the population-weighted aggregate of predicted values of age- and gender-specific labor force participation rates from regressions on policy outcomes and cohort characteristics, business cycles, and country effects.[2] The potential capital stock is assumed to match the actual capital stock.

Expectations. The approaches above are supplemented with long-term growth expectations, such as five-year-ahead growth forecasts from *Consensus Economics* or the IMF's *World Economic Outlook*. These growth expectations reflect both model estimates and forecasters' judgment. Judgment can be especially useful during periods of major structural changes, which model-based estimates may not be well-equipped to capture.

Each approach has advantages and disadvantages.

- *Filtering techniques.* Even in data-poor environments, univariate filters are straightforward to implement while multivariate filters utilize additional information that can ensure that the measure of potential output is better aligned with economic theory. However, all statistical filters suffer from well-known "end-point" problems—their measured trends tend to overemphasize actual data at the beginning and end of the sample—and tend to correlate closely with actual data.[3] Measures of potential growth based on filtering techniques correlate strongly with actual output growth and with each other.

- *Production function approach.* The production function approach has the advantage of correlating less with actual growth and producing estimates that help explain the movement of potential output in terms of its inputs. The distinct nature of potential growth measured by the production function approach is also reflected in its weak correlation with potential growth based on filtering techniques. The production function approach relies on proxies for potential productivity and labor supply growth and

[1] This approach is similar to Abiad, Leigh, and Mody (2007); Bijsterbosch and Kolasa (2010); and Turner et al. (2016).

[2] This approach combines those by Fallick and Pingle (2007) and Goldin (1995).

[3] However, real-time estimates of actual and potential output respond differently to shocks (Coibion, Gorodnichenko, and Ulate 2017).

BOX 3.1 What is potential growth? *(concluded)*

capital structural accumulation that are liable to measurement error.

- *Expectations.* Long-term growth expectations can in principle incorporate judgment and, thus, capture factors that cannot be modelled. As a result, like the production function based-estimates, long-term growth expectations are only weakly correlated with filter-based estimates of potential growth. However, in practice, expectations tend to be highly sticky and, at times, in ways that are challenging to interpret.

Are the results robust to the choice of measure?

This chapter draws on a comprehensive database that estimates potential growth using all approaches. For each approach, the largest possible sample is used, up to 181 countries for 1980-2017 (extending to 2027 for the production function approach). For presentational clarity, the chapter presents only results using a production function approach, which is available for 30 advanced economies and 50 emerging market and developing economies for 1998-2027 (Annex 3.1, Table 3.1.1).[4] It assumes that output can be modelled as a (Cobb-Douglas) production function of total factor productivity (TFP), labor supply and capital.[5]

- Estimated potential TFP growth is the fitted value from a parsimonious panel regression of trend TFP growth on relative per capita income as a proxy for convergence potential, education, demographics, and trend investment.
- Estimated potential labor supply is the population-weighted aggregate of fitted values of age- and gender-specific labor force participation rates from regressions on policy outcomes and cohort characteristics, business cycles, and country effects.
- The potential capital stock is assumed to match the actual capital stock.

The key results pertaining to potential growth presented in this chapter are broadly robust to the choice of potential growth measures: the broad-based post-crisis slowdown in potential growth (Figure 3.1.1), the decline in potential growth through investment slumps (Box 3.3) and deep recessions (Box 3.4), and the increase in potential growth following multi-year growth upswings.

[4] The 50 EMDEs include 4 economies in East Asia and the Pacific, 9 economies in Europe and Central Asia, 15 economies in Latin America and the Caribbean, 7 economies in the Middle East and North Africa, 2 economies in South Asia and 13 economies in Sub-Saharan Africa (Annex 3.1). Data for half of EMDEs (especially in Europe and Central Asia and Sub-Saharan Africa) is missing before 1997. Hence, to ensure broad country coverage, the sample period is restricted to 1998-2027.

[5] Human capital is not separately accounted for in the production function approach but affects TFP growth and labor supply growth.

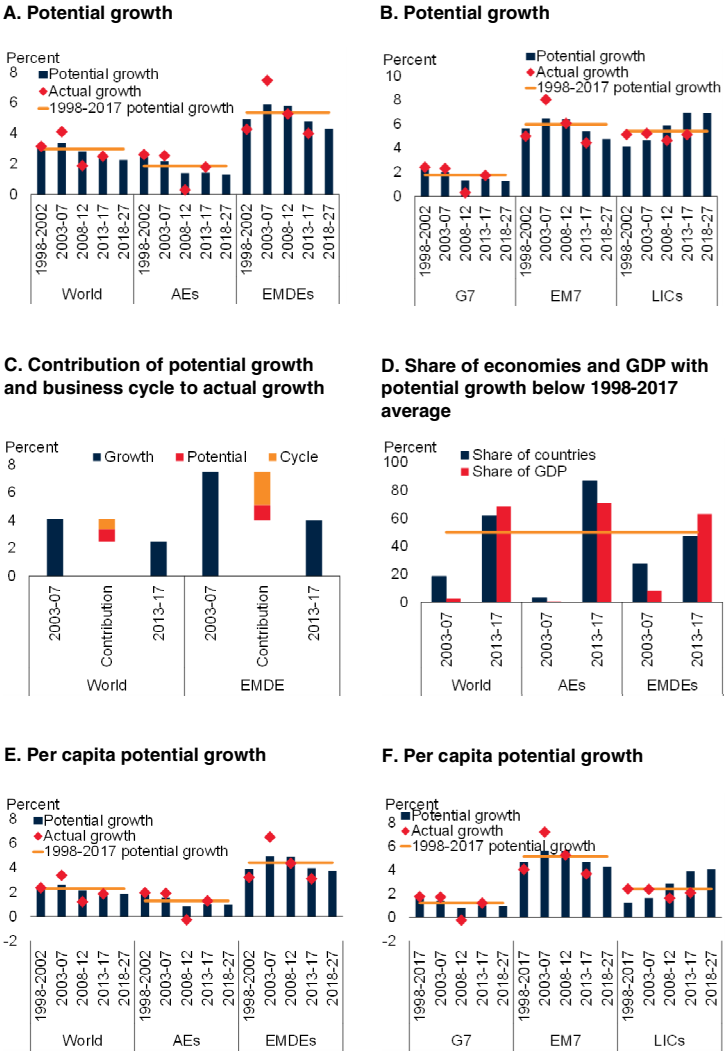
0.5 percentage point. The projected slowdown from 2013-17 would affect EMDEs and advanced economies that account for 73 percent of global GDP.

- Policies could help reverse these trends and boost global growth. Among EMDEs, in particular, education, health, and labor market reforms could significantly increase potential growth. Broader reform packages to improve institutional quality and business climates would also pay important dividends.
- Policy improvements are particularly critical at the current juncture. Over the last half-century, the world economy has been disrupted by a financial crisis of varying breadth and severity in every decade. If this pattern were to be repeated and another crisis occurred in the next ten years, it would generate lasting damage to potential output that would require a sustained policy push to reverse.

The current cyclical upswing poses a risk of complacency. To sustain higher potential growth, countries need to reform labor and product markets, strengthen human and physical capital and build conducive environments for business and households to invest. The onus is particularly on the largest emerging markets and advanced economies, whose growth momentum generates spillovers for other EMDEs.

FIGURE 3.2 Evolution of potential growth

During 2013-17, global potential growth declined to 2.5 percent, below the longer-term average and average rates a decade ago. In advanced economies, potential growth declined below its longer-term average, to about 1.4 percent. It slowed more sharply, to 4.8 percent, in EMDEs. The potential growth slowdown affected most EMDE regions and accounted for about one-third of the actual global growth slowdown.



Sources: Penn World Tables, World Bank.
Notes: Based on potential growth derived using production function approach.
A. B. C. E. F. GDP-weighted average.
A. C. E. Sample includes 30 advanced and 50 emerging market and developing economies.
B. F. G7 includes Canada, France, Germany, Italy, Japan, the United Kingdom and the United States. EM7 includes Brazil, China, India, Indonesia, Mexico, Russia, and Turkey. LICs includes 6 countries.
C. Blue bars denote average actual global growth during 2003-07 and 2013-17. Red bars denote the contribution of global potential growth to the change in actual growth between the two five-year periods; orange bars denote contribution of the cyclical component of global growth to change in actual global growth between the two five-year periods.
D. Number of economies and their share of global GDP among 30 advanced economies and 50 EMDEs with potential growth in each period below its longer-term average (1998-2017). Horizontal line indicates 50 percent.
Click here to download data and charts.

This chapter draws on a comprehensive database that estimates potential growth using all standard approaches for up to 181 countries for 1980-2017 (extending to 2027 for 80 countries). For clarity, the remainder of the chapter presents only results using a production function approach for 30 advanced economies and 50 emerging market and developing economies for 1998-2027 that together account for 91 percent of global GDP (Annex 3.1; Box 3.1).[5] The key results pertaining to potential growth presented here—such as the broad-based slowdown in potential growth, the long-term effect of deep recessions or investment busts on potential growth, and the virtuous circle triggered by sustained cyclical upswings—are broadly robust to the choice of potential growth measures (Annexes 3.2-3.5; Box 3.1).

Evolution of potential growth: What happened?

Slowdown in global potential growth. Global potential growth fell to 2.5 percent a year during 2013-17. This is below its longer-term (1998-2017) average of 3 percent a year and even further below its average a decade earlier (2003-07; Figure 3.2). The potential growth weakness was broad-based and robust to the specific choice of potential growth measures. During 2013-17, potential growth was below its longer-term average in 87 percent of advanced economies and in almost half of EMDEs. Economies with potential growth below its longer-term average accounted for 69 percent of global GDP. Per capita estimates also show a trend deceleration. These estimates suggest that there was a persistent slowdown in global potential growth beneath the temporary cyclical shocks that appear to have been the main reasons for the post-crisis slowdown in actual growth from elevated pre-crisis levels.

[5] The 50 EMDEs include 4 economies in East Asia and the Pacific, 9 economies in Europe and Central Asia, 15 economies in Latin America and the Caribbean, 7 economies in the Middle East and North Africa, 2 economies in South Asia and 13 economies in Sub-Saharan Africa (Annex 3.1). Data for more than one-third of them (and about half of the sample's EMDEs in Europe and Central Asia and Sub-Saharan Africa) is missing before 1997 and no data for EMDEs is available before 1991. Hence, to ensure broad country coverage, the sample period is restricted to 1998-2027.

Broadening slowdown. In advanced economies, the potential growth slowdown set in before the global financial crisis whereas EMDEs enjoyed a short-lived pre-crisis surge in potential growth that subsequently faded.

- *Advanced economies.* After a sharp decline during 2008-12—the period of the global financial crisis, the Euro Area crisis, and pronounced investment weakness—potential growth stabilized in 2013-17 as investment growth recovered.[6] However, at 1.4 percent a year over 2013-17, potential growth in advanced economies remains about 0.5 percentage points below its longer-term average.

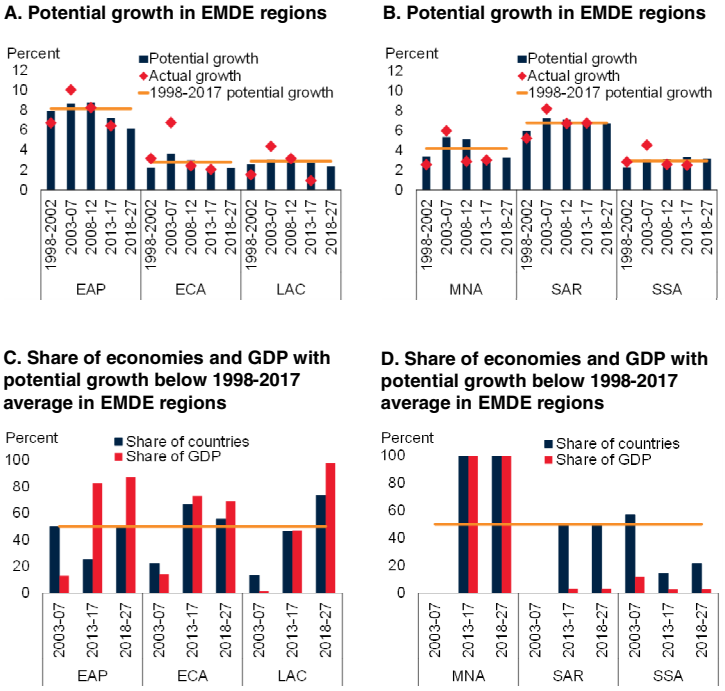
- *EMDEs.* In the initial wake of the global financial crisis, a surge in public investment underpinned EMDE potential growth, offsetting softening productivity and labor supply growth. As EMDE policy stimulus was unwound, and as investment growth plummeted in commodity-exporting EMDEs following the oil price slide in mid-2014, EMDE potential growth slowed sharply to 4.8 percent a year in 2013-17, 0.6 percentage point below its longer-term average.[7]

Regional patterns. Potential growth has fallen furthest in EMDE regions that had benefited from rapid per capita income convergence or that hosted many commodity-exporting EMDEs (Figure 3.3).

- *MNA.* The shortfall of potential growth during 2013-17 from its longer-term (1998-2017) average was one of the sharpest in the Middle East and North Africa (MNA, 1.2 percentage point) where investment growth plunged amid the oil price drop of mid-2014, a period of violent conflict and policy uncertainty in parts of the region.

FIGURE 3.3 Regional potential growth

Potential growth has slowed from its longer-term average in all EMDE regions other than South Asia and Sub-Saharan Africa. Among the causes are weakening fundamentals and disruptions to growth prospects, such as sharp and persistent commodity price declines (for commodity exporters), crises in major trading partners such as the Euro Area (for the ECA region), and spillovers from growth slowdowns in major economies (such as from China).



Sources: Penn World Tables, World Bank.
Notes: EAP = East Asia and Pacific, ECA = Europe and Central Asia, LAC = Latin America and the Caribbean, MNA = Middle East and North Africa, SAR = South Asia, and SSA = Sub-Saharan Africa.
A. B. GDP-weighted averages using potential growth estimate based on production function approach.
C. D. Number of economies and their share of GDP in the region among 50 EMDEs with potential growth in each period below its longer-term average (1998-2017). Horizontal line indicates 50 percent.
Click here to download data and charts.

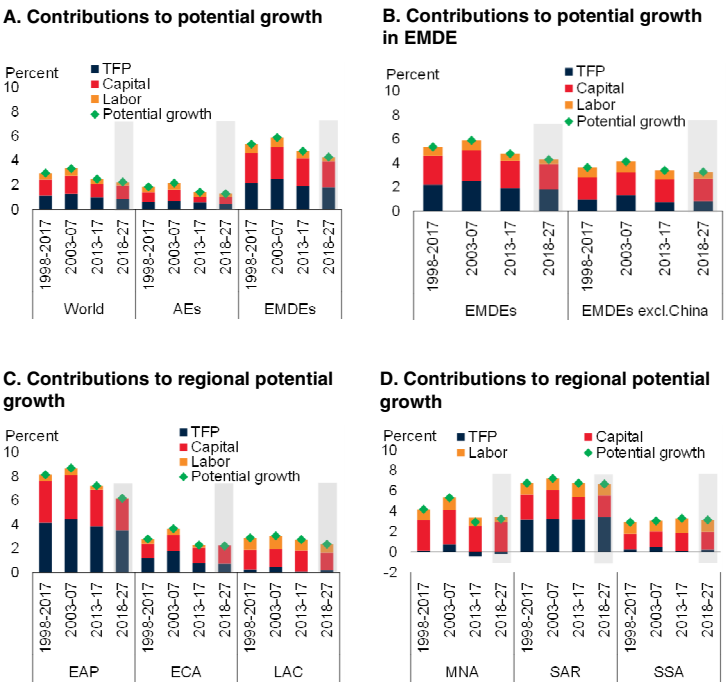
- *ECA, LAC.* During 2013-17, potential growth also fell 0.5 and 0.2 percentage points, respectively, below its longer-term average in Europe and Central Asia (ECA) and Latin America and the Caribbean (LAC). The ECA region's past two decades of rapid integration into European production networks has gradually diminished its potential for further catchup productivity growth. The region also hosts several energy exporters which suffered deep recessions or slowdowns following the mid-2014 decline in oil prices. Weak productivity growth and less favorable

[6] As in the broader set of advanced economies, potential growth in G7 economies—Canada, France, Germany, Italy, Japan, United Kingdom, and United States—was, at 1.5 percent on average in 2013-17, 0.3 percentage points below its longer-term average.

[7] The potential growth slowdown from pre-crisis rates was also evident in EM7 economies—Brazil, China, India, Indonesia, Mexico, Russia, and Turkey. On average during 2013-17, EM7 potential growth slowed to 5.4 percent. Almost three-quarters of this decline in EM7 potential growth between 2003-07 and 2013-17 reflected slowing potential growth in China.

FIGURE 3.4 Drivers of potential growth

The post-crisis slowdown in global potential growth below its longer-term average rates has mainly reflected slowing capital accumulation, labor supply growth, and TFP growth. In ECA and LAC, the decline predominantly reflected weak TFP growth. In EAP and MNA, slowing TFP growth was compounded by weak investment. In SAR and SSA, favorable demographic trends offset investment weakness (SAR) and weak productivity growth (SSA).



Sources: Penn World Tables, World Bank.
Notes: GDP-weighted averages of production function-based potential growth estimates (as defined in Annex 3.1). TFP growth stands for total factor productivity growth.
A.B. Sample includes 30 advanced economies and 50 EMDEs.
C.D. Regional samples include largest available sample for each region to ensure broad-based coverage. EAP = East Asia and Pacific, ECA = Europe and Central Asia, LAC = Latin America and the Caribbean, MNA = Middle East and North Africa, SAR = South Asia, and SSA = Sub-Saharan Africa.
Click here to download data and charts.

demographics reduced potential growth in LAC.[8]

- *EAP*. In 2013-17, potential growth in China fell 1.3 percentage points below its longer-term average as policy efforts succeeded in rebalancing growth away from investment towards more sustainable growth engines, combined with slowing productivity and working-age population growth. Elsewhere in EAP, potential growth rose 0.7 percentage point on robust capital accumulation and strengthening TFP growth.

- *SAR, SSA*. During 2013-17, favorable demographics have helped lift potential growth in South Asia (SAR) and Sub-Saharan Africa (SSA). In SAR, rates were offset by investment weakness such that potential growth in 2013-17 broadly matched its longer-term average. In SSA, potential output accelerated by 0.4 percentage point during 2013-17 compared to its longer-term average. This demographic dividend was complemented by rapid capital accumulation over the past two decades as resource discoveries were developed into operating mines and oil fields and governments undertook large-scale public infrastructure investments. The commodity price slide after 2011 has raised concerns about the sustainability of such potential growth.

Drivers of the slowdown in potential growth

Contribution of different drivers. Of the 0.5-percentage-point shortfall in post-crisis (2013-17) global potential growth below its longer-term (1998-2017) average, about one-half can be attributed to weaker capital accumulation (0.2 percentage point) and the remainder to weaker TFP growth and slower labor supply growth (0.1 percentage point, respectively; Figure 3.4). Weak global capital accumulation mainly reflected investment weakness in advanced economies, in the wake of financial crises in the United States and Europe, and a policy-driven rebalancing away from investment in China. Unfavorable demographics and slowing TFP growth were features of both advanced economies and EMDEs (Figure 3.4).

Total factor productivity growth

Channels of transmission. By allowing output to expand with a given amount of factor inputs, TFP growth has historically been the critical driver of sustained growth in per capita output and

[8] In contrast to production function-based potential growth measures, potential growth estimates based on filtering techniques have slowed sharply in LAC and SSA. The predominantly host commodity exporters, where actual growth decelerated steeply in the commodity price slide from 2011.

prosperity (Romer 1986; Lucas 1988; Grossman and Helpman 1991). TFP growth can rise with the adoption of new technologies, adaptation of existing technologies, introduction of more efficient processes, or changes in management practices (EBRD 2014). Differences in TFP account for about two-thirds of the variation in per capita income across the world (Jones 2016). Higher productivity lifts firms' marginal product and reduces their marginal cost, which allows firms to increase their demand for factors of production. Technological advances reduce the price of capital equipment, encouraging further capital accumulation which, in turn, embodies further improvements in productivity (Greenwood, Hercowitz, and Krusell 1997; Sakeflaris 2004; Box 3.2).

Evolution of potential TFP growth. Global potential TFP growth—the part of TFP growth that is stripped of its wide cyclical swings—slowed from about 1.3 percent a year a decade ago to about 1 percent a year during 2013-17, but with wide heterogeneity (Figure 3.5). In advanced economies, productivity growth showed signs of flattening well before the global financial crisis. For some advanced economies, the productivity growth slowdown during the early 2000s has been described as a return to productivity growth before the surge of information and communications technologies in the mid-1990s (Gordon 2013; Cette, Fernald, and Mojon 2016).

By contrast, TFP growth in EMDEs surged to 2.5 percent a year a decade ago (2003-07), reflecting productivity-enhancing investment, partly financed by capital inflows.[9] Reforms of policy frameworks after EMDE financial crises in the late 1990s and early 2000s and greater integration into global value chains provided a conducive environment for rapid productivity growth. However, since 2007, TFP growth in EMDEs has slowed to 1.9 percent a year in 2013-17.

Sources of the TFP growth slowdown. Some sources of the TFP growth slowdown are likely to be structural and persistent. TFP growth may have slowed as a wave of information and communications technologies matured (Box 3.2). Cross-country diffusion of technology may have slowed as global value chains stopped growing. Aging workforces may have slowed the adoption of new ideas. In commodity exporters, a downgrading of expectations for long-term profitability of resource projects would have reduced investment and, with it, embodied productivity gains. Finally, the large-scale factor reallocation, especially from agriculture to manufacturing, that has supported robust EMDE productivity growth over the past two decades appears to be slowing (Box 3.2).

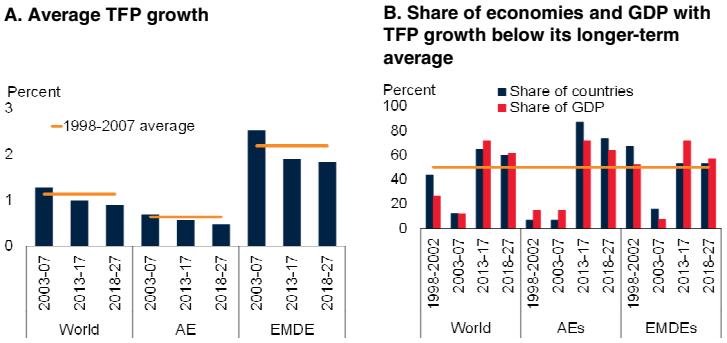
The role of human capital. Over the past three decades, TFP growth in EMDEs has been supported by growing human capital. Among a better-educated and healthier working-age population, both TFP growth and labor force participation rates tend to be higher. EMDEs have made rapid strides towards improving education and health outcomes over the past two decades.

- On average in EMDEs, secondary school completion rates have increased by 7 percentage points between 1998-2002 and 2013-17. At 27 percent, this is about two-thirds of the advanced-economy average.

[9] The regression results suggest that for many EMDEs, catchup productivity growth is a key driver of overall TFP growth (Annex 3.1).

FIGURE 3.5 Total factor productivity growth

Potential TFP growth has declined from average rates a decade ago and are now below longer-term averages in the majority of advanced economies, EMDEs, and EMDE regions.



Sources: Penn World Tables, World Bank.
Note: TFP growth stands for total factor productivity growth. This figure refers to potential TFP growth (Annex 3.1).
A. GDP-weighted average of total factor productivity growth. Includes 50 EMDEs and 30 advanced economies.
B. Number of economies among 30 advanced economies and 50 EMDEs in which potential total factor productivity growth is lower than its longer-term average (1998-2017).
Click here to download data and charts.

BOX 3.2 Understanding the recent productivity slowdown: Facts and explanations

Potential total factor productivity growth slowed, post-crisis, below its longer-term average and pre-crisis levels. The slowdown started well before the global financial crisis in advanced economies (AEs) and spread to EMDEs after the crisis. Weaker productivity growth has been attributed to slower investment growth, partly because of heightened uncertainty and crisis legacies, population aging, increased regulation, and maturing global value chains and information and communications technology.

Introduction

Global growth of total factor productivity (TFP), defined as the residual part of output growth not explained by factor accumulation, has slowed sharply over the past decade. Much of this reflected a steep cyclical slowdown, but global *potential* TFP growth—the focus of this box—also slowed in 2013-17 below its pre-crisis and longer-term average (Figure 3.2.1). Labor productivity growth, defined as output growth per worker, has shown a similar decline.

In advanced economies, TFP growth was flattening before the global financial crisis, as documented in the large literature reviewed below. By contrast, TFP growth in EMDEs surged to 2.5 percent a year during 2003-07, reflecting productivity-enhancing investment, partly financed by capital inflows, and ample room for convergence-driven productivity growth (Adler et al. 2017). Reforms of policy frameworks after EMDE financial crises in the late 1990s and early 2000s and greater integration into global value chains provided a conducive environment for rapid productivity growth. However, TFP growth in EMDEs slowed to 1.9 percent a year in 2013-17 amid investment weakness in the two-thirds of EMDEs that are commodity exporters, rapid per capita income convergence in commodity importers that narrowed the room for catchup productivity growth in some EMDEs, and a policy-driven rebalancing away from investment growth in China.

The recent slowdown in TFP growth was broad-based but steepest in commodity exporters (Figure 3.2.1). In EMDE regions where commodity exporters have struggled to adjust to low commodity prices (MNA, LAC, SSA) or which faced heightened political uncertainty that weighed heavily on investment, TFP growth slowed to near-zero during 2013-17. In contrast, TFP growth continued to be robust above 3 percent during 2013-17 in East Asia and Pacific (EAP) and Southeast Asia (SAR)—both regions hosting predominantly commodity-importing economies.

Considering the synchronous slowdown in productivity growth, this box addresses two questions:

- What are the linkages between productivity growth and potential output growth?
- What are the reasons behind the ongoing productivity slowdown?

Linkages between productivity and potential output growth

Differences in productivity growth account for about two-thirds of the variation in per capita income across the world (Jones 2016). Higher productivity lifts firms' marginal product and reduces their marginal cost, which allows firms to increase their demand for factors of production and, in turn, expand output. Technological advances can also reduce the quality-adjusted price of capital equipment, encouraging further capital accumulation which, in turn, embodies further improvements in productivity (Greenwood, Hercowitz, and Krusell 1997).

Weaker productivity growth reduces not only *actual* output growth, but also *potential* output growth. For example, the productivity slowdown in the United States, which pre-dates the global financial crisis, may reflect a return to productivity growth rates before the surge of information and communication technologies (ICT) in the 1990s and the early 2000s and may, therefore, be associated with a long-term reduction in potential output growth (Fernald 2015; CBO 2014).[1] Other factors, such as financial frictions that reduce investment in R&D and population aging, have contributed to the recent slowdown in TFP growth and may have dampened the potential of the economy to innovate in the future, i.e., they may have reduced potential TFP and output growth.

Explanations of productivity growth slowdown

The literature offers a number of explanations for slowing productivity growth. These include temporary factors—

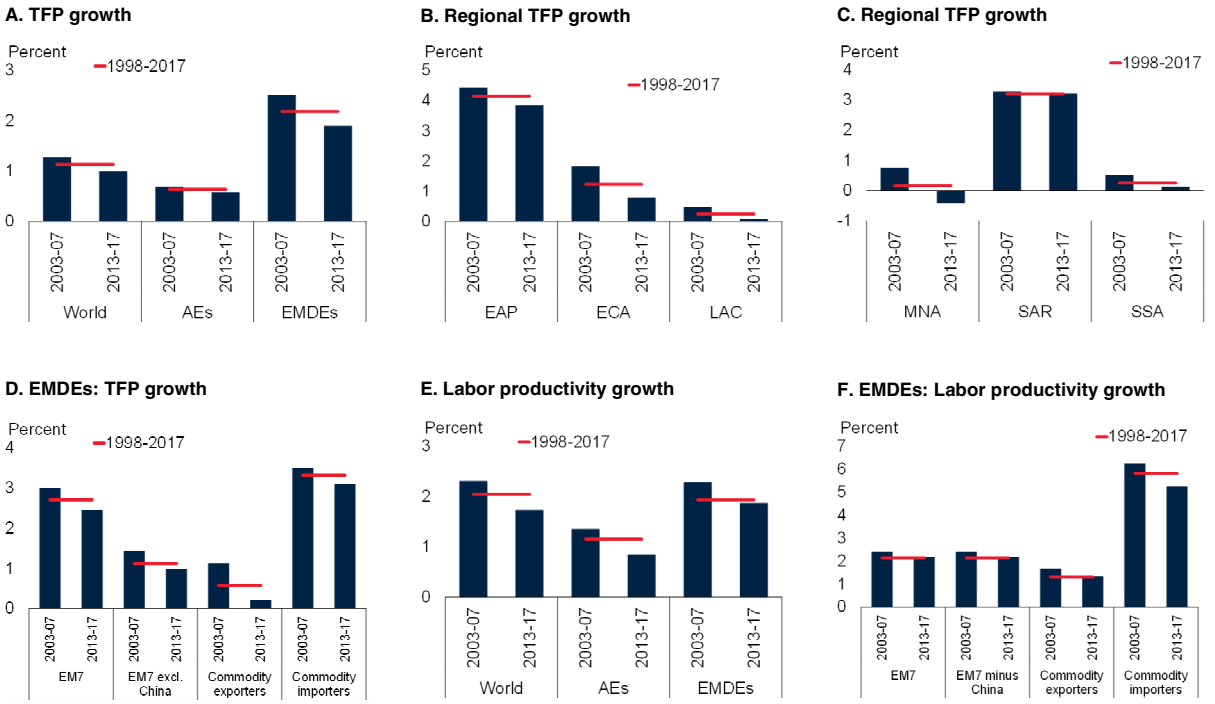
Note: This box was prepared by Ergys Islamaj, M. Ayhan Kose, and Franziska Ohnsorge.

[1] CBO (2014) has revised its estimates of potential GDP growth compared to 2007, taking into account a lower rate of productivity growth.

BOX 3.2 Understanding the recent productivity slowdown: Facts and explanations *(continued)*

FIGURE 3.2.1 Evolution of potential productivity growth

Potential productivity growth slowed in advanced economies and EMDEs during 2013-17 to rates below longer-term averages and average rates a decade ago.



Source: World Bank.
Notes: GDP-weighted averages of potential total factor productivity growth, defined as in Annex 3.1. AEs: advanced economies; EMDEs: emerging market and developing economies; EAP = East Asia and Pacific; ECA = Europe and Central Asia; LAC = Latin America and the Caribbean; MNA = Middle East and North Africa; SAR = South Asia; SSA = Sub-Saharan Africa; EM7: Brazil, China, India, Indonesia, Mexico, Russia, and Turkey; G7: Canada, France, Germany, Italy, Japan, the United Kingdom, and the United States.
A. D. Sample includes 30 advanced economies and 50 EMDEs.
E. F. GDP-weighted averages of potential labor productivity defined as potential GDP divided by potential employment.
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such as heightened policy uncertainty, crisis legacies that have eroded investment—as well as persistent factors, such as maturing global value chains, a switch in information and communications technologies to consumer applications (from productivity-enhancing hardware and software), and slowing human capital accumulation.[2] In the context of EMDEs, slowing productivity growth has also been attributed to slowing factor reallocation.

Uncertainty and investment slowdown. The decade 2008-17 was marked by heightened policy uncertainty, including following the global financial crisis and the Euro Area crisis. Uncertainty dampens investment, leading to lower productivity growth through less investment in R&D and through the loss of improved technologies embodied in new capital equipment (World Bank 2017a; Box 3.3). Uncertainty may also slow the reallocation of resources from less to more productive firms and from larger and older towards more innovative younger firms, as credit markets may be less willing to finance risky start-ups (Bloom 2009; Bloom 2014; Fort et al. 2013; Baker et al. 2016). In LAC, weak investment, especially in intangible assets, has contributed to low productivity growth (OECD 2016a).

Crisis legacies. Deep recessions, especially those following financial crises, can lower TFP levels (Fatás 2000; Adler et

[2] Some authors question the very existence of a productivity growth slowdown, arguing that productivity is increasingly mismeasured (Brynjolfsson and McAfee 2011, 2014). However, thus far there has been limited evidence of rising mismeasurement during the last decade (Byrne, Fernald and Reinsdorf 2016; Syverson 2017). In addition, in the United States, the productivity growth slowdown has spread broadly across sectors, and, as a result, cannot be explained by a shift of economic activity towards poorly measured, low-productivity-growth sectors, such as services (Fernald et al. 2017).

BOX 3.2 Understanding the recent productivity slowdown: Facts and explanations *(continued)*

al. 2017; Reinhart and Rogoff 2014).[3] Financial frictions following severe recessions and crises may reduce investment in research and development, especially in firms with pre-existing balance-sheet vulnerabilities (Aghion et al. 2012; Duval, Hong and Timmer 2017). Hence, the global financial crisis and Euro Area crisis may have deepened a TFP growth slowdown already underway (Cette, Fernald, and Mojon 2016). An event study of 161 contractions in 93 advanced and emerging market and developing economies during 1981-2016 show that actual TFP growth typically fell sharply during contractions, and the subsequent rebounds were insufficient to lift TFP levels back to their pre-crisis paths (Figure 3.2.2).[4] In particular, the severe recessions in EMDE commodity exporters following the commodity price slide from 2011 may account for some of the recent slowdown in EMDE productivity growth. Yet, the timing of the productivity slowdown for advanced economies suggests that the main drivers are factors other than the global financial crisis or subsequent coping policies.

Trade slowdown. International trade growth slowed sharply following the global financial crisis (World Bank 2015a). Weaker trade growth slows incentives for firms to invest and eases competitive pressures. As a result, the pace of resource re-allocation within firms and within sectors toward more efficient firms and sector slows (Adler et al. 2017; Ahn and Duval 2017). In addition, the spread of vertical specialization, which had been a significant force for both earlier productivity gains and trade growth, slowed as global value chains have matured (Matoo, Neagu, and Ruta 2017). While the post-crisis slowdown in trade has dampened productivity growth in open economies, elevated tariff and non-tariff barriers have depressed trade openness, competition, access to global technologies, and, hence, productivity growth in MNA (Freund and Jaud 2015).

Slowing population growth and human capital accumulation. As population growth has slowed, the growth of the labor force has also declined. In advanced economies, the working-age share of the population has declined since the mid-1980s and, more recently, in EMDEs. An older labor force has, historically, been associated with slower learning of new skills and with slowing innovation and productivity growth (Maestas, Mullen, and Powell 2016). Population aging may have accounted for as much as 0.2–0.5 percentage point lower average productivity growth in advanced economies in the 2000s than the 1990s (Adler et al. 2017). In LAC, specifically, poor education and skills have been central to low productivity growth (OECD/ECLAC/CAF 2016).

Maturing ICT. Information and communication technologies (ICT) has boosted productivity in the ICT-producing and ICT-related industries since the mid-1990s and, as it became a general-purpose technology, in other industries (Fernald 2015; Fernald et al. 2017; Basu et al. 2004). Businesses throughout the economy became more efficient by reorganizing to take advantage of ICT. After an uptick in productivity in the U.S. and other advanced economies in the mid-90s and early 2000s, ICT technologies and their absorption appear to have been maturing (Fernald 2015).[5] Productivity growth in EMDEs tends to reflect advanced-country productivity trends with a lag, as technological innovations first introduced in countries at the technology frontier are eventually adopted by the rest (Comín et al. 2014; Gordon 2016). Costs of extracting ideas may have also increased over time, making it more likely that productivity growth will remain low in the future (Bloom at al. 2017). In addition, hi-tech innovation seems to have shifted this century from productivity-enhancing hardware and software, toward consumer applications (Gordon 2016).

Rising regulation and loss of dynamism. The stringency of labor and product markets regulations may be negatively correlated with productivity levels across countries (Fatás 2016; Cette, Fernald, and Mojon 2016; Nicoletti and Scarpetta 2005). Deregulation may boost productivity by accelerating the reallocation of resources, facilitating technology diffusion and adoption, and increasing incentives to innovate. In the U.S. ICT sector, deregulation may have also increased labor market flexibility and allocative efficiencies since the early 2000s (Decker et al. 2016, 2017). In contrast, zoning restrictions in U.S. cities heightened housing supply constraints and reduced the efficiency of labor allocation across the United States (Hsieh and Moretti 2015). In the United States, changes in the federal regulatory burden do not appear to

[3] In theory, the constraints imposed by credit crunches and recessions should force the least productivity firms out of business and lift aggregate productivity growth (Petrosky-Nadeau 2013).

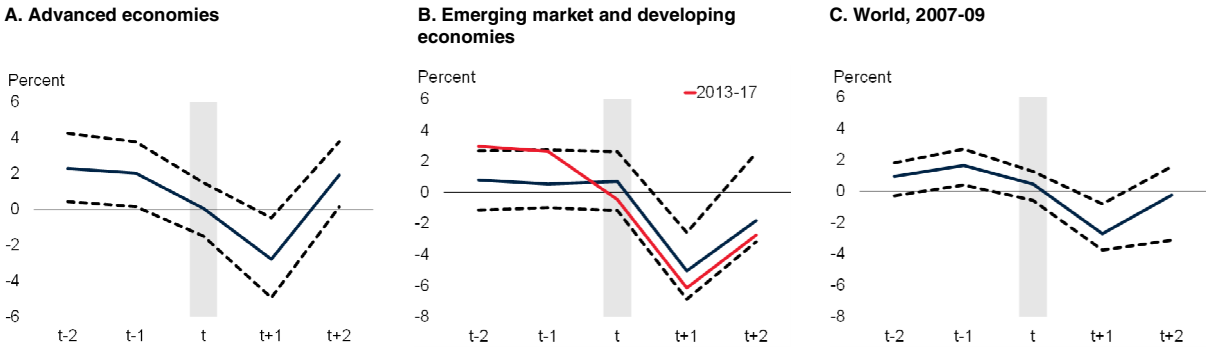
[4] Contractions are defined as the years of negative output growth from the year after the output peak to the output trough. Sample includes 161 events for 32 advanced economies and 61 emerging market and developing economies for the period 1981-2017. The methodology is described in detail in Annex 3.4.

[5] Adler et al. (2017) find that a shock to the U.S. TFP has had a gradual, increasing and significant spillover effect in the TFP of other advanced economies over the 1970-2010 period.

BOX 3.2 Understanding the recent productivity slowdown: Facts and explanations *(concluded)*

FIGURE 3.2.2 Productivity growth around contractions

Productivity growth has tended to slow by 4 percentage points during typical contraction episodes and to rebound quickly during subsequent expansions. The contraction episodes in commodity exporters following the commodity price slide after 2011 were associated with sharp declines in productivity growth.



Sources: Penn World Tables, World Bank.
Notes: Blue lines show unweighted averages around 161 contraction episodes in 32 advanced economies and 61 EMDEs. The methodology is described in detail in Annex 3.4. Dashed lines show 25th and 75th percentiles. Horizontal axis shows years.
A. B. t denotes the year of a business cycle peak preceding the contraction.
B. Red line shows unweighted average total factor productivity growth in countries that had recessions during 2013-2017 (Brazil, Burundi, Ecuador, Russia, Sierra Leone, Swaziland, Trinidad and Tobago, Ukraine, and República Bolivariana de Venezuela).
C. There are 52 countries identified as having a business cycle peak in 2008. t denotes 2008.
Click here to download data and charts.

explain variations in productivity growth, many small changes in the regulatory and institutional framework may have contributed to a decline in entrepreneurship dynamism and a decline in job and worker flows into the high-tech sector (Fernald et al. 2017; Haltiwanger 2015).

Slowing reallocation between firms and sectors. Reallocation of capital and workers toward more efficient firms and sectors has been an important driver of productivity growth over the past two decades both in AE and EMDEs (Restuccia and Rogerson 2017). In Europe, structural rigidities in labor and product markets may have hindered a favorable reallocation of resources. In China, the reallocation of labor from agriculture to manufacturing has been an important source of productivity growth (Cao and Birchenall 2013; Deininger et al. 2014). A reallocation of labor from low-productivity to high-productivity activities has been a major driver of productivity growth in Africa, Latin America and the Caribbean, and East Asia and the Pacific (Űngőr 2017; McMillan, Rodrik, and Verguzco-Gallo 2014). As the potential for reallocation is gradually exhausted, related productivity gains may be slowing.

Conclusion

Global productivity growth has slowed over the past two decades. Some of the underlying drivers of this slowdown may fade over time, such as policy uncertainty and crisis legacies. Others, however, are likely to persist: the decline in labor force growth and population aging; a levelling-off of productivity-enhancing innovations in information and communication technologies; and maturing global supply chains. Policies to address these persistent factors include better education for improved learning in aging populations and initiatives to stimulate investment in physical capital and research and development. Other measures, such as regulatory reform and trade liberalization, could raise productivity by reducing informality and increasing competition.

- Tertiary completion rates have risen by about one-half to 10 percent in 2013-17, but still about half of the advanced-economy average.

- Life expectancy has risen by 4 years to 71 years, about 10 years short of the advanced-economy average.

These substantial improvements in human capital mitigated other developments weighing on EMDE potential growth between 1998-2002 and 2013-17, and helped raise potential growth in regions where progress was particularly large. The largest improvements between 1998-2002 and 2013-17 were made in SSA, where secondary completion rates almost doubled (by 7 percentage points) to approach the advanced-economy average, and life expectancy rose by 7 years to almost 60 years. Life expectancy also rose considerably (4 years) in South Asia to 72 years.

Physical capital accumulation

Channels of transmission. Investment can lift potential output growth through direct and indirect channels (Box 3.3). Directly, investment is the source of capital accumulation, which raises labor productivity and potential output—provided investment is not channeled into excess capacity and wasted (Devarajan, Swaroop, and Zhou 1996; Presbitero 2016). Indirectly, investment can raise total factor productivity because technological improvements are often embodied in investment (Solow 1962).

Evolution of investment growth. Global investment growth halved between 2010 and 2016, with the investment weakness shifting from advanced economies to EMDEs over this period. Investment growth in advanced economies declined during the Euro Area crisis and, after a brief rebound, again after the oil price decline that disrupted energy sector investment in the United States. In EMDEs, investment growth slowed sharply following the global financial crisis, from double-digit rates in the immediate wake of the crisis to a post-crisis low of 3 percent in 2016. Despite signs of bottoming out in 2017, investment growth has been well below its pre-crisis average as well as its longer-term average in more than half of EMDEs in the sample (Figure 3.6). In EMDEs, both public and private investment were weak. Public investment accounted for about 31 percent of total investment in EMDEs and about 15 percent of advanced-economy investment during 2010-15 (World Bank 2017). After 2011, public investment growth remained anemic following the stimulus-related surge of 2008-09 and private investment growth slowed sharply after 2011.

Sources of investment weakness. Whereas investment weakness in advanced economies mainly reflected sluggish demand and output growth, in EMDEs a broader range of factors has been at play. In commodity importers, slowing FDI inflows and spillovers from soft activity in major advanced economies accounted for much of the slowdown in investment growth after 2011. In commodity exporters, a sharp deterioration in their terms of trade (particularly for energy exporters), slowing growth in China, and mounting private debt burdens accounted for much of the slowdown in investment growth. In several EMDEs, political and policy uncertainty was a key factor in investment contractions or slowdowns (Kose et al. 2017). Investment weakness may also reflect the declining price of capital goods or a growing role of poorly-measured intangible capital, such as design, research and developments, marketing and training (Corrado and Hulten 2010; Ollivaud, Guillemette, and Turner 2016).

Consequences of investment weakness. Cyclical factors, although transitory in themselves, can have long-lasting effects on potential output growth. More than half of EMDEs in the sample suffered at least one year of investment contraction during 2013-17. In some, investment contractions were triggered by the prolonged slump of commodity prices from their peak in early 2011. In others, it was accompanied by heightened domestic political or geopolitical tensions. Such episodes typically foreshadow weaker potential growth in the three years surrounding the trough of the investment contraction (Box 3.3).

Investment contractions are one reason for the long shadow cast by deep recessions over potential

BOX 3.3 Moving together? Investment and potential output

The recent slowdown in potential growth coincided with considerable investment weakness in emerging market and developing economies (EMDEs). After briefly reviewing the main linkages between investment and potential output, this box documents that investment busts (booms) are often associated with weaker (stronger) TFP and potential output growth.

Introduction

Since 2010, investment growth slowed sharply in emerging market and developing economies (EMDEs), from double-digit rates in the wake of the global financial crisis to a post-crisis low of 3 percent in 2016 (Figure 3.3.1). This slowdown has resulted from a range of headwinds facing EMDEs, including a sharp decline in commodity prices, slower FDI inflows, elevated policy uncertainty, and weaker growth expectations (Kose et al. 2017; Vashakmadze et al. 2017; World Bank 2017). Irrespective of its causes, weaker investment growth can dampen potential growth by reducing the speed of capital accumulation and the rate at which new technologies embedded in investment can increase productivity.

As global growth has firmed in recent quarters, investment growth in EMDEs has begun to bottom out: investment growth stabilized at 4.5 percent in 2017 and is expected to rise to 4.8 percent in 2018. It remains an open question to what extent the benefits of the ongoing investment pickup could offset the adverse effects on potential output growth of past protracted weakness in investment and productivity, and demographic shifts.

Against this background, this box addresses two questions.

- What are the basic linkages between investment and potential growth?
- How do TFP growth and potential output growth change during investment booms and busts?

Linkages: Theory and evidence

Investment growth can lift potential output growth through direct and indirect channels. Directly, capital accumulation raises potential output growth and labor productivity growth. Indirectly, investment can raise total factor productivity because of technological improvements embedded in investment in new equipment or research and development.[1]

A large literature has provided firm-level evidence in support of the linkages between investment and productivity growth (Syverson 2011).[2] Higher level of investment in research and development, and information and communications technology are associated with particularly large gains in firm productivity.[3] Jorgenson, Ho, and Stiroh (2007), for instance, find that investment in information technology played a dominant role in the U.S. productivity surge in the late 1990s and accounted for about one-third of productivity growth over 2000-2005. In addition to its direct impact on productivity, investment growth also tends to amplify the benefits of other sources of firm productivity, including staff education and experience, managerial skills, and firm structure (Bloom, Sadun, and Reenen 2012; Cirera and Maloney 2017).[4]

Macro-level evidence supports the linkages between investment growth and productivity growth. Investment in machinery and equipment has supported labor productivity growth in advanced economies and EMDEs (Herrerias and Orts 2012; De Long and Summers 1992a and 1992b). Research and development investment has been associated with higher productivity (IMF 2016). Growth of non-military public investment, especially infrastructure investment, has lifted total factor productivity growth (Aschauer 1989; Calderón, Moral-Benito, and Servén 2015; Ramirez 1998a, 1998b). Finally, aggregate investment growth appears to be associated with faster total factor productivity growth in OECD countries (Mourougane et al. 2016; Fournier 2016) and some EMDEs (Fedderke et al. 2005; Hendricks 2000). The slowdown in trend labor productivity growth between

Note: This box was prepared by M. Ayhan Kose, Franziska Ohnsorge, and Temel Taskin.

[1] Evidence for such investment-specific technological change has been presented in Greenwood, Hercowitz, and Krusell (1997 and 2000); Cummins and Violante (2002); Fischer (2006); Boileau (2002); He and Liu (2008); Levine and Warusawitharana (2014); Doraszelski and Jaumandreu (2013); and Hendricks (2000).

[2] For firm-level evidence, see Faggio et al. (2013); Boeing, Mueller, and Sandner (2015); Commander, Harrison, and Menezes-Filho (2011); and Aw, Roberts, and Xu (2008).

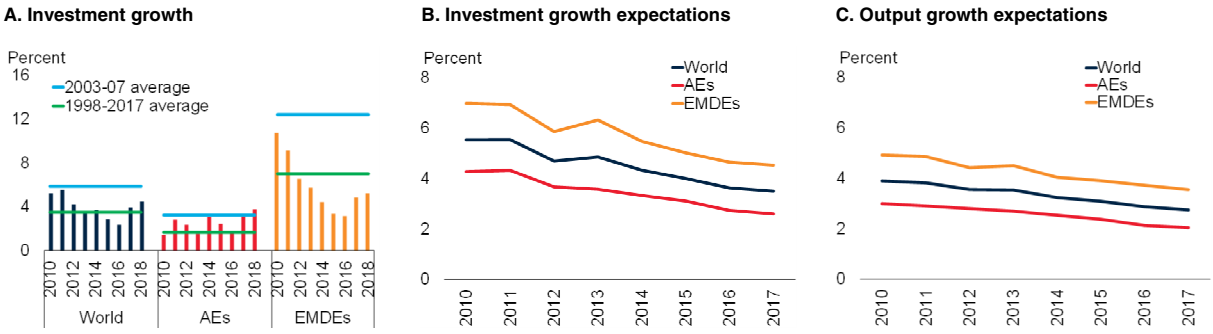
[3] Oliner, Sichel, and Stiroh (2007); Castellani et al. (2016); Raymond et al. (2015); and d'Artis and Siliverstovs (2016).

[4] Van Ark, O'Mahony, and Timmer 2008 document that investment in information and communication technology accounted for about one-third of the contribution of labor productivity to output growth in the European Union and the United States during 1995-2004. De Long and Summers 1992b estimate a 0.2- and 0.4-percentage-point increase in labor productivity growth in response to a 1-percentage-point increase in the investment-to-GDP ratio in a large sample of advanced and emerging market economies. Fournier 2016 finds that a 1-percentage-point increase in the share of public investment in primary government spending is associated with a 5 percent increase in long-term output in OECD countries.

BOX 3.3 Moving together? Investment and potential output *(continued)*

FIGURE 3.3.1 Potential output growth and investment growth

Investment growth in EMDEs has halved since 2010. Since capital accumulation makes a major contribution to potential output growth both directly, and indirectly via TFP, the slowdown has negative implications for future growth prospects.



Sources: Consensus Economics, Haver Analytics, Penn World Tables, World Bank.
Note: GDP-weighted averages.
A. Investment-weighted averages. Sample includes 37 advanced economies and 145 EMDEs.
B. Based on data for 24 advanced economies and 21 EMDEs. Five-year-ahead *Consensus* investment growth forecasts. Latest data is from July 2017.
C. Based on data for 24 advanced economies and 21 EMDEs. Five-year-ahead *Consensus* output growth forecasts. Latest data is from July 2017.
Click here to download data and charts.

2007 and 2015 has been entirely attributed to weakness in capital accumulation in OECD countries (Ollivaud, Guillemette, and Turner 2016). Conversely, investment busts may be accompanied by firm closures that reduce average productivity (Campbell 1998).

TFP and potential output during investment booms and busts

Data. Annual aggregate investment data is available from several sources, including the IMF, Eurostat, OECD, and World Bank. The impact of investment booms on TFP growth and on potential output growth is illustrated with an event study. Potential growth is estimated using the production function approach, but the results are robust to using other measures.

Definitions. An investment boom (bust) is defined as an episode during which investment growth is at least one standard deviation higher (lower) than its sample average for at least two consecutive years. The sample covers 94 episodes of investment booms and 32 episodes of investment busts in 40 EMDEs during 1980-2016. About one-half of busts but few booms occurred after the global financial crisis. A typical investment boom and bust episode lasts about 2.7 and 2.3 years, respectively.

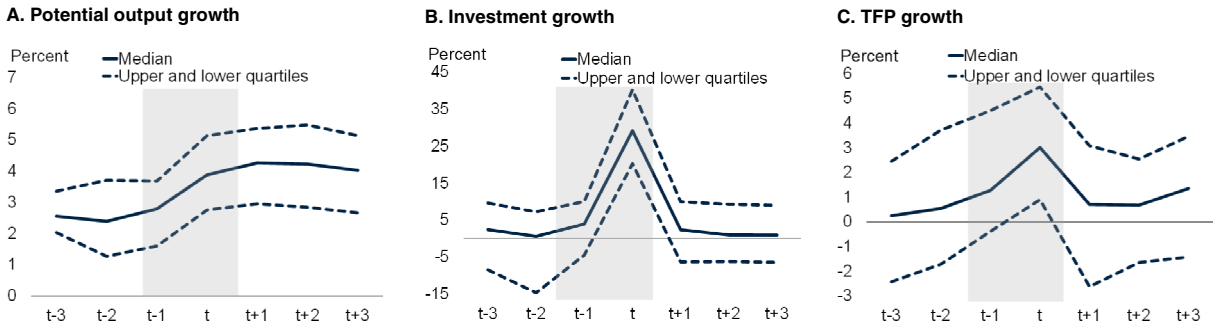
Methodology. The evolution of TFP growth and potential output growth 3 years before and after the boom and bust episodes are examined. The results derive from simple averages of the evolution of both variables and from a panel regression of potential growth on dummy variables for these events, controlling for country and year fixed effects. The two approaches serve somewhat different purposes. Simple averages illustrate the evolution of TFP and output growth during events while the regression approach allows a test of differences between event and non-event years.

Results. The event study suggests that the median investment boom in the sample is associated with a 2.8 percentage point a year increase in TFP growth and a 1.1 percentage point a year increase in potential output growth during the three years leading up to the peak of the investment boom (Figure 3.3.2). As the investment boom subsides, TFP and output growth rates gradually slow. Investment busts are associated with slowdowns in TFP growth of 4.9 percentage points a year and in potential growth of 1.0 percentage point a year during the three years leading up to the trough of the investment bust (Figure 3.3.3). Potential output growth and, especially, TFP growth usually rebound following a trough in investment growth. These events coincide with slower actual output growth. The panel regression confirms that the differences in TFP growth and potential growth during booms and busts from non-event years are statistically significant (Annex 3.3). While these results represent correlations, they are consistent with the results in the literature discussed above.

BOX 3.3 Moving together? Investment and potential output *(concluded)*

FIGURE 3.3.2 Growth around investment booms in EMDEs

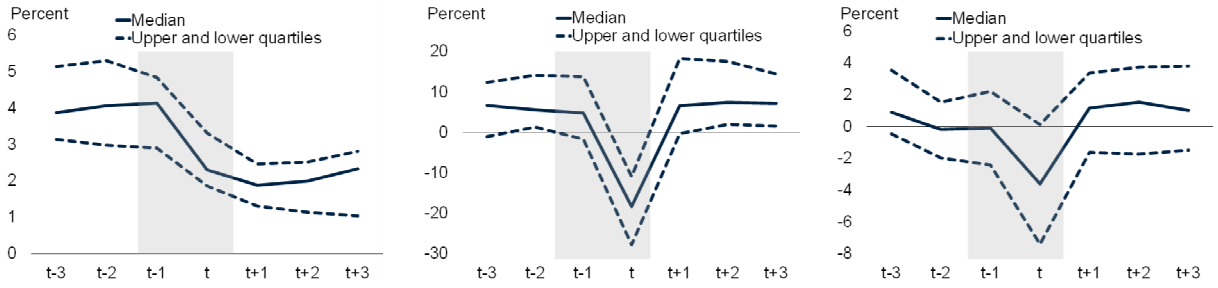
Investment booms have typically been associated with increases in potential output growth, followed by gradual slowdowns. Surges in TFP growth during investment booms have tended to be quickly reversed.



Source: World Bank.
Notes: An investment boom is defined as an episode during which investment growth is at least one standard deviation larger than its long-run (over the sample period) average level. t denotes the average of the investment boom. The event studies in this box are conducted using the boom and bust episodes of at least two consecutive years. Shaded area is the peak of the investment boom. Solid lines indicate median, dotted lines indicate interquartile range.
A. Potential growth defined by production function approach.
C. Actual TFP growth as defined in Annex 3.1.
Click here to download data and charts.

FIGURE 3.3.3 Growth around investment busts in EMDEs

Investment busts have tended to be accompanied by lower subsequent or contemporaneous potential output growth, followed by gradual recoveries. TFP growth has tended to slump during investment busts but to rebound quickly as investment growth recovered.



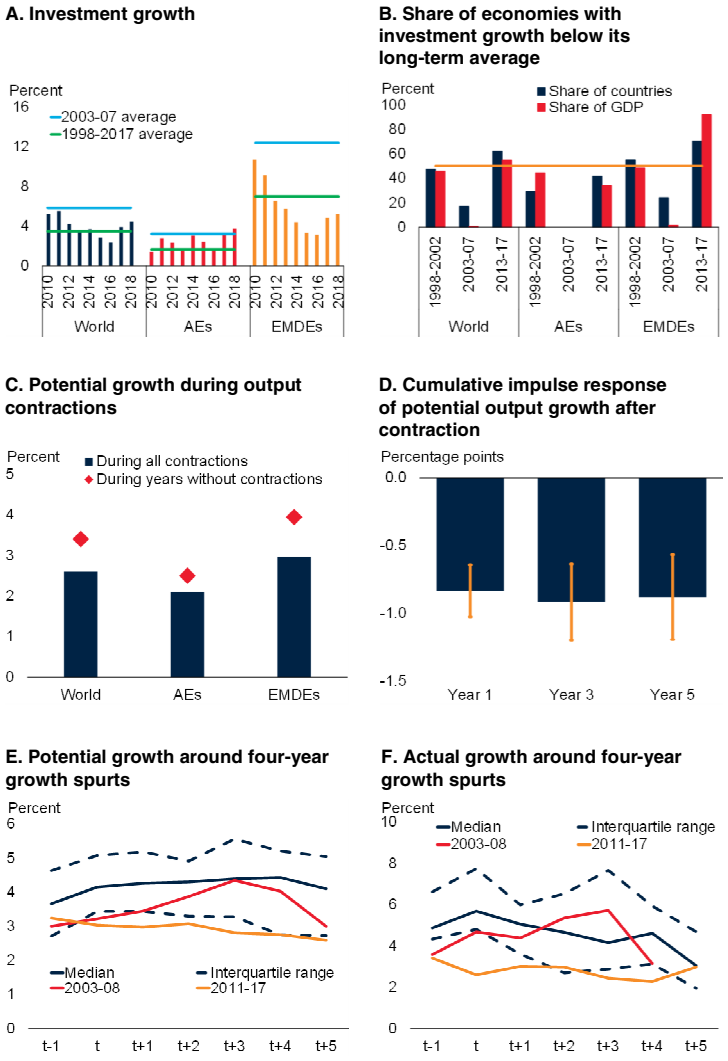
Source: World Bank.
Notes: An investment bust is defined as an episode during which aggregate investment is at least one standard deviation lower than its long-run average level. t denotes the average of the investment bust. The event studies in this box are conducted using the boom and bust episodes of at least two consecutive years. Shaded area is the trough of the investment bust. Solid lines indicate median, dotted lines indicate interquartile range.
A. Potential growth defined by production function approach.
C. Actual TFP growth as defined in Annex 3.1.
Click here to download data and charts.

Conclusion

Ample evidence supports the existence of multiple linkages between investment growth and potential output growth. By eroding productivity growth, investment busts have adverse indirect effects on potential growth, above and beyond the direct effects of slowing capital accumulation. The slowdown in investment growth in EMDEs since 2010, therefore, raises substantial longer-run concerns. The association between sharp swings in investment growth and changes in potential output growth suggests that proactive policy measures might usefully support investment, against the risk of investment busts, to avoid an erosion of potential growth.

FIGURE 3.6 Investment growth

Investment growth in EMDEs has slowed sharply since the global financial crisis from double-digit rates after the global financial crisis to a post-crisis low of—3 percent in 2016. Investment weakness during deep recessions, such as the global financial crisis, is one reason why output contractions are associated with about 1 percentage point lower potential growth for the next half-decade. Conversely, a cyclical upturn may generate its own momentum to lift potential growth. Following four-year growth spurts, potential growth rose around 1 percentage point above median potential growth in years outside such spurts.



Sources: Penn World Tables, World Bank.

A. Investment-weighted averages. For a sample of 37 advanced economies and 145 EMDEs.

B. Share of 139 countries in which investment growth is below the longer-term average (1998-2017).

C. D. Contractions are defined as the years of negative output growth from the year after the output peak to the output trough, as in Huidrom, Kose, and Ohnsorge (2016). Sample includes up to 32 advanced economies and 45 EMDEs during 1989-2016. The methodology is described in detail in Annex 3.4. Unweighted averages of potential growth during contractions compared with all other country-year pairs without such events (C). Impulse response for the full sample of up to 77 advanced and EMDE economies from local projections model, as described in Annex 3.4, over horizons of 1, 3, and 5 years (D). Dependent variable defined as cumulative slowdown in potential growth after a contraction event using baseline specification. Bar shows coefficient estimates, vertical lines shock +/- 1.64 standard deviations (10 percent confidence bands). Potential growth based on production function approach.

E. F. Median of potential growth using the production function approach (E) or actual growth (F) during 81 episodes (12 percent of country-year pairs) of growth upswings during 1988-2017 (9 in advanced economies, 72 in EMDEs). *t* = 0 is the fourth consecutive year in which growth has been positive and strengthened from year to year. "Median" indicates the median for *t* years in the five years around the upswing event. During non-event years, median actual growth was 3.2 percent and median potential growth was 2.9 percent. Sample includes 98 economies for 1988-2017.

Click here to download data and charts.

growth. In addition, deep recessions may lower labor productivity by extending unemployment spells that erode human capital. If accompanied by financial stress, recessions can reduce profitability or access to finance for productivity-enhancing R&D spending, technology absorption, and operations of innovative firms. Indeed, short-term output shocks often precede persistent potential growth slowdowns (Box 3.4). Output contractions have tended to leave a legacy of lower potential growth (by as much as 1 percentage point on average) four to five years after the onset of the contraction. The effects have tended to be initially stronger, but less persistent, for EMDEs.

Consequences of sustained cyclical recoveries. Conversely, the cyclical upswing currently underway may generate its own momentum that feeds into higher potential growth.[10] With improving growth, investors may become keener to invest. The embodied new technologies may, in turn, spark a burst of productivity growth. Rising employment may build workplace skills and, therefore, raise labor productivity. Over the past three decades, strong growth spurts—defined as years in which growth accelerated in four consecutive years—have been associated with about 1-percentage-point higher potential growth than in the median normal year.[11] Initially, this increase in potential growth was only one-third of the increase in actual growth, but was sustained even as the growth spurt dissipated (Figure 3.6). However, such growth spurts were rare: in the sample used here, they represent only 12 percent of all country-year pairs.

Labor supply

Channels of transmission. Growing working-age populations have been associated with "demographic dividends" to growth. Higher working-age shares of populations have been accompanied by higher capital accumulation and employment

[10] Past growth accelerations have been associated with better institutions, increased economic openness, and greater macroeconomic stability (Berg, Ostry, and Zettelmeyer 2013).

[11] Over the past three decades, there have been about 81 episodes (9 in advanced economies, 72 in EMDEs) in which actual growth accelerated every year for four consecutive years.

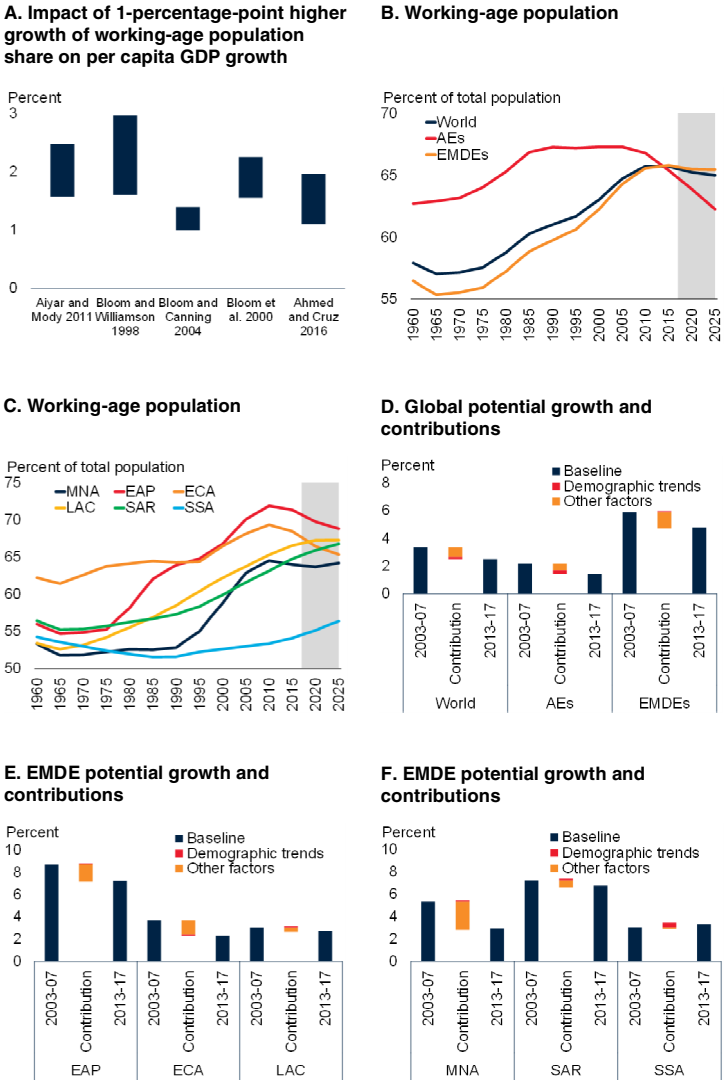
(Bloom and Canning 2004; IMF 2004; Figure 3.7).[12] Shifts towards an older age structure of the population affect potential output in several ways. Population aging may reduce the working-age population, which directly reduces potential labor supply. There are also less direct effects of population aging. For example, aging increases the share of the population with below-average labor force participation rates. Aging populations have been associated with slower labor productivity growth for various industries and occupations (Maestas, Mullen, and Powell 2016).

Another important driver of increased labor supply can be labor force participation among less represented groups, including women, young, and old workers. Rising female labor force participation rates have been attributed to better educational attainment (opening access to higher-earning jobs), lower fertility rates, a technology-driven shift toward non-manual skills, and cheaper home production (lowering the opportunity cost of working).[13]

Evolution of demographics. In the past five decades, growth was supported by rapidly growing working-age populations—until the mid-1980s in advanced economies and around 2010 in EMDEs (Figure 3.7). Since 2000, countries with rising working-age population shares accounted for half of global output growth and three-quarters of global GDP levels. With the retirement of the baby boom generation and lower fertility rates, demographic trends have turned less favorable to growth and will continue to do so over the next decade. In advanced economies, the working-age share of the population is set to decline, from 65.4

FIGURE 3.7 Demographics

Higher working-age population shares are associated with higher per capita output growth. Global demographic trends turned from tailwinds to growth into headwinds around 2010. Since 1998-2002, demographic trends shaved about 0.1 percentage point off global potential growth. In EMDEs, other factors were also important, and the impact varied by region.



Source: United Nations *World Population Prospects: The 2017 Revision.*
Note: EAP = East Asia and Pacific, ECA = Europe and Central Asia,
LAC = Latin America and the Caribbean, MNA = Middle East and North Africa, SAR = South Asia, and SSA = Sub-Saharan Africa.

A. The sample of each study differs from each other. Aiyar and Mody (2011): Indian states, 1961-2001; Bloom and Williamson (1998): 78 countries, 1965-90; Bloom and Canning (2004): Over 70 countries, 1965-95; Bloom et al. (2000): 70 countries, 1965-90; Amer and Cruz (2016): 160 countries, 1960-2010.

B.C. Population weighted averages. The working-age population is defined as people aged 15-64 years.

D. -F. GDP-weighted averages. Other factors include contribution from policy changes, cohort effects, changes in population growth, convergence-driven productivity growth, and investment. "Contribution" reflects percentage-point changes between the averages of 2003-07 and 2013-17. Methodology is described in detail in Annex 3.1.

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[12] The benefits from a rising working-age population have been particularly pronounced in Asia (Bloom et al. 2010; Bloom et al. 2007; Aiyar and Mody 2011). Demographic change over the period 1960-1995 for 86 countries has been estimated to have accounted for approximately 20 percent of per capita output growth, and more in Asia and Europe (Kelly and Schmidt 2005). Cruz and Ahmed (2016) estimated that a 1-percentage-point increase in the working-age population share was associated with a more-than-proportional increase in GDP per capita growth in 160 countries over 1960-2010. Other studies of the relationship between demographics and growth include Higgins and Williamson (1997); Eastwood and Lipton (2011); and Kelley and Schmidt (1995 and 2007).

[13] These factors have been explored in Mincer (1962); Goldin (1994); Hill (1983); Killingsworth and Heckman (1986); and Connelly (1992).

BOX 3.4 The long shadow of contractions over potential output

Contractions are associated with about 1 percentage point lower potential growth four to five years after their onset. The effect is initially stronger, but less persistent, for emerging market and developing economies.

The slow recovery from the global financial crisis and the sharp slowdown in commodity-exporting EMDEs caused by the recent slump in commodity prices have reignited the debate about the impact of deep recessions on potential output levels and growth. Global output contracted by 1.8 percent in 2009 and, in 2017, remained 4 percent below its pre-crisis trend. Most EMDEs avoided outright contractions in 2009—partly as a result of large stimulus. However, one-quarter of commodity-exporting EMDEs subsequently slid into recessions as commodity prices declined. In others, growth halved as a result of domestic political tensions or spillovers from policy uncertainty elsewhere. This post-crisis growth weakness has coincided with a decline in potential growth (Figure 3.4.1).

Severe short-term output shocks have been associated with highly persistent losses in output levels in both advanced economies and emerging market and developing economies (EMDEs). In advanced economies, output growth also tends to remain lower after recessions than pre-recession for a protracted period.[1] On average in a sample of 40 advanced economies and EMDEs, a recession was associated with 0.5 percentage point lower per capita potential growth in the two years following the pre-recession output peak, but half of this decline was reversed over the following two years (Haltmeier 2012).

Against this background, this box focuses on the impact of contractions on potential growth in a large sample of AEs and EMDEs. Specifically, it addresses the following questions:

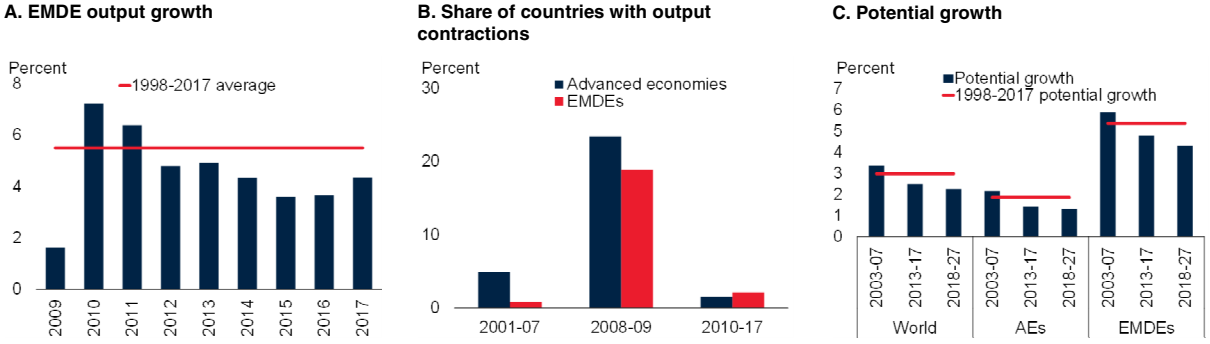
- How can contractions affect potential growth?
- What has been the impact of contractions on potential growth?

Linkages: Theory and evidence

A number of mechanisms may drive potential output losses as a result of crises or severe contractions. Theoretical models highlight the role of weak profitability for

FIGURE 3.4.1 Output

Global output remains 4 percent below its pre-crisis trend. While most EMDEs avoided outright contractions in 2009—partly as a result of large stimulus—several subsequently slid into recessions or sharp slowdowns. Since the global financial crisis, potential growth has also slowed, by all measures of potential growth.



Source: World Bank.
Note: GDP-weighted averages.
B. Includes 38 advanced economies and 150 EMDEs.
C. Potential growth estimates based on the production function approach.
Click here to download data and charts.

Note: This box was prepared by Sinem Kilic Celik and Franziska Ohnsorge.

[1] For research on the impact of contractions on growth, see Cerra and Saxena (2008); Candelon, Carare and Miao (2016); Queralto (2013); Blanchard, Cerutti and Summers (2015); Martin, Munyan, and Wilson (2015); Ball (2014); and Haltmeier (2012).

BOX 3.4 The long shadow of contractions over potential output *(continued)*

productivity-enhancing R&D spending (Fatás 2000), a liquidity demand shock that tightens availability of funds for technology absorption (Anzoategui et al. 2016), loss of access to bank lending for creative firms (Queralto 2013), a legacy of obsolete capacity (Nguyen and Qian 2014), self-fulfilling expectations of weak growth prospects (Caballero and Simsek 2017), human capital loss and reduced job search activity among the long-term unemployed (Lockwood 1991; Lindbeck 1995; and Blanchard and Summer 1987), and lower labor productivity after financial crises (Oulton and Sebastia-Barriel 2016). Damage to aggregate output during the global financial crisis in the United States has been attributed to a nonlinear effect of demand-side weaknesses (as captured by a threshold unemployment rate, Reifschneider, Wascher, and Wilcox 2015). Other studies also find that the adjustment of growth or output levels to the pre-recession trend is non-linear and depends on the persistence, depth and source of the recession and its coincidence with financial crises.[2]

Potential output during contractions

Data. The literature on the impact of recessions on potential growth has focused on univariate filter-based methodologies. Since they correlate strongly with actual growth, including during contractions, these filters tend to show a decline in potential growth during the depth of the recession and a subsequent rebound in synch with actual growth (Box 3.1). In contrast, potential growth based on the production function approach will only change in response to contractions if long-term fundamental drivers change substantially for an extended period of time. To capture this longer-term impact, this box focuses on the potential growth measure derived from the production function approach. That said, the results are robust to the use of other methodologies.

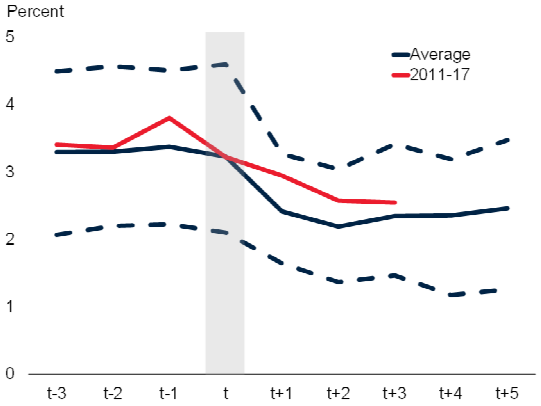
Definitions. Contractions are defined as years of negative output growth as in Huidrom, Kose, and Ohnsorge (2016). Depending on data availability for potential growth estimates, this definition yields up to 47 contraction events in 32 advanced economies and up to 77 contraction events in 49 EMDEs during 1990-2016 (Annex 3.4). Contractions, on average, lasted 1.4 years and were associated with growth of -4 percent, on average. In EMDEs, contractions were, on average, similarly short

[2] See Claessens, Kose, and Terrones (2009 and 2012); Furceri and Mourougane (2012); Haltmeier (2012); and Ball (2014).

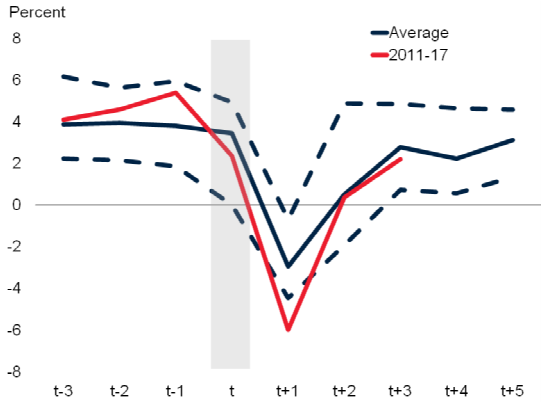
FIGURE 3.4.2 Potential growth around contractions

Contractions are associated with lower potential output growth.

A. Potential growth during contractions: Production function approach



B. Actual growth around contractions



Sources: Huidrom, Kose, and Ohnsorge (2016); World Bank; World Economic Outlook, International Monetary Fund.

Note: Contractions are defined as the years of negative output growth from the year after the output peak to the output trough, as in Huidrom, Kose, and Ohnsorge (2016). Sample includes 37 contraction events in advanced economies and 44 contraction events in EMDEs during 1989-2016. The methodology is described in detail in Annex 3.4. Dotted lines indicate interquartile range.

A. B. Unweighted averages of potential growth as estimated by the production function approach (A) or actual growth (B) during contractions. t denotes the peak preceding the contraction. 2011-17 is the unweighted average for countries with contraction episodes after a peak in 2014.

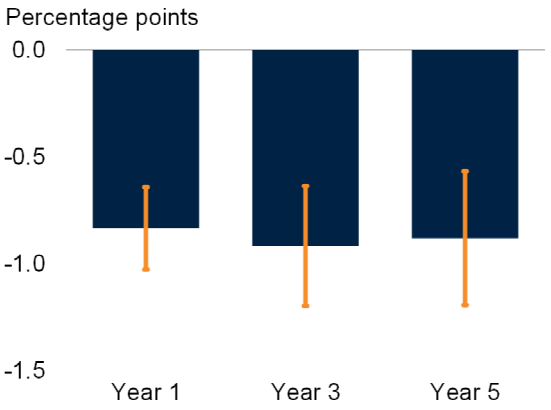
Click here to download data and charts.

BOX 3.4 The long shadow of contractions over potential output *(concluded)*

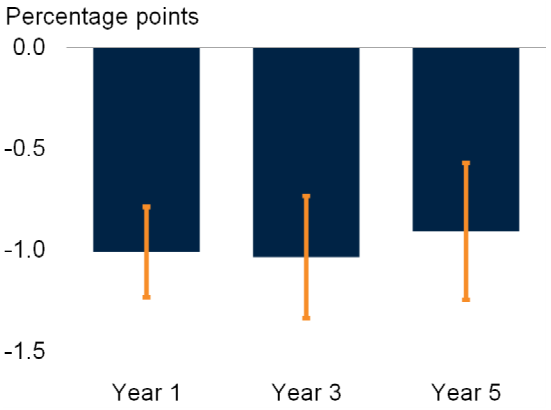
FIGURE 3.4.3 Potential growth after contractions

The fall in potential growth following contractions persists over the following half-decade, but with considerable uncertainty around the magnitude of the effect.

A. Cumulative impulse response of potential output growth after contraction



B. Cumulative impulse response of EMDE potential output growth after contraction



Sources: Huidrom, Kose, and Ohnsorge (2016); World Bank; World Economic Outlook, International Monetary Fund.

Notes: Contractions are defined as the years of negative output growth from the year after the output peak to the output trough, as in Huidrom, Kose, and Ohnsorge (2016). Sample includes yields 37 contraction events in advanced economies and 44 contraction events in EMDEs during 1989-2016. The methodology is described in detail in Annex 3.4.

A. Impulse response for the pooled sample of up to 77 advanced and EMDE economies from local projections model, as described in Annex 3.4, over horizons of 1, 3, and 5 years. Dependent variable defined as cumulative slowdown in potential growth after a contraction event using the baseline specification. Bars show coefficient estimates, vertical lines show 90 percent confidence bands.

B. EMDE sample only.

Click here to download data and charts.

(1.3 years) but somewhat more severe (-4.4 percent) than in advanced economies (-3.4 percent).

Methodology. Two exercises are conducted to estimate the impact of short-term output shocks on potential growth: an event study and a local projections model (Jorda, Schularick, and Taylor 2013; Mourougane 2017). For the event study, average potential growth during contractions (all years from the year after the peak to the trough of output) is examined over time and compared with average potential growth in all other years. The local projections model is used to estimate impulse responses of potential growth to contractions.

Evolution of potential growth during contractions. Two years following the average contraction, potential growth is still more than 1.2 percentage point below potential growth in the year preceding the contraction (exceeding the decline in actual growth over the same period; Figure 3.4.2). The effect is somewhat stronger in EMDEs than in advanced economies.

The long shadow of contractions. The local projections model helps explore the evolution of potential growth following contractions. Contractions leave a legacy of lower potential growth (about 1 percentage point) four to five years after the onset of the contraction (Figure 3.4.3). The effect is initially stronger, but less persistent, for EMDEs.

Conclusion

For advanced economies, short-term economic disruptions such as output contractions have been shown to reduce *actual* output for several years to come. This box documents that such contractions tend to be associated with weaker *potential* output growth for the following half-decade, although with considerable uncertainty around the magnitude of the effects. Depending on the measure of potential growth, contractions are associated with up to 1 percentage point lower potential growth four to five years after the onset of the contraction. The effect is initially stronger, but less persistent, for EMDEs.

percent in 2015 to 62.3 percent by 2025. In EMDEs, the working-age share of the population peaked at 65.8 percent in 2015 and is expected to stabilize around this level for the next 10 years. While the largest declines are expected in EAP and ECA, working-age shares of the population are expected to rise in Sub-Saharan Africa and South Asia.

In addition to the changing age composition of the population, expanding female labor force participation has increased labor supply, especially in EMDEs. Female labor force participation has been broadly stable over the two decades from 1998-2002 to 2013-17, however with a wide divergence across EMDE regions. Supported by surging school enrollment and completion rates, female labor force participation rates in LAC rose by almost 6 percentage points between 1998-2002 and 2013-17. In contrast, despite some (more modest) improvements in education, they declined in SAR by almost as much over the same period. Among EMDEs, female labor force participation remains less than three-quarters of male labor force participation.

The role of demographics in potential growth. The overall effect of demographics on potential growth—via TFP growth and labor supply growth—can be assessed using the production function approach. The estimates compare baseline potential growth estimates against counterfactual scenarios in which the composition of the population for all age groups and genders remains at their 1998 values (Annex 3.1).[14] The results suggest that, in 2013-17, demographic trends had lowered global potential growth by 0.2 percentage point from its 2003-07 average. Advanced economies accounted for all of this decline. In EMDEs, with the exception of ECA, growing and younger working-age populations lifted potential growth marginally over the same period. Trends in female labor force participation benefited some EMDE regions' potential growth while weighing on others'. Over the longer-term (1998-2017), higher female labor force participation contributed 0.3 percentage point to potential growth in LAC, while it did not contribute appreciably to longer-term potential growth in SAR.

Prospects for potential growth: What could happen?

Factors weighing on potential growth over the past five years are likely to persist over the next decade. Demographic trends are expected to become less favorable. This will weigh on potential growth even if trend improvements in human capital and female labor force participation continue. Although investment growth is expected to recover from its recent weakness, it is unlikely to return to elevated pre-crisis levels. Short of unexpected surges in productivity growth—perhaps as a result of dissipating crisis legacies or unanticipated technological breakthroughs—these trends imply an outlook for mediocre potential growth.

Baseline scenario assumptions. The forward-looking scenario presented here applies the production function approach to assumed paths for capital, population statistics, and education and health outcomes.

- The size of the global population and its composition are assumed to grow in line with a median fertility scenario (as in the UN Population Projections).[15]
- Past trend improvements in EMDE education and health outcomes are expected to continue.
- In line with the historical experience, investment growth is assumed to remain constant at its long-term average.

Evolution of drivers of global potential growth. Under this baseline scenario, the fundamental drivers of potential growth all point to continued softening.

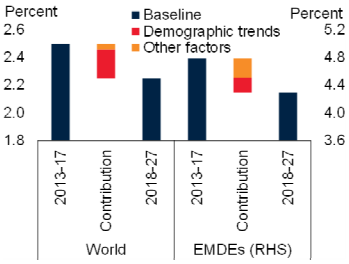
[14] Such thought experiments are widely used to assess the impact of demographics on growth or growth projections (Bloom, Canning, and Fink 2010; European Commission 2015).

[15] This scenario also assumes that migration flows continue on past trends.

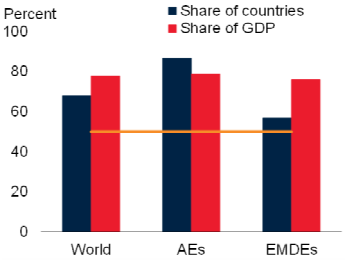
FIGURE 3.8 Potential growth prospects

Over the next decade, trends in fundamental drivers of potential growth suggest that global potential growth may slow by another 0.2 percentage point and EMDE potential growth by 0.5 percentage point. This slowdown will likely be broad-based: 69 percent of economies, accounting for more than 78 percent of global output, are expected to have potential growth below its longer-term average.

A. Potential growth



B. Share of countries and GDP of countries with potential growth in 2018-27 below its longer-term average



Source: World Bank estimates.
A. GDP-weighted averages. Derived using the production function-based potential growth as described in Annex 3.1. "Other factors" reflects declining population growth, convergence-related productivity growth, policy changes, cohort effects, and a slowdown in investment growth relative to output growth. "Contribution" reflects the percentage-point changes between the averages of 2013-17 and 2018-27.
B. Share of countries and share of GDP of 80 countries in which potential growth in 2018-27 is below longer-term average potential growth (1998-2017), in percent of all countries or global GDP among 80 advanced economies and EMDEs. Horizontal line indicates 50 percent.
Click here to download data and charts.

- A slowing pace of capital accumulation, especially in China, will be offset by growing capital accumulation in advanced economies. In EMDEs other than China, the pace of capital accumulation will remain broadly steady as investment growth keeps pace with recovering output growth after its pronounced weakness of 2015-16.

- Subdued investment and less room for catchup productivity growth as per capita income differentials narrow for EMDEs will sap productivity growth. This could reduce potential growth by about 0.1 percentage point.

- Even if education and health outcomes continue to improve in line with their longer-term trends, aging populations combined with withdrawal from the labor market of older cohorts of workers could reduce global potential growth by another 0.2 percentage point on average.

Global potential growth. Thus, absent significant policy changes or productivity breakthroughs, global potential growth could decline by 0.2 percentage point, to 2.3 percent a year in 2018-27 (Figure 3.8). Two-thirds of the sample's economies, accounting for 78 percent of global output, would be left with potential growth below the longer-term average. Advanced-economy potential growth could slow by 0.1 percentage point to 1.3 percent a year.

EMDE potential growth could slow by 0.5 percentage point to average 4.3 percent a year during the next decade, well below its longer-term average. This slowdown would mostly reflect demographic trends (across most EMDEs) and weaker capital accumulation in China, as China's policy-guided investment slowdown continues (elsewhere capital accumulation is expected to recover partially from its post-crisis weakness). While China will account for 0.4 percentage point of the 0.5-percentage-point decline in EMDE potential growth, the decline will be broad-based, affecting almost two-thirds of EMDEs in the sample.

The slowdown would also be sizable for the largest EMDEs, which could generate adverse spillovers to other EMDEs that the production function approach does not explicitly account for.[16] Largely owing to weakening demographic trends and China's slowing capital accumulation, potential growth in the seven largest emerging markets (EM7) is expected to slow by 1.1 percentage point on average, of which China accounts for more than three-quarters. Aging (and, in some cases, shrinking) populations are expected to reduce G7 potential growth by 0.2 percentage point on average.

Regional potential growth. Potential growth is expected to slow over the next decade in all regions and fall below the longer-term average in all regions except SSA. In most regions, working-age shares of the population are expected to shrink. In SAR and SSA, working-age shares of the

[16] A 1-percentage-point decline in growth in the seven largest emerging markets (EM7) could slow growth in other EMDEs by 0.9 percentage point over the following three years. A similarly-sized decline in G7 growth could have a one-half to three times larger impact than an EM7 slowdown (Huidom, Kose, and Ohnsorge 2017).

population are expected to rise, but a shift is expected within the working-age population towards older cohorts with weaker labor market attachment.

- *EAP, LAC.* Potential growth is expected to moderate in EAP as policy efforts in China succeed shifting towards more sustainable growth engines, and the region's working-age population ages. China's potential growth is expected to slow to 6.5 percent, on average in 2018-27, from 9.1 percent on average during 1998-2017 (Figure 3.4). Elsewhere in EAP, potential growth is expected to remain solid. In LAC, demographic trends and the legacy of weak investment over the past half-decade will weigh on potential growth.

- *ECA, SAR, SSA.* Shrinking labor supplies and weak investment will weigh on potential growth in ECA and SAR as investment fails to return to the elevated levels seen before the oil price plunge and onset of policy uncertainty in mid-2014. In SSA, an expected slowdown in potential growth largely reflects population aging in South Africa, while elsewhere in SSA potential growth is expected to remain broadly steady at a robust 5 percent.

- *MNA.* Potential growth is expected to strengthen somewhat in the Middle East and North Africa. Investment and productivity growth are expected to firm provided conflict and geopolitical risks do not intensify again.

Policy options to lift potential growth

The production function framework can be applied to examine stylized policy scenarios. The impact of better policy outcomes is estimated as the difference between potential growth under a counterfactual scenario of higher growth of physical or human capital or labor supply compared with the baseline scenario (Annex 3.1). All counterfactual scenarios model a repeat of a country's best ten-year improvement, up to reasonable ceilings. The potential growth dividend of the scenarios therefore depends on each country's track record as well as its room for improvement. For productivity-raising reforms not easily measured or explicitly modelled in the production function, such as improvements to governance or business climates, an event study provides some guidance about possible effects. The estimate provided in these stylized scenarios may well be lower bounds because they disregard nonlinearities in reform impacts as well as synergies between different reform measures.

Raising physical capital

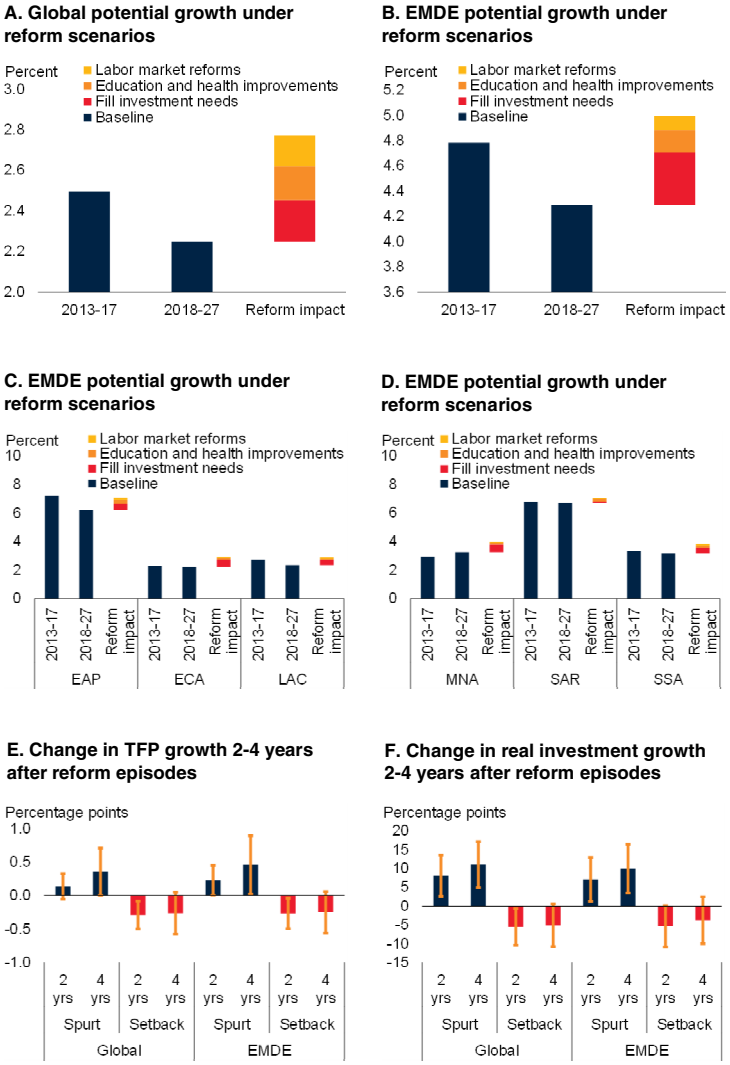
All EMDE regions have sizable investment needs (Vashakmadze et al. 2017). UNCTAD (2014) estimated that unfilled global investment needs amount to up to 3 percent of global GDP. Depending on the availability of financing, these could be filled through either public or private investment or a combination of both in public-private partnerships. Increasing public investment can be an effective policy tool to support short-term demand while also helping to raise future potential growth (World Bank 2017a; Calderón and Servén 2010a, 2010b, and 2014). Although the rapid increase in public debt over the past decade has constrained fiscal space in most countries, there remains scope to shift existing government expenditures toward public investment to make government operations more growth-friendly (World Bank 2017b). Moreover, in many countries, government revenue ratios remain low, indicating that in some cases tax revenues could be raised, including by expanding tax bases or improving the quality of tax administration (World Bank 2015).

In addition, policies can support productivity-enhancing private investment. Innovation-related investment tends to be low in EMDE firms, partly because of limited availability of complementary inputs such as trained engineers or effective organization techniques (Cirera and Maloney 2017). Policy efforts to expand the supply of complementary inputs and capabilities and to raise the returns on investment through intellectual property right protection may foster private investment.

If, over the next decade, each country raised its investment growth as much as its largest increase

FIGURE 3.9 Policies to stem declining potential growth

A combination of additional investment, education, and health improvements and labor market reforms could stem the expected decline in global potential growth over 2018-27.



Source: World Bank estimates.
Note: GDP-weighted averages.
A. B. Derived using the methodology described in Annex 3.1.
E. F. Regression coefficients of potential TFP growth (E) and real investment growth (F) on dummies for structural reform spurts and setbacks—defined as statistically significant changes in four *Worldwide Governance Indicators*—from local projections model for lags of two and four years, for a sample of 136 EMDEs and 38 advanced economies during 1996-2015. Vertical bars show 90 percent confidence interval. A detailed methodology is available in Annex 3.5.
Click here to download data and charts.

over any historical ten-year interval, global investment-to-GDP ratios would rise by 2.3 percentage points of GDP. Investment-to-GDP ratios would rise somewhat more in EMDEs, by 2.9 percentage points of GDP. It is estimated that such an investment boost would raise global potential output by 2 percent by 2027, reversing the slowdown under the baseline scenario. EMDE potential output would rise even more (5 percent cumulatively by 2027; Figure 3.9).

Implicit in these scenarios is the premise that the additional investment will be used productively. In the context of EMDEs, there is some evidence that absorptive capacity can limit the success of large scaling-up of public investment, although this adverse effect is small in lower-income and capital-scarce countries (Presbitero 2016).

Raising human capital

Measures to raise human capital could lift both labor supply and TFP growth: A better educated workforce is more securely attached to the labor market and more productive. In particular, a better-educated workforce may be better able to adjust to technological disruptions that reduce employment and wages by replacing jobs (Acemoglu and Restrepo 2017a).[17] In the framework used here, human capital has two dimensions, educational attainment and health outcomes (proxied by life expectancy).

Education. While secondary school enrollment rates are near advanced-economy levels in the average EMDE, tertiary school enrollment rates (40 percent) and secondary and tertiary school completion rates (27 and 10 percent, respectively) were less than two-thirds of the advanced-economy average in 2013-17 on average. In addition to expanding access to education, such as captured by these measures, improving the quality of education to improve education outcomes is critical (World Bank 2017c).

There are a number of policies that can improve education outcomes. At the national level, these include policies targeted at better training for teachers, greater teacher accountability, and performance incentives (Evans and Popova 2016). The development of metrics to assess and accelerate progress toward learning goals is a

[17] The impact of such technological disruptions on output may not be clear-cut. For example, in aging societies, technological change to replace jobs may relieve pressures resulting from a shrinking labor supply (Acemoglu and Restrepo 2017b and 2017c). In addition, automation may expand labor demand by creating new tasks for which labor has a comparative advantage (Acemoglu and Restrepo 2016).

prerequisite for policy actions to improve educational outcomes (World Bank 2017c).[18] At the student-level, useful policies include efforts to tailor teaching to the requirements of students (Kremer, Brannen, and Glennerster 2013). Grants may encourage school attendance by disadvantaged students (Glewwe and Marulidharan 2015). Better early childhood nutrition and cognitive development improve students' capacity to learn (Tsimpo Nkengne, Etang Ndip, and Wodon 2017).

In a stylized policy scenario, education-related policy indicators—secondary and tertiary enrollment and completion rates—are assumed to rise over 2018-27 in each EMDE by as much as their largest historical improvement in any ten-year period. This would imply that EMDEs, on average, would raise secondary school completion rates by 5 percentage points and secondary and tertiary enrollment rates by 7 percentage points, on average, during the next decade. In EMDE regions that have made particularly large strides in improving education outcomes but still have ample room for further improvements, such as SAR, secondary school completion rates could rise as much as 16 percentage points over the next decade.

Health policies. At 71 years on average in 2013-17, life expectancy in EMDEs is still below that in advanced economies (82 years). Although regions such as SAR and SSA have made large improvements, raising life expectancy by 4-7 years over the past two decades, it remains about one-eight below advanced-economy levels.

Policy interventions to improve public health, and to ensure productive working lives, range widely. Better sanitation and access to clean water would improve public health: 9 percent of the global disease burden may be attributable to unsafe water, inadequate sanitation, and insufficient hygiene (WHO 2008). In addition, improvements in health care provision can be spurred by well-defined and regularly monitored performance indicators (Bradley et al. 2010). Comprehensive coverage of health services has been followed by better health outcomes in countries with higher per capita incomes (Maeda et al. 2014). At the local level, programs targeted at local health service providers or groups of patients have generated considerable improvements in health care services and outcomes. For example, in Rwanda, performance-based incentive payments helped significantly improve health indicators for children (Gertler and Vermeesch 2012). In India, enhanced training of primary health care providers led to better identification and treatment of patient ailments (Das et al. 2016).

In a stylized scenario of improved health, life expectancy is assumed to rise over 2018-27 in each EMDE by as much as its largest improvement over any historical ten-year period. This would imply an increase in life expectancy in EMDEs by 2.5 years, on average, but as much as 3.8 years in MNA over the next decade.

Impact on potential growth. These stylized scenarios suggest that improvements in education and health outcomes—via their effect on labor supply and TFP growth—could lift global and EMDE potential growth by 0.2 percentage point on average. In some EMDE regions with a strong track record of boosting human capital and ample room for improving education and health outcomes, such as in EAP, potential growth could rise by one-and-a-half times as much.

Impact on inequality. Better education and longer life expectancy will not only raise potential growth but also have implications for income inequality. While economic development may exert pressures for higher income inequality (e.g., because of growing urbanization), better education may alleviate some of these pressures (Special Focus 2).

Raising labor supply

At 49 percent, on average, in 2013-17, global female labor force participation remains two-thirds that of men (75 percent), and it is even lower in EMDEs. Similarly, in both EMDEs and advanced economies, the average labor force participation rate among workers aged 55 years or older is about one-half that of 30-45-year-old workers, and labor

[18] Other measures such as reducing student-teacher ratios or additional years of schooling have effects that differ widely depending on country circumstances (Evans and Popova 2016; Hanushek and Woessman 2008).

force participation among 19-29 year-olds is only four-fifths that of their 30-45-year-old peers.

Labor supply can be raised by drawing a greater share of the working-age population into the labor force. This can be achieved through policies to "activate" discouraged workers or groups with historically low participation rates, such as women and younger or older workers.

In advanced economies and EMDEs, active labor market policies and reforms to social benefits were followed by higher labor force participation rates (Betcherman, Dar, and Olivas 2004; Card, Kluve, and Weber 2010). Less rigid employment protection regulation and lower minimum wages have had mixed effects on employment and labor force participation and, at times, unintended side effects such as lower labor force participation of disadvantaged groups (Betcherman 2014).

In EMDEs, policies aimed at other objectives have sometimes brought important collateral benefits that improve labor force participation. For example, in Nigeria, improved access to finance and training programs increased female labor force participation by encouraging firm startups (Brudevold-Newman et al. 2017). In Uruguay, the extension of the school day was associated with higher adult labor force participation (Alfaro, Evans, and Holland 2015). In Eastern Europe and Central Asia, shifting health care systems towards services targeted at the elderly has helped extend productive life times, and providing support services to women with families has helped encourage labor force participation (Bussolo, Koettl, and Sinnott 2015).

Female labor force participation rates—along cohort-, age-, and country-specific dimensions—are assumed to rise, over the next decade, by the largest historical ten-year improvement in each EMDE (in a stylized labor market reform scenario), although they will not exceed the rates of same-aged men. On average, this would imply raising female labor force participation rates by 10 percentage points by 2027. The premise underlying this assumption is that, over the decade, sufficient jobs will be created to absorb this additional labor supply.

Impact on potential growth. In such a stylized labor market reform scenario, global and EMDE potential growth could rise by 0.2-0.1 percentage point, respectively, on average, over 2018-27. Again, such a renewed reform push could yield the largest dividends for EMDE regions with both a strong track record and sizable remaining gaps between male and female labor force participation rates (e.g., LAC).

Raising productivity

Institutional reforms could help lift productivity growth. Better institutional quality, such as control of corruption, application of the rule of law, and improved political stability, has accompanied higher and more stable growth. At the firm-level, more friendly business climates have favored firm productivity and a shift from informal activities to more productive formal activities (Box 3.5).

Reforms that lift microeconomic distortions and frictions can unlock productivity growth by fostering reallocations at the sectoral, firm, and worker level. Reforms that increase product market flexibility or competition (e.g., trade integration) could raise aggregate productivity growth by encouraging a reallocation of resources away from unsuccessful firms to more productive ones (Melitz 2003; Bernard, Jensen, and Schott 2006). Labor market reforms that improve the allocation of talent, such as broadening access to occupations, can generate considerable productivity growth (Hsieh et al. 2013). Reforms to level the playing field (e.g., state-owned enterprise reforms) could encourage entry of more productive firms and, thus, raise aggregate productivity (Brandt, van Biesebroek, and Zhang 2012).

Reforms to strengthen competition could have synergies with reforms to improve human capital. Firms in EMDEs tend to innovate in marginal process and product improvements rather than engaging in significant technology adoption or new product imitation (Cirera and Maloney

BOX 3.5 Productivity and investment growth during reforms

Wide-ranging governance and business climate reforms have been associated with higher potential growth through an increase in TFP growth and investment growth over the subsequent two to four years.

In many emerging market and developing economies (EMDEs), enterprises claim that a wide range of institutional problems constitute significant obstacles to doing business. Recent World Bank enterprise surveys for more than 10 percent of EMDEs rank law and order, customs and trade regulation, and tax administration among the top three non-financial obstacles to doing business.[1] Weak governance, often manifested in corruption and large informal sectors, was also a common complaint.

By removing obstacles to firms' operations, governance and business climate reforms can raise potential growth through their impact on productivity and investment growth.[2] This box addresses the following questions.

- How do weak governance and business climates affect growth?
- How has TFP and investment growth evolved during major reform episodes?

How do weak governance and business climates affect growth?

Institutional quality. Improved institutional quality clarifies and protects property rights, facilitates contracts between non-related parties and, therefore, promotes a more efficient allocation of resources (Acemoglu and Johnson 2005). Institutional quality is associated with higher and more stable long-term growth. In particular, less corruption typically accompanied higher growth and investment, although such dividends have depended on country circumstances (Hodge et al. 2011; de Vaal and Ebben 2011; Shleifer and Vishny 1998). Greater political stability encourages stronger growth, investment, and lower levels of government spending (Aisen and Veiga 2013). Aspects of the rule of law, such as the provision of security and the protection of property rights, are correlated with higher growth or lower growth volatility (Haggard and Tiede 2011; Acemoglu, Johnson, and Robinson 2001; World Development Report 2017).

Business climate. Poor business climates encourage anticompetitive practices, curtail innovation and hold back an efficient allocation of factors of production (Bourles et al. 2013; Buccirossi et al. 2013; Aghion and Schankermann 2004). While they be intended to provide social protection, stringent labor regulations often encourage informal employment and constrain firm size (Bruhn 2011; La Porta and Shleifer 2014; Loayza, Oviedo, and Servén 2005; Loayza and Servén 2010). Weak business environments dampen the crowding-in effects on domestic investment that would otherwise accrue from public and foreign direct investment (Kose et al. 2017). Burdensome business regulations amplify the adverse effect of corruption on firms' labor productivity (Amin and Ulku forthcoming). Trade restrictions are associated with lower firm productivity, especially when accompanied by heavy domestic industrial regulation (Topalova and Khandelwal 2011). Conversely, reforms that implement major improvements in business environments are associated with increased output growth (Divanbeigi and Ramalho 2015; Kirkpatrick 2014).

How has TFP and investment growth evolved during major reform episodes?

To illustrate the linkages between major governance and business climate reform efforts and TFP (or investment) growth, an event study and a local projections model are employed.[3] Two sets of events are defined, based on two different datasets of structural indicators. Major reform spurts and setbacks are either defined as those that lift or reduce at least one of four *Worldwide Governance Indicators* (government effectiveness, control of corruption, rule of law, and regulatory quality) by at least 2 standard errors over two years as in Didier et al. (2015).[4] Alternatively, major reform spurts and setbacks are defined as those that lift or reduce the "distance to the frontier"[5] for at least one of the ten *Doing Business* indicators by at

Note: This box was prepared by Sinem Kilic Celik.

[1] This ranking excludes the two financial obstacles, access to finance and tax rates.

[2] Reform payoffs may take some time to materialize and their growth dividend will depend on the country's stage of development and the technology level of the country (Dabla-Norris 2016).

[3] This box analyzes potential TFP growth to assess the long-term effect of structural reforms. Hence, TFP growth refers to potential TFP growth throughout the box.

[4] This yields 247 events in 136 EMDEs and 38 advanced economies during 1996-2015.

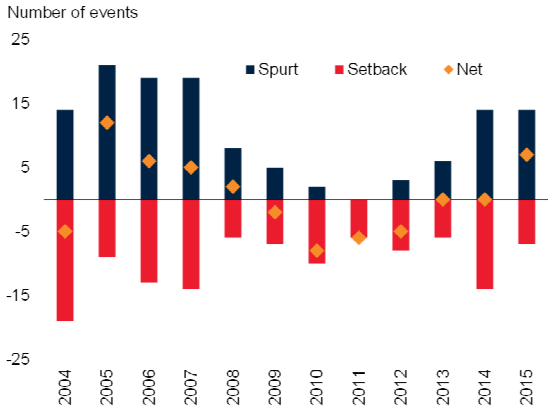
[5] An economy's distance to frontier is indicated on a scale from 0 to 100, where 0 represents the lowest performance and 100 the frontier, which is constructed from the best performances across all economies and across time.

BOX 3.5 Productivity and investment growth during reforms *(continued)*

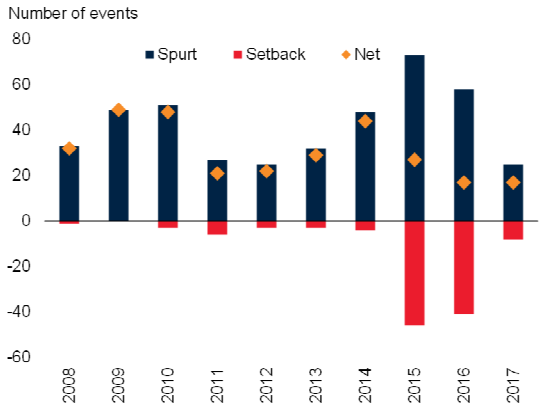
FIGURE 3.5.1 Reform spurts and setbacks

Progress in reforms has been mixed since 2014, with some evidence that the pace of governance reforms has accelerated more than that of business climate reforms.

A. Worldwide Governance Indicators: Number of reform spurts and setbacks



B. Doing Business indicators: Number of reform spurts and setbacks



Source: World Bank.
Note: A detailed methodology is available in Annex 3.5.
A. For *Worldwide Governance Indicators*, reform events are defined as two-standard-error changes in one of four *Worldwide Governance Indicators* for 136 EMDEs and 38 advanced economies during 1996-2015.
B. For *Doing Business* indicators, reform events are defined as two-standard-deviation changes in distance to frontier in one of ten *Doing Business* indicators in 127 EMDEs and 34 advanced economies during the same period during 2002-17.
Click here to download data and charts.

least two standard deviation over two years.[6] Details of the methodology are described in Annex 3.5.

Progress in reforms has been mixed since 2014, with some evidence that the pace of *governance* reforms has accelerated more than that of business climate reforms. Over 2014-15 (the last available data), governance reform spurts have become more common while reform setbacks have become less common compared to the immediate post-crisis period (Figure 3.5.1). In 2015, for the first time since the global financial crisis, reform spurts outnumbered reform setbacks. For *business climate* reforms, however, a surge in reform spurts in 2015-16 was largely offset by a surge in reform setbacks. As a result, while reform spurts have continued to outnumber setbacks, the pace of net improvements has not accelerated compared to the immediate post-crisis period (Figure 3.5.1). Around reform episodes, potential TFP and investment growth has tended to be higher than during "normal" years.

- Reform spurts reflected in *Worldwide Governance Indicators* were, on average, associated with about 1 percentage point higher TFP growth globally and somewhat more in EMDEs during the spurt (Figure 3.5.2).[7] Investment growth was 9 percentage points higher during the average reform spurt and about 2 percentage points lower during the average reform setback.

- When reform spurts reflected in *Doing Business* indicators exceeded reform setbacks, TFP growth typically rose by 0.2 percentage point among EMDEs. During these episodes investment growth in EMDEs was about 1.6 percentage points above that in "normal" years (Figure 3.5.2).

The local projections model suggests that the effects of governance reform spurts and setbacks build over time.

[6] This yields 44 events in 127 EMDEs and 34 advanced economies during 2002-17. The sample for potential TFP growth is smaller so there are no setbacks identified in the case of *Doing Business* among this smaller sample.

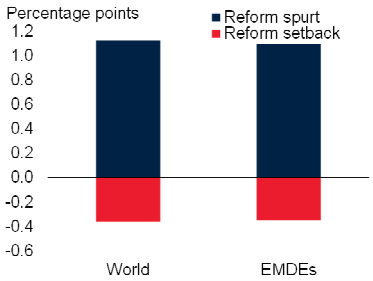
[7] For comparison, using industry-level data, Bourles et al. (2013) estimate that a removal of all anti-competitive regulations in upstream industries might have raised TFP growth by 1.7 percentage points per year in the average OECD country during 1995-2007. Dabla-Norris et al. (2015) estimate that the full elimination of labor and product market distortions would lift TFP in 13 advanced economies by 3.8-19.5 percent. Studies of aggregate growth find better business climates are associated with 1 percentage point higher actual growth in EMDEs or 0.8 percentage point higher per capita growth in a broader sample of countries (Didier et al. 2015; Divanbeigi and Ramalho 2015).

BOX 3.5 Productivity and investment growth during reforms *(concluded)*

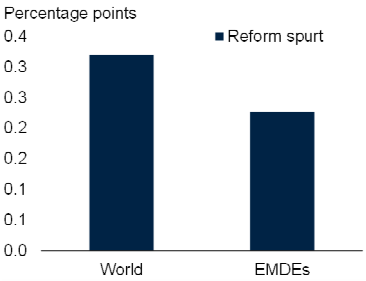
FIGURE 3.5.2 Potential TFP and investment growth around reform spurts and setbacks

Reform spurts were, on average, associated with a statistically significant 0.1 percentage point per year increase in TFP growth above its "normal-year" average (0.8 percent) and 2.8-3.5 percentage points per year increase in investment growth above its "normal-year" average (6.4 percent) two-four years after the reform spurts.

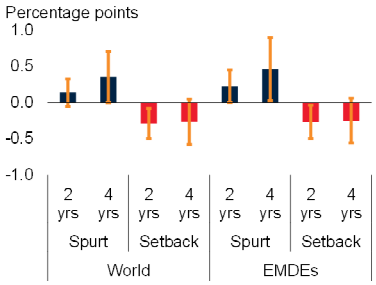
A. Average change in potential TFP growth around *Worldwide Governance Indicators* reforms



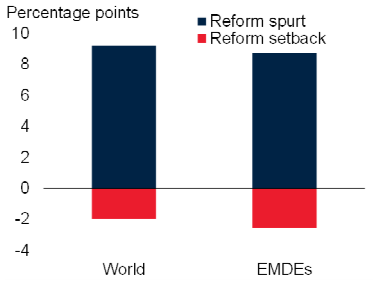
B. Average change in potential TFP growth around *Doing Business* reforms



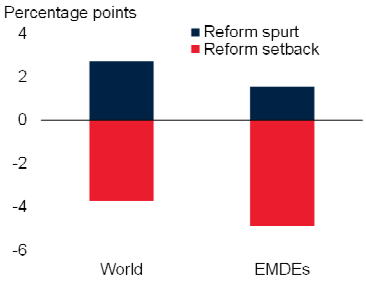
C. Change in potential TFP growth 2-4 years after reform episodes



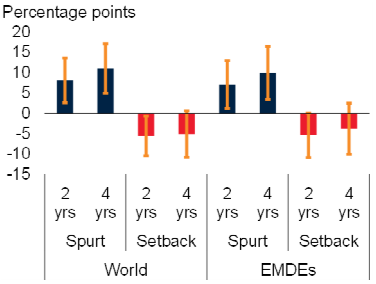
D. Average change in investment growth around *Worldwide Governance Indicators* reforms



E. Average change in investment growth around *Doing Business* reforms



F. Change in investment growth 2-4 years after reform episodes



Source: World Bank staff estimates.

Note. TFP growth refers to potential TFP growth, as estimated in Annex 3.1. A detailed methodology is available in Annex 3.5.

A. B. D. E. Simple averages of potential TFP (A and B) and investment (D and E) growth during reform spurts and setbacks (minus simple average potential TFP and investment growth outside such episodes) for all countries ("Global") or for EMDEs only ("EMDE"). For Worldwide Governance Indicators (A and D), based on an event study of statistically significant 247 reform events—defined as two-standard-error changes in one of four *Worldwide Governance Indicators*—for 136 EMDEs and 38 advanced economies during 1996-2015. For *Doing Business* indicators (B and E), based on an event study of 44 reform events—defined as two-standard-deviation change in one of ten Doing Business Indicators—in 127 EMDEs and 34 advanced economies during the same period during 2002-17. TFP data not available for the 4 reform setback events in *Doing Business* indicators (A).

C. F. Regression coefficients of potential TFP (C) and investment (F) growth on dummies for structural reform spurts and setbacks—defined as two-standard-error changes in one of four *Worldwide Governance Indicators*—from local projections model for lags of two and four years, for a sample of 136 EMDEs and 38 advanced economies during 1996-2015. Vertical bars show 90 percent confidence interval.

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Typically, while it takes four years for growth dividends to materialize after governance reform spurts, the adverse impact of reform setbacks materializes faster (within about two years) and is less persistent for governance reform setbacks. Potential TFP growth is, on average, about 0.1 percentage point per year above its "normal-year" average (0.8 percent) four years after reform spurts and about 0.2 percentage point per year below two years after setbacks. Investment growth is, on average, about 2.8-3.5 percentage points per year above its "normal-year" average (6.4 percent) two-four years after governance reform spurts and about 2.7 percentage points per year below two years after reform setbacks.

Conclusion

Governance reforms have accelerated over the past three years while mixed progress has been made on business climate reforms. A renewed boost to both types of reforms promises sizable dividends for both productivity growth and investment.

2017). This can partly be attributed to weak managerial capabilities. Better education, especially if combined with greater competition, can induce an upgrading of managerial skills that can foster more ambitious innovations.

An event study suggests that major reform episodes are followed by higher potential TFP growth and investment growth over several years, and conversely for major reform reversals. Major reform packages are defined as those that significantly improve governance (proxied by *Worldwide Governance Indicators*) or business climates (proxied by *Doing Business* indicators). Four years after governance reform spurts in advanced economies and EMDEs, potential TFP growth was about 0.1 percentage per year above the average in years without spurts (0.8 percent) and investment growth was about 2.8-3.5 percentage points per year above its average in years without spurts (6.4 percent; Figure 3.9, Box 3.5). Reform setbacks were followed by slower TFP and investment growth.

Other reforms, including fiscal structural reforms, could also yield important productivity dividends. Several studies have highlighted the long-term growth dividends of fiscal reforms, especially when combined with other structural reforms (IMF 2015b). In OECD countries, the growth-enhancing effects of a budget-neutral shift in government spending towards health, education, and transport often becomes apparent after five years (Barbiero and Cournède 2013). More broadly, low- and lower-middle-income countries with a greater share of non-wage government spending tend to have higher long-term growth (Gupta et al. 2005). On the revenue side, also, a budget-neutral increase in the efficiency of the tax system could raise long-term growth. Sixty percent of fiscal reform episodes in 112 countries—such as switching from labor taxation to consumption taxation and shifting spending towards health, education, and infrastructure—were followed by growth accelerations of more than 1 percentage point (IMF 2015b). Over the longer-term, fiscal reforms such as the establishment of fiscal rules have also proven growth enhancing in EU countries (Miyazaki 2014; Castro 2011; Afonso and Jalles 2012).

Reforms for growth: More important should history repeat itself

The stylized scenarios above suggest that a combination of additional investment, better educational and health outcomes, labor market or business climate and governance reforms could stem or even reverse the expected decline in potential growth over the next decade (Figure 3.9). The human and physical capital and labor market reform scenarios above are associated with 0.7 percentage point higher EMDE potential growth. This would more than offset the 0.5-percentage-point slowdown in EMDE potential growth expected under the baseline scenario.

However, good policies could be thwarted by bad luck. If one or several global and country-specific risks to growth materialize, some EMDEs could experience a crisis that is associated with deep output contractions (Chapter 1). Moreover, historically, the global economy has experienced a major recession in every decade of the last half-century (Kose and Terrones 2015). Although these global recessions were triggered by different types of shocks, each of them was accompanied by a financial crisis somewhere. In 1975, oil price surges coincided with recessions in major advanced economies and crises in some EMDEs. In 1982, monetary policy tightening in major advanced economies preceded recessions in those economies and debt crises in many EMDEs. In 1991, an abrupt tightening of credit in the United States coincided with banking and currency crises in many European countries. And in 2008-2009, there were particularly deep financial crises in major advanced economies. The global economy slowed significantly during the 1997-98 Asian Crisis and the 2001 dot-com crash, and these coincided with recessions in major advanced economies and some EMDEs.

If this pattern is any guide, it may not be unreasonable to anticipate that the global economy could experience another recession or slowdown over the next ten years. This could again be accompanied by financial upheaval in one or more countries. It is impossible to know when

and where the next crisis might occur and what would trigger it, but past crises have often been associated with severe short-term output losses. Short-term contractions, in turn, were followed by highly persistent losses in output levels in both advanced economies and EMDEs.

A recession would also have lasting effects on potential growth, in addition to the obvious short-term output disruptions. Box 3.4 estimates the impact of severe output contractions on potential growth over the next 1-5 years. Among 49 EMDEs during 1990-2016, there were 77 such events and, among 32 advanced economies, 47 such events. Contractions in EMDEs, on average, lasted 1.3 years and were associated with annual average growth of -4.4 percent. On average, they were followed by about 1 percentage point lower potential growth five years after the event.

What would be the implications of a crisis that induced a severe recession in the event of another economic shock during the next decade? Three stylized scenarios are considered to illustrate the impact of a possible crisis on potential output: a baseline scenario consistent with potential growth prospects for 2018-27, a scenario in which a crisis triggers a severe recession, and a scenario that involves a crisis accompanied with a sustained policy push as described in the previous section.[19]

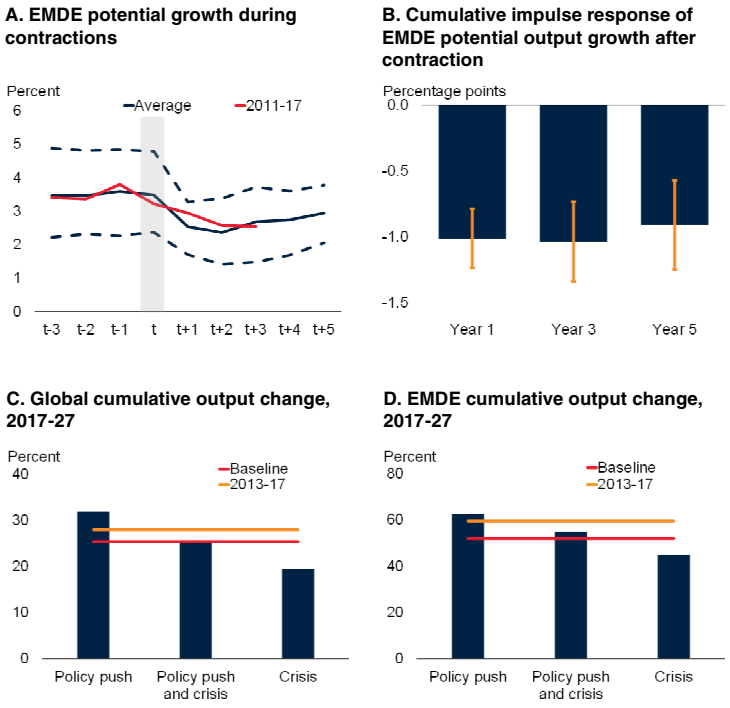
Under the baseline scenario, EMDE potential output a decade from now would be 52 percent above current levels (Figure 3.10). However, in the crisis scenario, these output gains could be 7 percentage points lower. Crises have at times been associated with growing inequality and setbacks in development goals (Ötker-Robe and Podpiera 2013; Feyen 2009). It would take a decade's worth of sustained policy efforts to reverse potential output losses. Absent a crisis, a similar policy push could lift EMDE potential output by 11 percentage points over the baseline over the next decade.

Any reform package has to take into account several additional considerations.

[19] In the baseline scenario, EMDE potential growth is assumed to be 4.3 percent on average over 2018-27. In the crisis scenario, EMDE potential growth is assumed to fall to 3.8 percent on average during 2018-27 (3.3 percent during 2021-26 and 4.3 percent otherwise). In the policy-push-and-crisis scenario, EMDE potential growth is assumed to average 4.5 percent during 2018-27 (4 percent on average during 2021-26 and 5 percent otherwise). The stylized nature of these scenarios implies that the calculation ignores a wide range of factors that could affect the cost of crises. In particular, the exercise does not take into account the nature of the crisis that would determine the severity of its impact; the underlying shock that would trigger the crisis; the initial conditions that determine an economy's vulnerability to shocks; the geographical distribution of costs; or the likely policy response that could mitigate the impact of the crisis (Claessens and Kose 2014).

FIGURE 3.10 Growth and crisis scenarios

If one or several global and country-specific risks to growth materialize, some EMDEs could face a crisis that generates deep output contractions. Past experience suggests that such a deep recession could reduce potential growth by about 1 percentage point over half a decade. A sustained policy push would be needed to reverse such output losses.



Sources: Huidrom, Kose, and Ohnsorge (2016); World Bank; World Economic Outlook, International Monetary Fund.

A. Contractions are defined as the years of negative output growth from the year after the output peak to the output trough, as in Huidrom, Kose, and Ohnsorge (2016). Sample includes 44 contraction events in EMDEs during 1989-2016 (Annex 3.4). Figure shows unweighted averages of potential growth as estimated by the production function approach during contractions. t=0 denotes the peak preceding the contraction. 2011-17 is the unweighted average for countries with contraction episodes after a peak in 2014. Dotted lines indicate interquartile range.

B. Contractions are defined as the years of negative output growth from the year after the output peak to the output trough, as in Huidrom, Kose, and Ohnsorge (2016). Sample includes yields 44 contraction events in EMDEs during 1989-2016 (Annex 3.4). Figure shows impulse responses from local projections model (Annex 3.4), over horizons of 1, 3, and 5 years. Dependent variable defined as cumulative slowdown in potential growth after a contraction event using the baseline specification. Bars show coefficient estimates, vertical lines show 90 percent confidence bands.

C. D. GDP weighted averages. Derived using the production function-based potential growth as described in Annex 3.1. Baseline scenario as described in Annex 3.1. Policy push scenario assumes 0.5 percentage point increase in global potential growth (0.7 percentage point for EMDE potential growth) during 2018-27 compared with 2013-17 because of investment boost (0.2 percentage point), improved human capital (0.2 percentage point) and increased labor supply (0.1 percentage point). Crisis scenario assumes that potential growth is reduced by 1 percentage point for five years and then reverts to baseline scenario ("Crisis") or to policy push scenario ("Policy push and crisis").

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- *Synergies.* Implementing multiple reforms simultaneously rather than piecemeal can generate mutually-reinforcing synergies. For example, in OECD countries, labor and product market reforms, FDI, and trade regulation potentially yield important synergies (OECD 2017). In another example, land, fiscal, and social benefit reforms yield larger growth benefits in China when implemented jointly (Ran et al. 2011). In addition, cross-country synergies from coordinated reforms may arise. The potential for growth spillovers puts a premium on reform efforts in advanced economies that have large repercussions for their EMDE trading partners.

- *Country-specific reform priorities.* In practice, reform priorities differ across countries, calling for tailored policies (Dabla-Norris 2016). For example, school enrollment and completion rates in several economies in the MNA region exceed the EMDE average. However, education reforms continue to be needed to address poor scores on international tests and pervasive skills mismatches in the labor market (World Bank 2008 and 2013). Region-specific reform priorities are discussed in detail in Boxes 2.1-2.6.

- *Timing.* Reform payoffs may take more time to materialize than in the stylized scenarios discussed here. There is some evidence that reforms have had the largest growth dividends when they were well-timed—at least in the context of advanced economies. For example, labor market reforms may lift growth more during economic upswings, when job entrants can more easily find jobs appropriate to their skills, than downturns (IMF 2016c).

The current cyclical upswing is an auspicious time to implement reforms that may yield long-term gains. There can be no quick fix for reversing the expected slowdown in potential output growth at the global level, since it reflects underlying economic factors that are not susceptible to rapid change. More importantly, if history repeats itself, a possible crisis over the next decade may have a substantial adverse impact on potential growth prospects. Mitigating pressures from the short-term risks and long-term headwinds requires the adoption of appropriate policies over time. A package that delivers substantial material benefits at an early date is more likely to be politically viable, and stands more chance of success in the long run.

ANNEX 3.1 Potential output estimates using the production function approach

The production function approach assumes that potential output can be captured by a Cobb-Douglas production function:

$$Y_t = A_t K_t^{\alpha} L_t^{(1-\alpha)}$$

where Y_t is potential output, A_t is potential total factor productivity (TFP), K_t is the potential capital stock, and L_t is potential employment. To extend the sample beyond 2014—the latest available data from Penn World Tables—TFP was recalculated as the Solow residual of output, employment (extended using data from Haver Analytics) and capital (extended using investment data from Haver Analytics and the perpetual inventory method). Labor and capital shares are the within-country averages of those reported in Penn World Tables. Two of the three components of potential output—potential TFP and potential employment—are proxied by the fitted values from panel regression estimates. The third component, the contribution of capital to potential growth, is assumed to be the same as the contribution of capital to actual growth. This approach yields an unbalanced panel dataset for 32 advanced economies and 63 EMDEs for 1992-2027 (Table 3.1.1).

Capital stock data from Penn World Table 9.0 is used until the latest available year in the data set (2014 for most countries in the sample). For 2015-17, investment data are compiled from national statistics offices and Haver Analytics, while the capital stock is estimated from investment data by the perpetual inventory method using historical average depreciation rates.[1]

Estimating potential total factor productivity

Potential TFP growth is defined as the fitted value of a panel fixed effects regression for 37 advanced economies and 74 EMDEs for 1983-2017 of Hodrick Prescott-filtered trend of actual TFP growth (the Solow residual) on determinants of productivity. These include GDP per capita relative to advanced economies, education (secondary school completion rate), the working-age share of the population, and the five-year moving average real investment growth (as in Abiad, Leigh, and Mody 2007; Bijsterbosch and Kolasa 2010; Turner et al. 2016; Feyrer 2007).[2] To allow for nonlinearities in the productivity dividends from education, schooling is interacted with a dummy for schooling in the bottom two-thirds across the sample. A dummy for commodity exporters between the period 2003-07 captures the impact of credit boom in commodity exporters.

$$\begin{aligned} dtfp_{i,t} &= \alpha_0 + \alpha_1\, GDP\ per\ capita_{i,t} + \alpha_2\, wap_{i,t} \\ &+ \alpha_3\, education_{i,t} + \alpha_4\, education_{i,t} * d_{edu}^{\,bottom\ two\text{-}thirds}{}_{i,t} \\ &+ \alpha_5\, dceb_{i,t} + \alpha_6\, dinv_{i,t} + \varepsilon_{i,t} \end{aligned}$$

where *dtfp* is the logarithmic first difference of trend TFP, *GDP per capita* is GDP per capita in percent of advanced economies per capita GDP, *wap* is the working-age share of the population, *education* is the percent share of the population who completed secondary school, *dinv* is the five-year moving average real investment growth, $d_{edu}^{\,bottom\ two\text{-}thirds}$ is a dummy variable taking the value of 1 if the secondary completion rate is in the bottom two-thirds of the distribution, and *dceb* is a dummy variable taking the value 1 if the country is a commodity exporter for the period 2003-07.

The data were compiled using UN Population Statistics (for population growth, the working-age share of the population), Barro and Lee (for secondary school completion), the World Development Indicators (for GDP per capita relative to the advanced economies, and life expectancy), and Haver Analytics (for investment).

[1] Implicitly, this approach does not account for the possibility that inefficient investment is written off during downturns but depreciates only gradually. Hence, it may overstate the capital stock during downturns.

[2] The results are robust to using GDP per capita instead of GDP per capita in percent of advanced-economy GDP per capita. GDP per capita relative to a frontier (advanced economies) is used here to proxy the catch-up effect highlighted in the literature on stochastic frontier analysis (Growiec et al. 2015).

The results are broadly in line with the existing literature (Annex Table 3.1.2). TFP growth slows as per capita incomes converge toward advanced-economy levels (Barro and Sala-i-Martin 1997). A younger and better-educated population and accelerated investment lift TFP growth. However, the effect of education diminishes as education levels rise toward advanced-economy levels (Kato 2016; Benhabib and Spiegel 1994 and 2005; Coe, Helpman, and Hoffmaister 1997). As a result, the coefficient on secondary school completion rates is only significant for countries with completion rates below the top third.

Estimating labor force participation rates

Potential employment is defined as the product of the working-age population and the fitted value of age- and gender-specific regressions of labor force participation rates ($lfpr_{a,g,t}$) on their structural determinants ($X_{a,g,t}$) and controlling for cohort effects, fixed effects, and the state of the business cycle, defined as the deviation of the logarithm of real GDP from the Hodrick-Prescott-filtered trend. The vector $X_{a,g,t}$ includes gender-specific education outcomes (secondary and tertiary completion and enrollment rates), age-specific fertility rates and life expectancy. The vector $C_{a,g,t}$ includes all the control variables.

$$lfpr_{a,g,t} = \alpha_{a,g} + \beta_{a,g} X_{a,g,t} + \gamma_{a,g} X_{a,g,t} * d_{emde} + \delta_{a,g} C_{a,g,t} + \varepsilon_{a,g,t}$$

Data on the working-age population comes from the UN *Population Statistics Database*. Data for age- and gender-specific labor force participation rates are available from *Key Indicators of the Labor Market* (KILM) of the ILO *Population Statistics Database* for 1990-2016 for up to 35 advanced economies and 133 EMDEs.[3] Completion rates of secondary and tertiary education are from Barro and Lee (2013); age-specific fertility rate and life expectancy are from the UN's *World Population Projections* database; gender-specific secondary and tertiary school enrollment rates are from the *World Development Indicators*.[4] The results are broadly in line with findings in the existing literature (Annex Table 3.1.3).

Fertility rates. Higher fertility rates reduce labor force participation of women aged 25-49 years. This could reflect caregiving for young children or challenges in rejoining the labor market after temporary exit (Bloom et al. 2007). Among teenage and younger women, fertility rates increase labor force participation as mothers are more likely to discontinue their education and participate in the labor force, at least in advanced economies (Fletcher and Wolfe 2009; Azevedo, Lopez-Calva, and Perova 2012; Herrera, Sahn, and Villa 2016). This effect is more muted in EMDEs, potentially reflecting an earlier average age of marriage, which tends to reduce female labor force participation (UN 2012).

Educational enrollment and attainment. Educational attainment, in the years when the age group was at the relevant age, increases participation rates, except for young men and women aged 20-24 in EMDEs. The positive correlation between completion rates and labor force participation may partly reflect higher compensation for more educated workers. For the young age groups in EMDEs, higher secondary and tertiary educational attainment reduces labor force participation. This might reflect the lack of demand for employment in sectors where these educated workers would expect to be employed, discouraging them from labor force participation (Klasen and Pieters 2013). For men aged 50-64 and all workers aged 65 years and older, education becomes an insignificant determinant of labor force participation (as in Fallick and Pingle 2007). Secondary and tertiary enrollment rates in all relevant age groups reduce labor force participation as students devote time to completing their degree (Linacre 2007; Kinoshita and Guo 2015; and Tansel 2002).

Life expectancy. Life expectancy is one of the main determinants of participation for workers

[3] This is an unbalanced sample because some of the exogenous variables are not available for the full period for all countries. However, the regression results are robust to restricting the sample to the balanced panel with fully available data.

[4] UN data for life expectancy is for five-year periods so life expectancy for historical years is used from the *World Developing Indicators* database and then spliced with UN *World Population Statistics and Prospects* data for the projection years or if the data are not available in the *World Development Indicators* database.

aged 50 and above (Fallick and Pingle 2007). For the younger ones among them, between the ages of 50-64, higher life expectancy raises labor force participation, possibly reflecting the need to accumulate savings for a longer retirement period or the positive association between better health among older workers and higher incomes (Haider and Loughran 2001). Among those aged 65 years or older, higher life expectancy increases labor force participation in advanced economies, but does not significantly change participation in EMDEs. Life expectancy may be a weak proxy for a healthy old age in EMDEs with less-developed health care systems or where differences in life expectancy might mostly reflect differences in infant mortality (Eggleston and Fuchs 2012). The effect of life expectancy on labor force participation of workers aged 65 years or older also depends on the business cycle. The increased participation of older workers in a weaker economy might reflect the increased desire for part-time positions for this age group when they are healthier (as proxied by higher life expectancy). It may also reflect rising employer interest because this age group, if healthy, can act as a highly flexible source of employment (Buddelmeyer, Mourre, and Ward 2004; Baer 2015).

Business cycle. Labor force participation is procyclical—albeit less so in EMDEs than in advanced economies—in most age groups until the age of 50 and even for men aged above 65.[5] As the working age population increases, the sensitivity to cyclicality decreases and participation eventually becomes countercyclical (Duval, Eris, and Furceri 2011; Balakrishnan et al. 2015). This may reflect greater ability of more experienced workers to remain employed or return into employment after spells of unemployment (Shimer 2013; Elsby, Hobijnb, and Sahin 2015). However, participation becomes pro-cyclical again for workers aged 65 and above as they become eligible to retire and may be readier to drop out of the labor force in a weaker economy.

[5] In several instances, there were no statistically significant differences between advanced economies and EMDEs in the cyclicality of their labor force participation. Hence, the interactions were omitted from the regressions.

Scenario analysis

Contribution of aging to potential growth. The contribution of aging to potential growth is calculated as the difference between actual potential growth and a counterfactual derived from an "unchanged demographics" scenario. The counterfactual scenario is one in which population shares are fixed at 1998 levels (for historical contributions) or 2017 levels (for forward-looking scenarios) in the calculation of labor force participation rates and TFP growth. All other variables, including fitted labor force participation rates for each age group and gender, remain the same in both scenarios. Hence, aggregated labor supply differs between the two scenarios only because different age groups (with different inclinations to participate in the labor force) have different population shares.

Baseline scenario. The baseline scenario is one of "business as usual" in that it assumes that all policy variables follow their long-term average trends. The scenario assumes that all population-related variables (including age and gender structure of the population, fertility, and life expectancy) evolve as in the UN Population Projections under the assumption of median fertility and normal mortality.[6]

- Secondary and tertiary *enrollment* rates by gender are assumed to grow through the forecast horizon at their average growth during 1998-2017 but are capped at 100 percent. Economy-wide averages are calculated as the population-weighted (2000-16) average of these gender-specific rates.

- Secondary and tertiary education *completion* rates by gender and age group are assumed to grow at their average rate during 1998-2017. Economy-wide averages are calculated as the

[6] UN *World Population Prospects* defines medium fertility in which total fertility in all countries eventually converges toward a level of 1.85 children per woman. Under normal mortality, mortality is projected on the basis of models of life expectancy based on recent trends in life expectancy by gender. Life expectancy projections are capped at 100 years.

population-weighted (2000-16) average of these gender and group-specific rates.

- Cohort effects are assumed to stay constant at their latest level throughout the forecast horizon, starting in 2018.

- The investment growth rate is assumed to remain constant at its longer-term average throughout the forecast horizon.[7]

Based on these assumptions about drivers of TFP, capital stock, and labor supply, potential growth is estimated using the production function approach detailed above.

Policy scenarios. The policy scenarios are "best-on-record" scenarios. Each policy variable is assumed to rise as much as its biggest ten-year improvement on record, subject to ceilings.

- *Meeting investment needs.* The investment growth rate in each country is assumed to rise by its largest increase in any ten-year period during 1998-2017.

- *Better human capital.* Educational outcome indicators—secondary and tertiary enrollment and completion rates—are assumed to rise in each country by as much as the maximum improvement over any ten-year period during 1998-2017. Enrollment rates remain capped at 100 percent. Completion rates are capped at the maximum across advanced economies in 2016. Life expectancy is assumed to rise in each country as much as the largest improvement over any ten-year period during 1998-2017, but not above the median advanced-economy life expectancy in 2016 (capped at 100 years).

- *Labor market reform.* For each age group in each country, female labor force participation rates are assumed to rise by the largest increase over any ten-year period during 1998-2017, but not to exceed male labor force participation rates in the same age group.

[7] Considering the policy-driven rebalancing away from investment in China, investment growth rates are assumed to be constant at their last five-year average (2013-17).

ANNEX TABLE 3.1.1 Country and year coverage

Country	Sample period	Country	Sample period	Country	Sample period
Argentina	1994-2028	Hong Kong SAR, China	1993-2028	Norway	1988-2028
Austria	1994-2028	Hungary	1994-2028	Panama	1994-2028
Bahrain	2013-2028	Iceland	1994-2028	Paraguay	1994-2028
Barbados	1994-2028	India	1994-2028	Peru	1993-2028
Belgium	1994-2028	Indonesia	1993-2028	Philippines	1993-2028
Benin	1994-2028	Iran, Islamic Rep.	1994-2028	Poland	1994-2028
Botswana	1994-2028	Ireland	1994-2028	Portugal	1994-2028
Brazil	1997-2028	Israel	1994-2028	Russia	1997-2028
Bulgaria	1994-2028	Italy	1988-2028	Rwanda	2000-2028
Burundi	1994-2028	Jamaica	1994-2028	Saudi Arabia	1994-2028
Cameroon	1994-2028	Japan	1988-2028	Senegal	1994-2028
Canada	1988-2028	Jordan	1994-2028	Serbia	2004-2028
Chile	1994-2028	Kazakhstan	1997-2028	Slovak Republic	1997-2028
China	1994-2028	Kenya	1994-2028	Slovenia	1996-2028
Colombia	1994-2028	Korea, Republic of	1988-2028	South Africa	1993-2028
Costa Rica	1994-2028	Kuwait	1994-2028	Spain	1994-2028
Côte d'Ivoire	1994-2028	Latvia	1995-2028	Sri Lanka	1994-2028
Croatia	1996-2028	Lesotho	1994-2028	Sudan	2004-2028
Cyprus	1994-2028	Lithuania	2000-2028	Swaziland	1994-2028
Czech Republic	1998-2028	Luxembourg	1994-2028	Sweden	1988-2028
Denmark	1994-2028	Malta	2003-2028	Switzerland	1993-2028
Dominican Republic	2001-2028	Mauritania	2009-2028	Thailand	1994-2028
Ecuador	1994-2028	Mauritius	1994-2028	Togo	2013-2028
Egypt, Arab Rep.	1994-2028	Mexico	1994-2028	Tunisia	1994-2028
Estonia	1996-2028	Moldova	1998-2028	Turkey	1994-2028
Finland	1994-2028	Mongolia	1999-2028	Ukraine	1997-2028
France	1988-2028	Morocco	1994-2028	United Kingdom	1988-2028
Gabon	2013-2028	Mozambique	1994-2028	United States	1988-2028
Germany	1995-2028	Namibia	2013-2028	Uruguay	1994-2028
Greece	1994-2028	Netherlands	1988-2028	Venezuela, RB	2013-2028
Guatemala	1994-2028	Nicaragua	2013-2028		
Honduras	1994-2028	Niger	1994-2028		

ANNEX TABLE 3.1.2 Regression results of total factor productivity

Dependent variable: TFP growth	
GDP per capita relative to advanced economies	-0.05***
	(0.000)
Working-age population	3.95*
	(0.086)
Secondary completion rate	0.003
	(0.766)
Secondary completion rate (bottom two-thirds)	0.018**
	(0.009)
Investment growth (five-year moving average)	0.058**
	(0.002)
Commodity exporters credit boom dummy	0.43**
	(0.001)
Number of observations	576
Number of countries	114
Within *R*-squared	0.24

Note: Estimated under fixed effects model. *P*-values are in parentheses. *, **, and *** indicate *p*-values smaller than 0.05, 0.01, and 0.001, respectively.

ANNEX TABLE 3.1.3 Regression results of labor force participation rates

	15-19-year old		20-24-year old		25-49-year old		50-64-year old		65+-year old	
	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male
Fertility	0.026* (0.017)		0.072*** (0.000)		-0.007*** (0.000)					
Secondary enrollment	-0.247*** (0.000)	-0.188*** (0.000)								
Tertiary enrollment			-0.056*** (0.000)	-0.099*** (0.000)						
Completion of secondary education			0.936*** (0.000)	0.645*** (0.000)	0.432*** (0.000)	0.273*** (0.000)	0.592*** (0.000)	0.044 (0.507)		
Completion of tertiary education			0.519*** (0.000)	2.002*** (0.000)	0.510*** (0.000)	0.776*** (0.000)	1.229*** (0.000)	0.288 (0.086)		
Life expectancy							0.447*** (0.000)	0.930*** (0.000)	0.108** *(0.000)	0.225*** (0.000)
Business cycle	19.74*** (0.000)	27.27*** (0.000)	0.88 (0.416)	21.57*** (0.000)	3.642** (0.006)	0.505 (0.061)	-1.056 (0.285)	-0.71 (0.471)	3.823* (0.039)	62.85* (0.024)
Business cycle * life expectancy									-0.075** (0.008)	-0.773* (0.042)
Fertility * EMDE	-0.0276* (0.035)		-0.064*** (0.000)							
Secondary enrollment * EMDE	0.108** (0.001)									
Completion of secondary education * EMDE			-0.952*** (0.000)	-0.800*** (0.000)						
Completion of tertiary education * EMDE			-0.713*** (0.000)	-2.179*** (0.000)						
Life expectancy * EMDE									-0.079* (0.011)	-0.489*** (0.000)
Business cycle * EMDE	-19.98*** (0.000)	-28.53*** (0.000)		-22.88*** (0.000)	-4.353** (0.002)					-51.33 (0.066)
Business cycle * life expectancy * EMDE										0.559 (0.143)
Joint coefficient of fertility in EMDEs	-0.001 (0.740)		0.007 (0.127)		-0.007*** (0.000)					
Joint coefficient of secondary enrollment in EMDEs	-0.132*** (0.000)	-0.188*** (0.000)								
Joint coefficient of secondary education in EMDEs			-0.016 (0.739)	-0.155*** (0.000)						
Joint coefficient of tertiary education in EMDEs			-0.194* (0.020)	-0.177 (0.074)						
Joint coefficient of cycle in EMDE	-0.24 (0.737)	-1.26 (0.108)		-1.31 (0.273)	-0.711 (0.120)					
County-cohort fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Age fixed effects	No	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes
Number of observations	3,456	3,617	2,758	2,854	17,349	17,997	11,061	11,097	4,400	4,400
Number of countries	157	164	143	148	149	154	141	141	168	168
Adjusted R-square	0.997	0.997	0.998	0.999	0.997	0.999	0.985	0.993	0.998	0.999

Note: *P*-values are in parentheses. *, **, and *** indicate *p*-values smaller than 0.05, 0.01, and 0.001, respectively.

ANNEX 3.2 Potential output estimates using statistical filters

Univariate filters

A univariate statistical filter decomposes a series y_t into trend and cyclical components. Univariate filters (UVF) have the advantage of being simple to implement, since the only data required in the estimation is y_t (here, real GDP). The trend component is used as a proxy for potential output. However, the resulting estimates do not ensure consistency between cyclical output and other cyclical indicators or between potential output and its fundamental drivers. Moreover, the so-called "end-point problem" inherent in purely statistical techniques often implies significant revisions of output gaps toward the end of the sample, as new data becomes available.

Five univariate filters are applied to estimate potential output: filters based on Hodrick and Prescott (1997), three band-pass filters (Christiano and Fitzgerald 2003; Baxter and King 1999; Butterworth 1930), and the Unobserved Components Model. Confidence bands for all univariate filters are based on the confidence bands estimated by the Unobserved Components Model.

The *Hodrick-Prescott* (HP) filter minimizes deviations of a series y_t from its trend τ_t, assuming a degree of smoothness λ of the trend.[1] The three band-pass filters aim to isolate fluctuations in a time series which lie in a specific band of frequencies. They eliminate slow-moving components (trend) and very high frequency components and define the intermediate components as business cycles. Specifically, the three band-pass filters differ in their approximations of the optimal linear filter (also known as the "ideal" band-pass filter) to deal with finite time series.

- The *Baxter and King (BK) filter* is a moving average of the data with symmetric weights on lags and leads. Therefore, it loses observations in the beginning and towards the end of the sample.[2] It is particularly well-suited when the raw series follows a near independent and identically distributed process (Christiano and Fitzgerald 1999).
- The *Christiano and Fitzgerald* (CF) filter is a one-sided moving average of the data with weights that minimize the distance between the approximated and the "ideal" filter. Since the filter is one-sided, it does not lose observations towards the end of the sample. It is most suitable for random-walk series.[3]
- The *Butterworth* (BW) filter—widely used in electrical engineering for signal extraction—isolates only low-frequency fluctuations, not high-frequency ones. It is particularly suitable for series with sharp changes in the underlying trend.

In contrast to other univariate filters, the *Unobserved Components Model* does not impose specific parameter assumptions about the degree of smoothing, lead and lag windows, or business cycle frequencies. Instead, it relies on assumptions about the underlying process followed by output gaps and potential growth, and is estimated in a Kalman filter (Harvey 1990):

$$LY_t = L\overline{Y}_t + YGAP_t \quad (1)$$

$$L\overline{Y}_t = L\overline{Y}_{t-1} + G_t + \varepsilon_t^{\overline{Y}} \quad (2)$$

$$G_t = (1 - \tau)G_{ss} + \tau G_{t-1} + \varepsilon_t^{G} \quad (3)$$

$$YGAP_t = \beta_1 YGAP_{t-1} + \beta_2 YGAP_{t-2} + \varepsilon_t^{YGAP} \quad (4)$$

where LY is the log of seasonally adjusted quarterly real GDP, $L\overline{Y}$ the log of potential output, $YGAP$ the output gap, G_t potential output growth, G_{ss} the steady state growth, and $\varepsilon_t^{\overline{Y}}$ and ε_t^{G} are independently and identically distributed disturbances. Note that the shock $\varepsilon_t^{\overline{Y}}$ shifts the level of potential output whereas ε_t^{G} is a shock to potential

[1] A larger λ indicates a smoother trend. For λ=0, the trend is equal to the actual series and for $\lambda \to +\infty$ the trend is a linear time trend with a constant growth rate. Typically, the value of λ is set at 1600 for quarterly data (Hodrick and Prescott 1997). The trend is estimated based on past values as well as projected values of the series y_t.

[2] This implies a loss of k observations on both ends of the sample, with a higher k approaching closer to the ideal filter. Baxter and King (1999) suggest using of k = 3 for annual and quarterly data.

[3] The Baxter-King and Christiano-Fitzgerald filters require an assumption about business cycle frequencies. The default business cycle frequencies used here are 1.5 to 8 years.

output growth. Equation (3) assumes that potential growth converges (at a speed of convergence τ) to its steady level G_{ss} after a shock. The output gap follows a commonly used second-order autoregressive process (equation 4).

Multivariate filters

The unobserved components model can be expanded to include additional indicators of domestic demand pressures to help identify the output gap (Benes et al. 2015). The most commonly used indicators are inflation and the unemployment rate. Specifically, the univariate model of equations (1)-(4) is augmented with a Phillips Curve relationship between inflation and output gaps (equation 5), an Okun's Law relationship between unemployment rates and output gaps (equations 6-9), and a relationship between capacity utilization and output gaps (equations 10-13).

Phillips Curve. The Phillips Curve relates inflation to output gap, controlling for the impact of supply side shocks such as import prices on domestic inflation.

$$\pi_t = \rho\pi_{t-1} + (1 - \rho)\pi_{t+1} + \alpha_1 YGAP_t + \lambda_1\pi_{t-1}^{m} + \varepsilon_t^{\pi} \quad (5)$$

where π_t is quarter-on-quarter inflation at time t and π_t^m is import price inflation at time t. Expectations are assumed to be an average of adaptive and rational expectations, weighted by ρ.

Okun's Law. The Okun's Law relates unemployment gap $UNGAP_t$ (defined as the difference between the actual unemployment rate UN_t and the equilibrium (or natural) unemployment rate UN_t in equation 6) to $\overline{UN}_t$ the output gap as:

$$UNGAP_t = UN_t - \overline{UN}_t \quad (6)$$

$$UNGAP_t = \gamma UNGAP_{t-1} - \alpha_2 YGAP_t + \varepsilon_t^{UNGAP} \quad (7)$$

Following Blagrave et al. (2015), the equilibrium unemployment rate process is specified in deviation from steady state. Equation (8) specifies the process for $\overline{UN}_t$. It implies that following a shock, the NAIRU converges back to its steady state value $\overline{U}_{ss}$ according to the parameter τ_1 and has a trend component G_t^U which has an autoregression process (9).

$$\overline{UN}_t - \overline{U}_{ss} = \tau_1(\overline{UN}_{t-1} - \overline{U}_{ss}) + G_t^U + \varepsilon_t^{\bar{U}} \quad (8)$$

$$G_t^U = \tau^u G_{t-1}^U + \varepsilon_t^{G^u} \quad (9)$$

Capacity utilization. Since capacity utilization is highly pro-cyclical, it can help identify the cyclical component of output even during jobless recoveries. Equations (10)-(13) describe the relation between capacity utilization and output gaps and the exogenous process for capacity utilization, where $\overline{CAPU}_{ss}$ is the steady state of capacity utilization rate.

$$CAPUGAP_t = \theta CAPUGAP_{t-1} + \alpha_3 YGAP_t + \varepsilon_t^{CAPUGAP} \quad (10)$$

$$CAPU_t = CAPUGAP_t + \overline{CAPU}_t \quad (11)$$

$$\overline{CAPU}_t - \overline{CAPU}_{ss} = \tau_2(\overline{CAPU}_{t-1} - \overline{CAPU}_{ss}) + G_t^C + \varepsilon_t^{\overline{CAPU}} \quad (12)$$

$$G_t^C = \tau^c G_{t-1}^C + \varepsilon_t^{G^C} \quad (13)$$

Output gap. To close the model, a process for the output gap needs to be specified. Inflation and unemployment might fail to capture all domestic demand pressures, such as credit or asset price growth or commodity price cycles. This may lead to an underestimation of the output gap and an overestimation of potential output, especially at the peak of the cycle. Instead of assuming that the output gap process is exogenous, as in the traditional multivariate Kalman filter, three additional indicators are included in the output gap equation: house price, credit, and commodity price growth:

$$YGAP_t = \beta_1 YGAP_{t-1} + \beta_2 hpr_{t-1} + \beta_3 compr_{t-1} + \beta_4 cr_{t-1} + \varepsilon_t^{YGAP} \quad (14)$$

where cr_t, hpr_t, and $compr_t$ are cyclical components of year-on-year private sector credit growth deflated by consumer price inflation, quarterly seasonally-adjusted house prices, and export-weighted real average commodity prices respectively.

Estimation. The model parameters are estimated using Bayesian techniques and the state variables are estimated by a Kalman filter algorithm. A key parameter determining the shape of potential output is the variance of the output gap relative to potential growth innovations. The variance of the innovations ε_t^{YGAP} and ε_t^{G} are set such that the ratio of the variances matched the typically used smoothness parameter of the Hodrick-Prescott filter. All priors for persistence parameters follow a beta distribution. The priors for the slope of the Philipps curve α_1 , the sensitivity of inflation to import prices λ_1 , the elasticities of output gap with respect to house price and credit growth cycles β_2 and β_4, respectively, as well as α_2 and α_3 are set as gamma distributions. The prior for the elasticity of output gap with respect to commodity price β_3 follows a normal distribution to allow for a potentially negative impact of commodity price increases in commodity importers. The prior distributions for all standard deviations are inverse gamma distributions. The standard deviations of $\varepsilon_t^{CAPUGAP}$ and ε_t^{UNGAP} are set as the OLS standard errors of equations (5) and (9) based on Hodrick-Prescott-filtered data. Steady state values of growth, unemployment, and capacity utilization are calibrated to the sample mean of their corresponding HP-filtered series. Confidence bands are constructed based on the variance matrix of the smoothed (filtered) estimates of the state variables provided by the Kalman filter algorithm. The variance of the state variable is computed at the posterior mode of the parameters and does not reflect uncertainty related to model parameters.

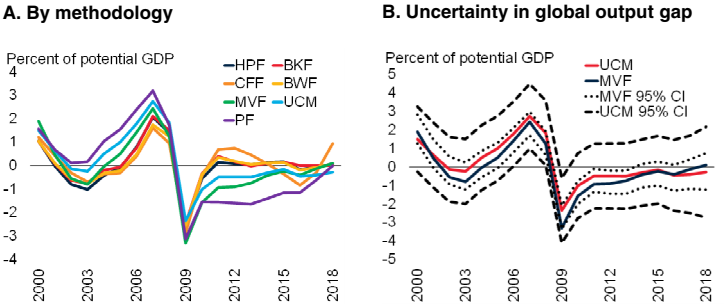
Database

Output gaps and potential growth are estimated for 15 advanced economies and 23 EMDEs, for 1980Q1-2016Q4 (Annex Table 3.2.1). GDP, inflation, unemployment rates, and capacity utilization rates are from Haver Analytics. Private sector credit is from the Bank for International Settlements (BIS), when available, or International Financial Statistics when not available from BIS. House price growth is from Haver Analytics. Commodity prices are from the World Bank's Pink Sheet, and export weights are from UN Comtrade. For the purposes of this chapter, country-specific output gaps are aggregated using real GDP weights at 2010 exchange rates and prices.

Multivariate filter-based estimates of output gaps have narrower confidence bands than those of univariate filters (Figure A.3.2.1). This reflects the use of additional demand pressure indicators in the MVF that help identify the output gap more accurately.

ANNEX FIGURE A3.2.1 Global output gaps

Output gaps implied by univariate filters tend to be narrower than those estimated by the multivariate filter and tend to have wider confidence bands.



Source: World Bank.
A. Figure defines the global output gaps as the real GDP-weighted average of country-specific output gaps based on different methodologies—the five univariate filters (HPF, BKF, CFF, BWF, UCM), the multivariate filter (MVF), and the production function approach (PF). HPF = Hodrick-Prescott filter, BKF = Baxter-King filter, CFF = Christiano-Fitzgerald filter, BWF = Butterworth filter, UCM = unobserved components model.
B. Dashed lines "UCM 95% CI" are 95 percent confidence bands of UCM-based estimates. Dotted lines "MVF 95% CI" are 95 percent confidence bands of MVF-based estimates.
Click here to download data and charts.

ANNEX TABLE 3.2.1 Country and year coverage

Advanced economies	
Country	**Sample period**
Australia	1980Q1-2016Q4
Canada	1980Q1-2016Q4
Denmark	1980Q1-2016Q4
Finland	1980Q1-2016Q4
France	1980Q1-2016Q4
Germany	1980Q1-2016Q4
Italy	1980Q1-2016Q4
Japan	1980Q1-2016Q4
New Zealand	1980Q1-2016Q4
Norway	1980Q1-2016Q4
Spain	1980Q1-2016Q4
Sweden	1980Q1-2016Q4
Switzerland	1980Q1-2016Q4
United Kingdom	1980Q1-2016Q4
United States	1980Q1-2016Q4

Emerging market and developing economies	
Country	**Sample period**
East Asia and Pacific	
China	1992Q2-2016Q4
Indonesia	1983Q1-2016Q4
Malaysia	2005Q1-2016Q4
Thailand	1993Q1-2016Q4
Vietnam	1990Q4-2016Q4
Eastern Europe and Central Asia	
Bulgaria	1997Q1-2016Q4
Croatia	2000Q1-2016Q4
Hungary	1995Q1-2016Q4
Kazakhstan	1999Q1-2016Q3
Poland	1995Q3-2016Q4
Romania	1995Q1-2016Q4
Russia	1995Q1-2016Q4
Serbia	1996Q1-2016Q4
Turkey	1998Q1-2016Q4
Latin America and Caribbean	
Argentina	2004Q1-2016Q4
Bolivia	1990Q1-2016Q2
Brazil	1990Q1-2016Q4
Chile	1996Q1-2016Q4
Colombia	2000Q1-2016Q4
Mexico	1980Q1-2016Q4
Peru	1980Q1-2016Q4
South Asia	
India	1996Q2-2016Q4
Sub-Saharan Africa	
South Africa	1980Q1-2016Q4

ANNEX 3.3 TFP and potential output growth during investment booms and busts

Definitions. An investment boom (bust) is defined as an episode during which investment growth is at least one standard deviation higher (lower) than its sample average for at least two years.[1] The sample covers 94 episodes of investment booms and 32 episodes of investment busts in 40 EMDEs during 1980-2016.

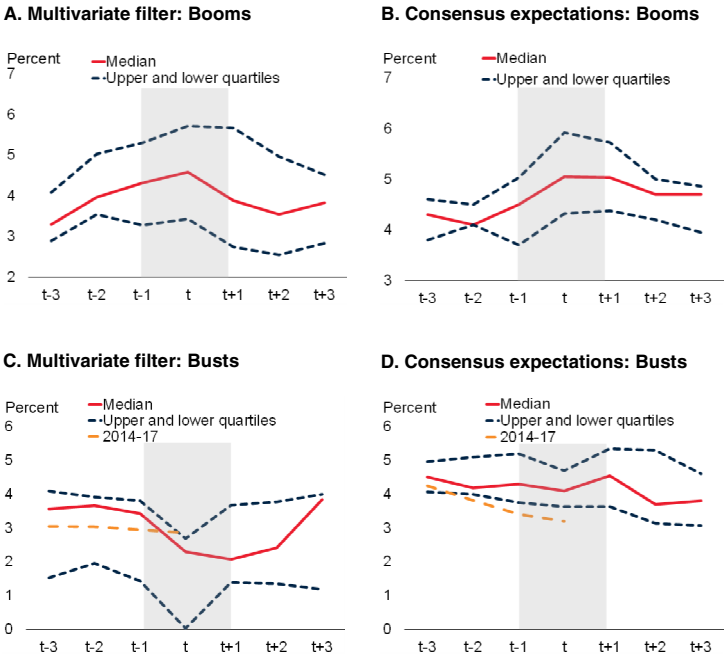
Methodology. The evolution of TFP growth and potential growth 3 years before and after the boom and bust episodes are examined. The results are derived from both simple averages of the evolutions and a panel regression of potential growth on dummy variables for these events, controlling for country- and year-fixed effects. Simple averages illustrate the evolution of TFP growth and potential output growth during events, while the regression approach allows a basic comparison with non-event country-year pairs.

Robustness of results. As a robustness check, the event study is conducted for alternative potential output measures (Figure A3.3.1, Annex Table 3.3.1). Potential growth estimates based on the multivariate filter and 5-year-ahead *Consensus* growth forecasts return similar results to the benchmark case of production function-based potential growth estimates. Both boom and bust dummies are estimated to be statistically significant in most of the cases as shown in Annex Table 3.3.1.

[1] The same exercise was repeated for investment booms or busts of more than one year's duration. Results were qualitatively similar.

ANNEX FIGURE A3.3.1 Potential growth around investment booms and busts in EMDEs: Alternative measures

The correlations between potential growth and investment booms and busts are robust to alternative measures of potential output such as multivariate filter approach and five-year-ahead Consensus *growth forecasts*.



Sources: Consensus Economics, World Bank.

Notes: An investment boom is defined as an episode during which investment growth is at least one standard deviation larger than its long-run (over the sample period) average level. t denotes the average of the investment boom in years. The event studies in this box are conducted using the boom and bust episodes of at least two consecutive years.

Click here to download data and charts.

ANNEX TABLE 3.3.1 Potential growth, TFP growth, and investment

Variables	MVF	PF	UCM	WEO	*Consensus*	TFP
Investment boom	0.74*** [0.235]	0.65*** [0.225]	1.12*** [0.285]	0.49*** [0.160]	0.35 [0.216]	2.80*** [0.657]
Investment bust	-1.55*** [0.386]	-1.28*** [0.169]	-2.12*** [0.536]	-0.46** [0.219]	-0.06 [0.233]	-3.41*** [0.890]
Observations	430	1,295	495	3,362	358	2,798
R-squared	0.31	0.23	0.37	0.02	0.38	0.08
Number of countries	22	64	22	134	20	86

Notes: Robust standard errors in brackets. *** $p<0.01$, ** $p<0.05$, * $p<0.1$

The table presents estimated coefficients of investment boom and bust dummy variables in a panel regression in which time and country fixed effects are controlled. The dataset is annual and covers the period between 1980 and 2016. MVF, PF, UCM, WEO, and *Consensus* stand for potential growth estimates derived using the multivariate filter, the production function approach, the unobserved component model, 5-year ahead *World Economic Outlook* and *Consensus* growth forecasts. *Consensus* Forecasts are available for a highly restrictive sample that reduces the precision of coefficient estimates.

ANNEX 3.4 Long-term effects of output contractions

ANNEX TABLE 3.4.1 Impulse response of potential growth to contraction events

Definition of potential output	*t*	World	EMDEs
Multi-variate filter	0	-0.286**	-0.544***
	1	-0.691**	-1.375**
	2	-0.789**	-1.597**
	3	-0.763**	-1.589**
	4	-0.678*	-1.542**
	5	-0.508*	-1.253**
Production-function approach	0	-0.078	-0.086
	1	-0.833***	-1.01***
	2	-1.041***	-1.144***
	3	-0.916***	-1.035***
	4	-1.007***	-1.10***
	5	-0.879***	-0.91***
Univariate filter	0	-0.333***	-0.458***
	1	-0.774***	-1.088***
	2	-0.839***	-1.245**
	3	-0.745**	-1.31**
	4	-0.655**	-1.51***
	5	-0.531**	-1.51***

Notes: *, **, and *** indicate significance at the 10, 5, and 1 percent level of confidence, respectively. The table represents the estimations of local projections model for change in potential growth (as dependent variable) between the contraction event and the end of the horizon. Regressors include the dummy variable for the contraction event, controlling for lagged potential growth before the shock and country fixed effects. A Hodrick-Prescott filter is used for the univariate filter-based measure of potential growth. For the regression using potential growth based on the production function approach, sample includes 33 events in 29 advanced economies and 32 events in 31 EMDEs. For the regression using potential growth based on the multivariate filter, sample includes 19 events in 15 advanced economies and 21 events in 17 EMDEs. For the regression using potential growth based on the univariate filter, sample includes 19 events in 15 advanced economies and 21 events in 17 EMDEs.

Definition and data. Contractions are identified as in Huidrom, Kose, and Ohnsorge (2016) as peak-to-trough periods when i) output growth is negative and ii) output growth is 1 standard deviation below the country-specific average during 1989-2016. Peaks are defined as the local maxima of real output that precede the contraction. The contraction event is the period from the year after the output peak to the year of the output trough. The definition of contraction events yields up to 47 contraction events in 32 advanced economies and up to 77 contraction events in 49 EMDEs during 1990-2016. However, the sample used in the regression specifications is considerably smaller because of the lack of potential growth measures.

Methodology. A local projections model is used to estimate the cumulative impact of output contractions on potential output growth, following Jorda (2005) and Teulings and Zubanov (2014). In impulse responses, the model estimates the effect of short-term shocks (the contraction event) over a horizon h while controlling for other determinants.

$$y^{pot}_{i,t+h} - y^{pot}_{i,t-1} = \alpha^h + \beta^h shock_{i,t} + \gamma^h dy^{pot}_{i,t-1} + \theta^h X_{i,t} + fixed\ effects + \varepsilon^h_{i,t}$$

where $y^{pot}_{i,t}$ is potential growth. The model controls for country-fixed effects to capture time-invariant cross-country differences. The variable $shock_{i,t}$ is a dummy variable for a contraction event, the main variable of interest. Lagged potential growth $dy^{pot}_{i,t-1}$ controls for the history of potential growth.

Robustness of results. Results are reported in Annex Table 3.4.1. They are broadly robust to the choice of potential growth measure (production function approach, multivariate filter, and Hodrick-Prescott filter).

ANNEX 3.5 Impact of reforms

Defining reform events. Two types of indicators are used to defined major reform events: the World Bank's *Worldwide Governance Indicators* and *Doing Business* indicators.

- *Worldwide Governance Indicators.* Reform spurts (setbacks) are defined as two-year increases (decreases) by two standard errors in one or more indexes of government effectiveness, regulatory quality, rule of law, and control of corruption from the *Worldwide Governance Indicators*. The average of the standards errors at time t and t-2 (the first and last year of the event interval) is used for the standard deviation. This yields 131 reform spurts and 116 reform setbacks for 136 emerging market and developing economies (EMDEs) and 38 advanced economies during 1996-2015.

- *Doing Business Indicators.* Similarly, reform spurts (setbacks) are defined as two-year increases (decreases) by two standard deviation in the distance to frontier of one or more of the ten *Doing Business* indicators: starting a business, dealing with construction permits, getting electricity, registering property, getting credit, protecting minority investors, paying taxes, trading across borders, enforcing contracts, and resolving insolvency. The standard deviation is defined as the cross-country standard deviation in the event year. This yields 40 reform spurts and 4 reform setbacks for 127 EMDEs and 34 advanced economies during 2002-17.

Methodology. Two exercises are conducted: a comparison of means and a local projection model.

- *Comparison of means.* The difference between the simple average of potential total factor productivity (TFP) (or real investment) growth during all reform spurt (setback) events and simple average of potential TFP (or real investment) growth during all "normal" years without such events is examined (Figure 3.5.2). The averages are calculated both for the full sample and for EMDEs only.

- *Local projection model.* A local projection model as in Jorda (2005) and Teulings and Zubanov (2014) is used to identify the effects of reform events on potential TFP and real investment growth over time. In impulse responses, the model estimates the effect of reform events (the dummy variable $shock_{i,t}$) on cumulative potential TFP (or real investment) growth over a horizon h while controlling for country- and year-fixed effects and lagged changes in potential TFP (or real investment) growth:

$$y_{i,t+h} - y_{i,t-1} = \alpha^h + \beta^h shock_{i,t} + \sum_{J=1}^{2} \gamma_{1,j}^h \; shock_{i,t-j}$$

$$+ \sum_{j=1}^{h-1} \gamma_{2,j}^h \; shock_{i,t+h-j} + \sum_{j=1}^{2} \gamma_{3,j}^h \; dy_{i,t-j}$$

$$+ fixed\ effects + \varepsilon_{i,t}^h$$

where y refers to TFP (or real investment) and dy to its growth rate.

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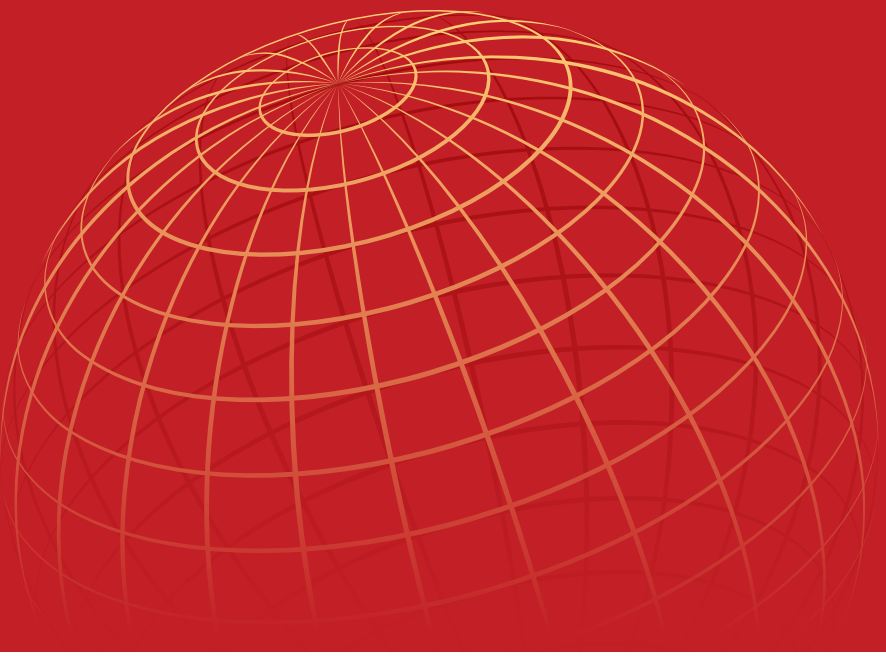


SPECIAL FOCUS 2

Education Demographics and Global Inequality

Education Demographics and Global Inequality

An expected shift in the skill composition of the global labor force will have important consequences for the future of global income inequality. Specifically, a more educated labor force from emerging market and developing economies will likely reduce inequality between countries. It would also diminish inequality within countries, especially in emerging market and developing economies.

Introduction

In the next two decades, new cohorts of more educated workers from developing countries will enter the global workforce with better skills. This change in educational demographics will likely have important consequences for global income inequality. Such formation of human capital will also enhance potential output and growth in the long run, a welcome development in light of the anticipated risks in the medium term (Chapter 3).

In the last two decades, global inequality was partly shaped by the rapid integration of rising working-age populations in emerging market and developing economies (EMDEs) into the world economy. The information and communications technology revolution, combined with cross-border increases in trade and financial flows, reduced the costs of communication and fragmented production by combining high-tech capital with best managerial practices and low-paid workers globally (Baldwin 2016). Between 1990 and 2015, the share of trade in global GDP rose by about 50 percent and the stock of international financial assets relative to GDP tripled (Figure SF2.1.A). Because of the convergence of income among countries, notably the rapid growth of large economies in Asia like China and India, global inequality fell from the late 1980s on. As average incomes across countries converged, the relative contribution of within-country inequality to global inequality rose (Figure SF2.1.B).[1]

Over the next two decades, the working-age population is expected to expand in EMDEs and shrink in advanced economies. This broad trend will be accompanied by a shifting skill composition, as the share of better-educated and more-skilled workers rises in EMDEs. These two factors will further change the income distribution between countries as well as within countries by 2030. Between-country distributional changes will continue to reflect an overall convergence in country-level per capita GDP whereas within-country distributional changes will be generated by improvements in household incomes led by younger, better-educated workers within each country.

In light of these changes and their likely impact, this Special Focus addresses the following questions:

- How has global inequality evolved during the past three decades of rapid globalization?
- How will the next wave of demographic and educational trends shape the global labor market?
- What are the implications of these changes for global inequality?

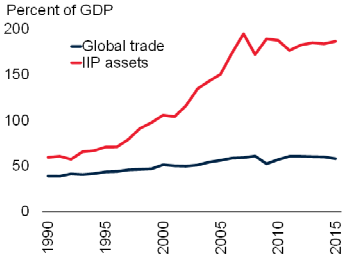
Note: This Special Focus was prepared by Marcio Cruz, Delfin S. Go, Franziska Lieselotte Ohnsorge, and Israel Osorio-Rodarte. Xinghao Gong provided valuable research assistance. The analysis in this Special Focus is mostly based on the background paper "Global Inequality in a More Educated World" by S. Amer Ahmed, Maurizio Bussolo, Marcio Cruz, Delfin S. Go, and Israel Osorio-Rodarte (2017).

[1] Two measures of inequality are used in the analysis – the Gini coefficient and the log mean deviation (also called Theil-L index or general entropy measure GE(0)). Although the Gini (1912) coefficient of inequality is intuitive and the most widely used single measure of inequality, it does not allow a decomposition into a between-country and within-country component since it is not additive across sub-groups. In contrast, the log mean deviation or Theil index as proposed by Theil (1967) allows a decomposition into between-country and within-country inequality (Bourguignon 1979). In Figure SF2.1.B, the relative importance of the two components add up to 100 percent. The fraction of global inequality accounted for by differences of average income across countries declined from 80 to 65 percent while the relative contribution of inequality within countries increased from 20 to 35 percent during 1988-2013. See the explanatory note of Figure SF2.1.B for details. See Annex for further discussion.

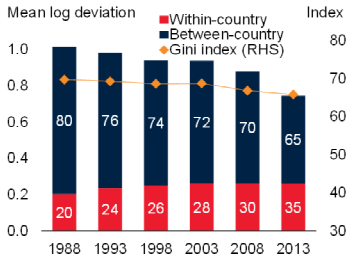
FIGURE SF2.1 Globalization and inequality

Two decades of rapid globalization resulted in increased trade and financial integration and have been accompanied by a decline in global inequality. This is mainly due to income convergence among countries. The relative importance of inequality within countries, however, has steadily increased.

A. Global trade



B. Global inequality



Sources: International Finance Statistics and World Economic Outlook, International Monetary Fund; World Bank (2016).

A. International investment position (IIP) assets are for countries with available data.

B. World Bank calculations based on data in Lakner and Milanović (2016) and Milanović (2016), using PovcalNet (online World Bank tool, http://iresearch.worldbank.org/PovcalNet/.) For each country, household income or consumption per capita is expressed in 2011 PPP exchange rates, and it is derived from household surveys that are represented by decile groups. The line (measured on the right axis) shows the Gini Index, which ranges from 0 (perfect equality) to 100 percent (perfect inequality). The height of the stacked bars shows an alternative measure of inequality, the GE(0) index which can be decomposed into within- and between-country inequality and increases from 0 (perfect equality) with growing inequality. The red bars show the population-weighted average of within-country inequality; and the blue bars show the average between-country inequality. The numbers in the bars denote the relative contributions (in percent shares) of these two sources to total global inequality.

Click here to download data and charts.

Recent evolution of global inequality

Emergence of a global labor market. A "global labor market" emerged rapidly in the 1990s, when China, India, and the former Soviet bloc began to integrate into the global economy. This integration increased the global labor pool from 1.5 billion workers to 2.9 billion workers. This "great doubling" brought in workers who were mostly low-skilled and low-wage (Freeman 2008 and 2007; Jaumotte and Tytell 2007).

Impact on inequality. The immediate impact was to alter the global capital-labor ratio, favoring or increasing returns to capital relative to wages and raising concerns in some studies about linkages between globalization and inequality (Pitt 2017; Milanović 2016; Bourguignon 2015; Galbraith 2012; OECD 2011; Lall et al. 2007). The expansion of world trade and investment flows benefited low-skilled workers in China, India and, to some extent, the former Soviet bloc. Demand for the goods they produced rose, and so did their wages. Also, increased global economic integration accelerated diffusion and adoption of new technologies, which in turn supported rapid growth in EMDEs before the global financial crisis. These developments coincided with a decline in inequality in EMDEs, especially in the new millennium, and the country-specific Gini coefficients —a widely used measure of inequality—for EMDE regions, on average, fell from 41.1 in 1998 to 38.9 in 2013 (Figure SF2.2.A). Despite recent improvements, however, the average Gini coefficient in Latin America and the Caribbean and Sub-Saharan Africa were the highest and second highest in six EMDE regions, respectively.

The opposite occurred for low-skilled workers in advanced economies. The share of national income accounted for by wages declined (Stockhammer 2013). Physical and financial assets became more concentrated in the top income brackets, increasing inequality. A number of studies have called attention to the rising capital share of total value added and the concentration of income and wealth at the top-end of income distribution in advanced economies (Stiglitz 2012; Piketty 2014; Atkinson 2015; Bourguignon 2015). On average among advanced economies, country-specific Gini coefficients have increased from 29.8 in 1988 to 31.8 in 2013 (Figure SF2.2.A).

However, global income inequality declined, as demonstrated by a decline in the global Gini index from 69.7 in 1988 to 65.8 in 2013 (Figure SF2.1.B). This decline can largely be explained by the convergence of EMDEs towards advanced economy per capita incomes during the two decades of rapid growth, especially among the largest emerging markets. Even so, the share of within-country inequality to total global inequality has been steadily increasing from 20 percent in 1988 to 35 percent in 2013.

Reflecting the relatively broad progress that many countries made in the new millennium, the average unweighted country specific Gini in the world declined from 40.6 to 37.8 between 1998 and 2013, after rising during 1988-1998. In fact, this was the first decline in global inequality since the industrial revolution (Bourguignon 2015; World Bank 2016). However, the population weighted average, which captures the within-country inequality for the average person in the

world, follows a slightly different pattern. The population-weighted average Gini fell from 40.1 in 1998 to 39 in 2008 but rose very slightly after the financial crisis to 39.3 in 2013.

Education wave and the global labor market

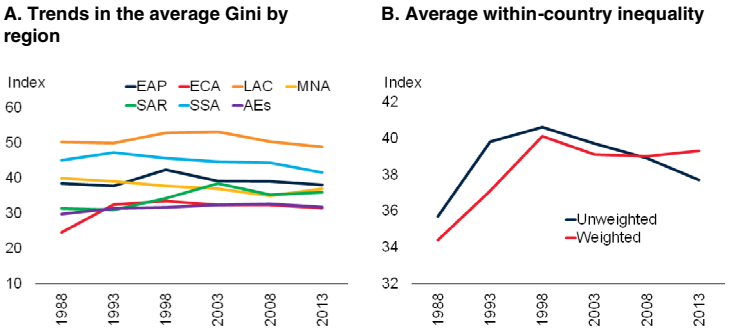
Data and methodology. The forward-looking analysis uses two World Bank global models that link economies across the world to derive the global repercussions of education demographics. The results of the analysis rely on income distributions from harmonized household surveys for over 100 countries (Ahmed et al. 2017; Annex).

Future labor market trends. Global demographic and educational projections foretell a second wave of substantial changes in the global labor market. Defining skilled workers as those having nine or more years of education, new entrants of better-educated workers will come mainly from developing countries (Figure SF2.3.A). Based on United Nations population projections and present rates of educational enrollment (conservatively kept constant into the future), the world will see the number of skilled workers rising from 1.66 billion in 2011 to 2.16 billion by 2040, an increase of about 500 million or 30 percent (Ahmed et al. 2017).

As in the case of the great doubling, the role of EMDEs is prominent. Due to their growing populations and investments in education, developing countries will contribute *all* of the additional workers to the world pool of educated workers. Because of aging, the overall number of skilled workers in advanced economies is projected to decline, from 603 million in 2011 to 601 million in 2030 and 594 million in 2050. Around 2012, one skilled worker from an advanced (OECD) economy was competing in the global labor market with two skilled workers from developing countries. In less than a generation, by 2030, that ratio will be 1 to 3. This "education wave" could constitute a shock to global labor markets and to the labor markets within EMDEs that may transform them once again, as the "great doubling" did in the first wave.

FIGURE SF2.2 Evolution of inequality, 1988-2013

In EMDEs, average inequality for most regions has declined in the new millennium. Despite broad-based improvement, the highest levels of inequality are observed in LAC and SSA. Average inequality in AEs, on the other hand, has been increasing since 1988. The average country-specific inequality as measured by the Gini index has declined since 1998.



Source: World Bank (2016).
Note: World Bank calculations based on data in Milanović (2014), using PovcalNet (online World Bank tool, http://iresearch.worldbank.org/PovcalNet/.)
A. The average within-country Gini by region are simple averages in the full sample without weighting countries by population. EAP = East Asia and Pacific; ECA = Europe and Central Asia; LAC = Latin America and the Caribbean; MNA = Middle East and North Africa; SSA = Sub-Saharan Africa; and AEs = Advanced Economies.
B. The lines show the trend in the average within-country Gini index with and without population weights in the full sample with an average 109 countries per benchmark year.
Click here to download data and charts.

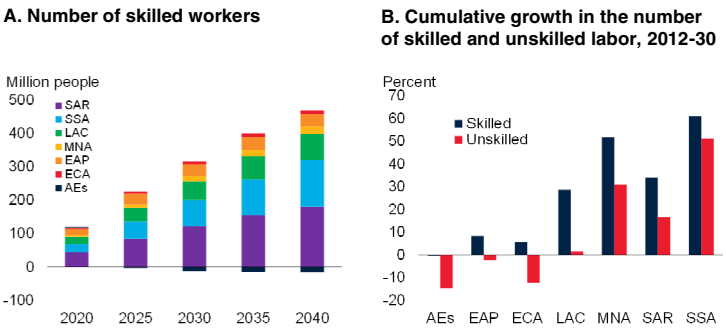
Large heterogeneity across regions will remain, as reflected in the growth rates of skilled versus unskilled workers. In most regions, the number of skilled workers is expected to grow faster—in some cases, much faster—than that of unskilled workers (Figure SF2.3.B). Within EMDEs, the regions of SSA, MNA, SAR, and LAC will have high growth in the supply of skilled workers.

Factors analyzed for their impact on future inequality. Changes in global inequality between 2012 and 2030 reflect not only the relative size of labor by skill among regions and countries but also their respective overall income growth, changes in sectoral employment, and income shifts between skilled and unskilled workers.

- By lifting the incomes of poor and non-poor alike, overall growth has long been identified as the main driver of poverty reduction (Dollar, Kleineberg and Kraay 2016). As long as per capita incomes grow faster in economies with many poor people than in economies with few poor people, aggregate growth will reduce global income inequality.

FIGURE SF2.3 Future supply of skilled workers

New skilled worker entrants will come mainly from EMDEs, and the number of skilled workers will generally grow faster than that of unskilled workers for most regions. Because of aging, however, the overall number of skilled workers in advanced economies is projected to decline by 2030.



Source: Ahmed et al. (2017).

A. B. EAP = East Asia and Pacific; ECA = Europe and Central Asia; LAC = Latin America and the Caribbean; MNA = Middle East and North Africa; SSA = Sub-Saharan Africa; and AEs = Advanced Economies.

A. Skilled is defined as workers with more than nine years of education. Population projections are based on UN (2015). Education information is from harmonized household and labor surveys for 117 countries, keeping present rates of educational attainment in the calculation of the supply of skilled workers.

B. The growth rates are expressed as the cumulative growth for the period 2012-30.

Click here to download data and charts.

- A higher number of skilled workers (relative to unskilled workers) in 2030 compared with 2012 will, other things equal, reduce the skill premium in wages and, hence, within-country inequality, especially in EMDEs.

- As EMDEs urbanize, production, income, and the allocation of unskilled workers will likely shift towards non-agricultural, urban sectors. Since the agricultural sector uses unskilled labor more intensively than urban sectors, the process of urbanization is likely to release more unskilled agricultural workers to urban sectors. This development will put downward pressure on relative wages of unskilled workers in urban sectors and reduce the urban premium for unskilled workers.

The effect of these factors on inequality will depend on country-specific circumstances as the scenario analysis below documents.

Education wave and global inequality

Scenarios. The simulation period is for about a 20-year span, from 2012 to 2030, comparable to the first wave of the "great doubling" of global labor supply. Two forward-looking simulations are defined:

- **Education-wave scenario.** The education-wave scenario is the baseline case. In this simulation, population projections are from the United Nations medium fertility scenario (UN 2015); economic growth projections are from World Bank (2015); and the share of skilled workers is projected to grow in line with population growth and assuming constant education attainment rates. Even with constant educational attainment rates (a conservative assumption),[2] the average schooling of the working-age population will increase as students move up from one educational grade to the next, while older, usually less educated ones leave the workforce—a pipeline effect or natural progression. The larger intergenerational education gap in developing countries, combined with the large size and growing pool of younger cohorts relative to the older ones in those countries, is the key driver of the education wave.

- **No-education-wave scenario.** The no-education-wave scenario is a counterfactual to the baseline scenario. It is the identical to the baseline case except for the assumption of a constant share of skilled workers in the working-age population (i.e., no pipeline effect from schooling). In contrast to the education-wave scenario, this assumes that the number of skilled and unskilled workers grows at the same rate as the working-age population for each country.

At the global level, the share of skilled workers in the total workforce was about 42.7 in 2012. In the no-wave scenario, despite keeping a constant share of skilled workers in the working-age population of each country, the global share of skilled workers is expected to fall slightly to 40.1 in 2030. This is due to differences in the demographic transition between countries attributable to changes in the size of the population and compositional effects as countries with less skilled workers increase their share of the global working-age population. In the

[2] Lutz and KC (2014) provide alternative projections with higher improvements in the enrollment rates from the International Institute for Applied System Analysis (IIASA). The beneficial effects of education on inequality have been documented in some country cases, such as Mexico (Lopez-Acevedo 2006) and Brazil (Blom et al. 2001). See the section on "Other factors" for further discussion.

education-wave scenario, the share of skilled workers is projected to rise to 45.5 in 2030.

Education-wave scenario. Since better skills are associated with higher income, the world under the baseline scenario will continue to become more equal by 2030 as EMDE per capita incomes catch up with advanced-economy per capita incomes. The global Gini coefficient is expected to decline from 65.8 in 2012 to 62.6 in 2030 (Figures SF2.4.A). This 3.2 percentage point decline in the global Gini coefficient as a result of assumed education demographics compares with the 7.2 percentage point decline in the global Gini coefficient during the slightly longer period 1988-2013, that was the outcome of a wide range of global and local developments (World Bank 2016).[3]

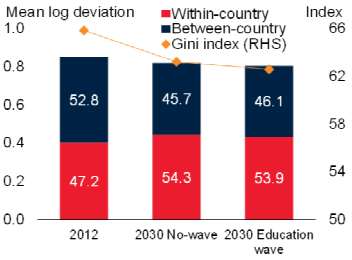
This expected decline in global inequality by 2030 in the baseline scenario mainly reflects a continuing convergence in average per capita incomes in EMDEs towards advanced economy levels (Figure SF2.4.B). Hence, fast-growing EMDEs with a large number of poor, such as India, which accounts for 28 percent of the world's poor in 2013, will continue to contribute to the reduction of global inequality. Within this declining trend in global inequality, the relative contribution of average within-country inequality rises from 47.2 percent share in 2012 to 53.9 percent by 2030.[4]

No-education-wave scenario. In the no-education-wave scenario, removing the additional influx of skilled workers from the pipeline effects of schooling and population aging into the global labor market would enhance the skill premium compared to the baseline or education-wave scenario and, hence, increase inequality. Compared with the baseline scenario, the global Gini coefficient would be slightly higher at 63.2 in 2030 while the GE(0) index would also rise to 0.82. The relative contribution of average within-country inequality at the world level would account for 54.3 percent by 2030. Compared to the baseline, the relative shares of between- and within-country inequality would change only marginally. This is because the education wave would improve both between-country inequality

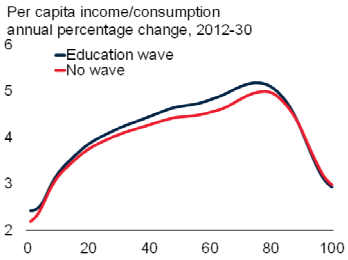
FIGURE SF2.4 Global inequality in 2012 and 2030

Global inequality is expected to fall further by 2030, largely reflecting a continuing convergence of EMDE per capita incomes to advanced-economy levels and the sectoral employment shifts due to economic transformation. Although within-country inequality will rise in importance at the global level, the education wave will nudge down within-country inequality, especially in EMDEs.

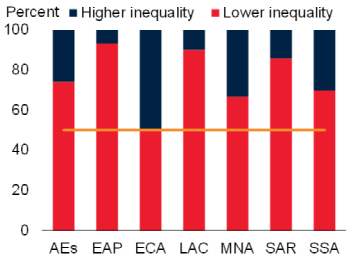
A. Gini coefficient



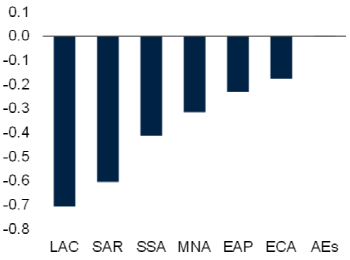
B. Global growth incidence, 2012-30



C. Economies with higher or lower within-country inequality in the education-wave scenario compared to the no-wave scenario



D. Population-weighted average of difference in the Gini index between education and no-wave scenario



Source: Ahmed et al. (2017).

A. The quantitative levels of inequality and particularly the decomposition between and within-country in the base year (2012) of this graph are different from those of the end year (2013) in Figure SF2.1B. One factor is the difference in the number and composition of countries used in Ahmed et al. (2017) and World Bank (2016). A second factor is a difference in the level of disaggregation in the household surveys employed. Each country distribution in World Bank (2016) is represented by ten decile groups, while Ahmed et al. (2017) use every single observation in the household survey to assemble a global database of approximately 10 million observations. Nonetheless, the qualitative interpretation and direction of change are consistent. The line (measured on the right axis) shows the Gini Index, which ranges from 0 (perfect equality) to 100 percent (perfect inequality). The height of the stacked bars shows an alternative measure of inequality, the GE(0) index which can be decomposed into within- and between-country inequality and increases from 0 (perfect equality) with growing inequality. The red bars show the population-weighted average of within-country inequality; and the blue bars show the average between-country inequality. The numbers in the bars denote the relative contributions (in percent shares) of these two sources to total global inequality.

B. The global growth incidence curve indicates household income growth between 2012 and 2030 in the no-wave and the education-wave scenarios for households at every level of income.

C. D. EAP = East Asia and Pacific; ECA = Europe and Central Asia; LAC = Latin America and the Caribbean; MNA = Middle East and North Africa; SSA = Sub-Saharan Africa; and AEs = Advanced Economies.

C. Figure shows the share of countries in each region in which the within-country Gini coefficient is lower in the education-wave scenario than the no wave scenario (red bars "Lower inequality") or higher in the education-wave scenario than the no-wave scenario (blue bars "Higher inequality").

D. The population-weighted average difference in the Gini index is negative if there is an improvement in the within-country inequality between the education-wave relative to the no-wave scenario.

Click here to download data and charts.

[3] Lakner and Milanović (2016) reported a decline of 1.7 percentage points for the shorter period 1988-2008 and in 2005 PPPs.

[4] Another index of inequality, the mean log deviation GE(0), or the Theil-L index, also declined from 0.85 in 2012 to 0.80 by 2030. The contribution of within-country inequality is measured as its contribution to the GE(0) index. Note the different database used in Ahmed et al. (2017) and World Bank (2016) as described in the explanatory note of Figure SF2.4.A.

(by raising the incomes of EMDEs relative to AEs) and within-country inequality (by lowering the skill premia of wages in EMDEs) so that the two effects offset one another relative to the no-wave case.

Growth incidence curves and country-specific inequality. In the global distribution of household income, middle-income households would be the biggest beneficiaries of the education wave. The global growth incidence curves illustrate household income growth between 2012 and 2030 at every level of household income in the world under the education-wave and no-wave scenario (Figure SF2.4.B). Income growth under the education-wave scenario is higher almost everywhere than in the no-wave scenario, but the difference is largest among middle-income households.

The beneficial impact of the education wave on within-country inequality can be seen by comparing the Gini indices of the two scenarios. The differences in the country-specific Gini indices of the education-wave and no-wave scenarios appear widely negative, meaning inequality falls more in the education-wave scenario. By 2030, the number of countries with lower inequality in the education-wave is uniformly and significantly higher than under the no wave scenario across all regions encompassing both the EMDEs and advanced economies (Figure SF2.4.C). The population-weighted average of these differences in the Gini coefficient between the education-wave- and no-education-wave-scenarios is negative (indicating less inequality in the education wave-scenario) for all EMDE regions but practically zero for advanced economies (Figure SF2.4.D). Among EMDEs, the benefits of the education wave are likely to be highest in LAC, SAR, and SSA due to the high growth of skilled workers in these regions that takes place during the transition phases of the intergenerational demographic gap (the difference in population size between young and old cohorts) and the inter-generational education gap (the difference in the average years of schooling between young and old cohorts). Although inequality in many advanced economies would improve with the education wave, these gains would be offset by a few aging economies with larger deteriorations and populations so that the weighted average is close to zero.

Other factors. Several important factors are outside the scope of this analysis. They could influence the results in either direction.

Trend improvements in educational attainment. Especially in Africa, educational attainment has grown steadily over the past two decades (World Bank 2017; Ahmed et al. 2016). Many EMDEs have already attained advanced-economy levels of completion rates for "skilled labor" as defined here with 9 or more years of schooling. (An exception is Sub-Saharan Africa, where completion rates at lower secondary schooling are still below 45 percent.) If these trend improvements continue or if they accelerate—perhaps because greater female empowerment leads to better education for children (World Bank 2012)—the supply of skilled labor would expand more than assumed in the scenario, growth will be higher and income inequality lower than in the scenarios above. This is, of course, predicated on education delivering learning. The 2018 *World Development Report* (World Bank 2017) emphasizes that it is the learning outcomes that are critical for increasing productivity, employment, earnings, and economic growth. A number of structural changes could expand the supply of skilled labor even more than assumed in this scenario, as suggested by results for Sub-Saharan Africa (Ahmed et al. 2016). As jobs empower women to invest more in their children, poverty will likely fall according to the 2013 *World Development Report* (World Bank 2012).

External and domestic shocks. Internal and external shocks could present severe setbacks to the scenarios outlined above (Devarajan et al. 2015, Chapters 1 and 2). Internal shocks include conflicts and droughts while external shocks include commodity price falls, sudden stops or even reversals in capital inflows, and recessions in major trading partners.

Labor market frictions. The analysis presumes that additional workers will be absorbed as their wages adjust flexibly to ensure full employment. In

practice, such flexibility may be imperfect. This could dampen the decline in within-country inequality.

Other sources of income. The scenario analysis here focuses on shocks that affect labor income. While labor income inequality may decline, inequality in other sources of income may grow. This could, for example, be caused by slow growth in investment, the scarcity of which would then raise its returns, or job-replacing technological change (Acemoglu and Restrepo 2016).

Trade. The pattern of growth and the structure of demand can affect growth, inequality, and poverty (Loayza and Raddatz 2010; Messina and Silva 2017). Tradable and non-tradable sectors can have different skill demands, and wage dispersions can exist across workers of similar skills depending on their sectors of employment. For wage differentials across sectors that go beyond the broad categories of skilled and unskilled labor and between urban and rural unskilled labor in the analysis, the relative growth in each sector will also affect the skill premium and labor incomes, especially over long periods.

Technological change. The nature of technical change will likely affect different groups of countries in different ways. Technological change that is biased toward skilled workers can mitigate or offset the distributional benefits of rising educational attainment, especially in advanced economies. It partly accounts for the rising college premium in the United States despite a rapid increase in the relative number of skilled workers in the 60 years after 1939 (Acemoglu 2009 and 1998). In contrast, in Latin America and the Caribbean and other developing countries, the growing number of skilled workers has been accompanied by falling education and skill-wage premia after 2000s (Cruz and Milet forthcoming; De la Torre et al. 2015; Lopez-Calva and Lustig 2010). Also, the world is undergoing a significant technological transformation characterized by the adoption of cyber-physical systems such as robotics, 3D printing, and machine learning (Cirera et al. 2017; Hallward-Driemeier and Nayar 2017). The pace of diffusion of these new technologies globally is an additional source of uncertainty, as they could have direct implications on income distribution across and within countries. Yet, the evidence is still weak that automation and trade also polarize labor markets in developing countries (Maloney and Molina 2016).

Alternative parameter values. The distributional benefits of education can also be mitigated by greater substitutability of skilled labor for capital or for unskilled labor (de la Granville and Solow 2009). The scenario analysis above assumes that skilled labor and capital are substitutable (through a constant elasticity of substitution or CES function) for each other and, together, are substitutable with unskilled labor. In contrast, skilled and unskilled labor could be substitutable for each other and, together, they could be indirectly substitutable with capital. The latter would dampen the decline in skill premia and raise global inequality compared to the education-wave scenario but would still improve inequality compared with the no-wave scenario.

Conclusions

The next big wave of change in the global labor market, the rising share of educated workers in EMDEs, will likely lift global potential growth (Chapter 3) and be accompanied by a further decrease in global income inequality. This decline will be driven by a reduction in inequality between countries, which will largely be lowered by the convergence of EMDE per capita incomes with advanced-economy levels as productivity gaps close. At the global level, the relative importance of overall within-country inequality would steadily rise. Even so, the education wave would decrease country-specific inequality in most instances. The population-weighted average of the Gini difference between education-wave and no-education-wave scenarios would decline for all regions among EMDEs but not for AEs as a group. Nonetheless, several caveats exist. Factors such as biased technological change, the global diffusion of new technologies, and changes in the substitutability between factors of production may alter the results.

Over the next two decades, policies that raise current attainment rates and learning outcomes in education could further reduce inequality for two reasons. First,

a sizeable pool of students will eventually translate into a larger number of skilled workers. That, combined with the large size and growing pool of younger cohorts relative to the older ones, would amplify the effects estimated above. Second, a modest productivity increase through better educational attainment or learning outcomes could further reduce country-specific inequality. Improving learning outcomes in education is a policy challenge as discussed in the 2018 *World Development Report* (World Bank 2017). This will require systemic changes that make learning an overriding priority, supported by diagnostics, reforms that make schools work for learners, motivated teachers, and the removal of political and technical barriers that hinder a focus on learning.

ANNEX SF2.1 Methodology, data, and measures of inequality[5]

Methodology. To examine how education demographics will shape future global labor market and inequality, the analysis combines the World Bank's global microsimulation model *Global Income Distribution Dynamics* (GIDD) and the global computable general equilibrium (CGE) model *LINKAGE* (Bourguignon and Bussolo 2013; van der Mensbrugghe 2013). Both models employ labor data that uses a consistent definition of skills based on the level of education as well as corresponding wages and skill premia as constructed from extensive household surveys. Ensuring such consistency is key for estimating the transmission of labor income shocks, in line with education demographics, into the distribution of household income.[6] By doing so, the analysis captures consistently the full distributional change—between and within countries—due to demographic trends.

In particular, LINKAGE is a multi-sectoral, multi-country and multi-agent dynamic recursive CGE model that is consistent with neo-classical growth theory. Aggregate growth depends on changes in the labor force, the capital stock, and total factor productivity. The economic impact of demographic change must, therefore, occur through one of these channels, and the key growth drivers sensitive to demographics are the labor force and the capital stock. As a simulation is implemented over time, the skilled and unskilled labor forces for a given country are defined following educational attainment rates and pipeline effects of schooling. At the same time, the model keeps track of the young (less than 15 years of age), working age (15-64 years of age), and aged (over 64 years of age) populations, following the values of the medium fertility scenario of the United Nations (2015).

Using the economy-wide effects of education demographics over time computed in LINKAGE, the GIDD microsimulation framework generates income distributions under the various scenarios. GIDD draws on household level survey data for many countries to estimate income distributions by country that account for demographics, household characteristics (e.g., age, gender, and education of different members), sector of employment, skill premia on wages, and income. Using the simulated income and employment under future scenarios from LINKAGE, and accounting for the demographic shifts characterized in the United Nations (2015) and skill implications of the assumed educational attainment rates, GIDD generates income distributions by country that are consistent with both the more 'aggregated' changes under the CGE simulations and what is known about households from survey data. In the simulation, the GIDD methodology updates the household survey data for the terminal year by reweighting the population characterized by the base year household surveys using non-parametric cross-entropy methods but keeping it consistent with the United Nations' population projections.

[5] This annex summarizes the methodology in Ahmed et al. (2017) that underpins the results of the forward-looking analysis.

[6] The GIDD microsimulation draws on per capital household income, which includes labor and non-labor income, to estimate global inequality. The GIDD transmits three key shocks derived from scenarios conducted in the LINKAGE model to household income: 1) Changes in per capita growth for each country; 2) Changes in wage skill premia, defined as the ratio between the average wage of skilled and of unskilled workers; 3) Changes in wage due to labor mobility across sectors. In addition, the GIDD updates the household survey data for the end year of the simulation, 2030. Further details on GIDD methodology are provided by Bussolo, Hoyos, and Medvedev (2010) and Ahmed et. al. (2017).

The analysis, therefore, focuses on forces of the educational wave that shape future supply and demand in the labor markets and their ensuing effects on global income distribution. On the supply side, it considers demographic shifts, improvement in education achievements, and policies that increase access to education and enable inter-sectoral mobility. On the demand side, it accounts for technological change, sectoral patterns of growth, and trade. It then draws the effects of these forces on global inequality by 2030, which is the target year of the Sustainable Development Goals (SDGs) as well as the World Bank's goals of ending extreme poverty and boosting shared prosperity. Because it usually takes longer than 15 years for the stock of skilled workers to show significant improvement from the new inflow of younger and more educated workers reaching the labor market, the time horizon to 2030 will present only a partial effect of the education wave, hence a very conservative scenario.

Data. The methodology combines a large data set from three sources. First, the population projections come from United Nations (UN 2015). Second, harmonized household surveys for many countries are employed in the *GIDD* database, which covers 10.5 million individuals in 127 countries that constitute 83 percent of global GDP and 86 percent of the global population. Third, data in *LINKAGE* comes from the uniform social accounting matrices of the *Global Trade Analysis Project*, which encompasses 129 regions/countries and 57 commodities that are linked by bilateral trade and other external flows (GTAP 2015).

To achieve consistency with the *GIDD*, *LINKAGE* is modified to adopt the former's skilled-unskilled labor definition, whereby a skilled worker is anybody with more than nine years of education, and an unskilled worker is anybody with less than nine years of education. This redefinition necessitates an adjustment of the GTAP data on value added by labor type in production, such that the number of workers of a given skill type in a given sector is consistent in the 2011 benchmark year across the two modeling frameworks.

Measures of inequality. Two measures of inequality are used in the analysis—the Gini coefficient and the log mean deviation (Theil-L index or general entropy measure GE(0)). The Gini (1913) coefficient is an intuitive measure of statistical dispersion that represents the income or wealth distribution of a nation's residents and is the most widely used measure of inequality. A high Gini coefficient denotes great inequality; it has an upper bound of one for perfect inequality and a lower bound of zero for perfect equality. However, the Gini does not allow a decomposition into a between-country and within-country component since it is not additive across sub-groups.

In contrast, the log mean deviation, or Theil index as proposed by Theil (1967), allows a decomposition into between-country and within-country inequality (Bourguignon 1979). The measure is equal to zero when everyone has the same income and takes on larger positive values as incomes become more unequal.

To measure inequality by either measure, every household observation of the 10.5 million individuals in the database is utilized. Moreover, each household is assigned its proper weight relative to the country's total population so that the resulting frequency distribution is reflective of the entire country. When the frequency distributions of all countries are added up, the resulting aggregates will also be reflective of the regional and global totals. The global and regional collections will entail reranking. That is, the bottom household may belong to Niger, and the next one may belong to another country like Eritrea, etc. Finally, the inequality measures use household consumption wherever available and income when consumption expenditure is not available (e.g. in many LAC economies).

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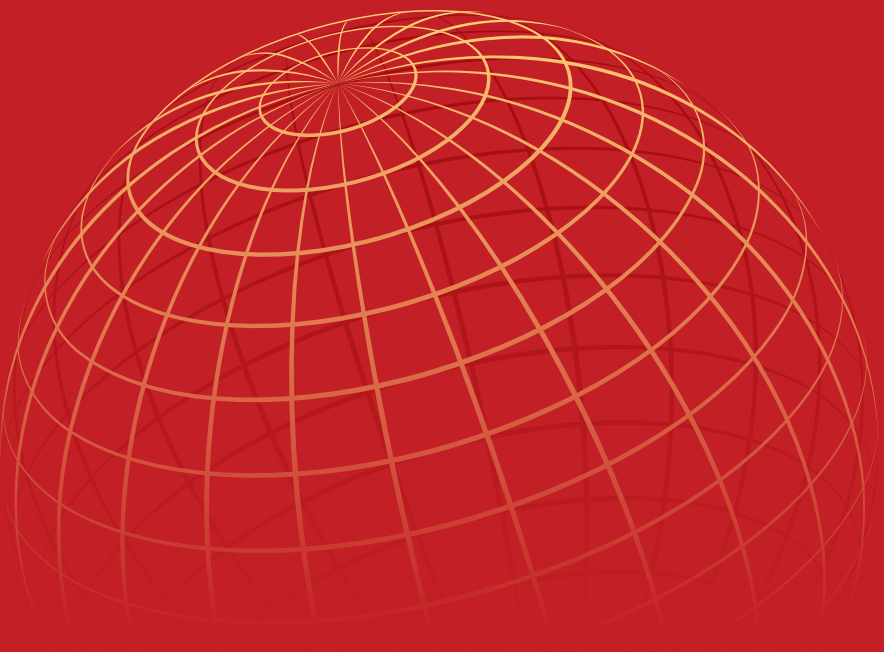

STATISTICAL APPENDIX

Real GDP growth

	Annual estimates and forecasts[1]						Quarterly growth[2]					
	2015	2016	2017e	2018f	2019f	2020f	16Q2	16Q3	16Q4	17Q1	17Q2	17Q3e
World	2.8	2.4	3.0	3.1	3.0	2.9	2.7	2.4	2.8	3.0	3.0	3.4
Advanced economies	2.2	1.6	2.3	2.2	1.9	1.7	1.7	1.6	1.8	2.2	2.1	2.4
United States	2.9	1.5	2.3	2.5	2.2	2.0	1.2	1.5	1.8	2.0	2.2	2.3
Euro Area	2.1	1.8	2.4	2.1	1.7	1.5	2.4	1.6	1.6	2.7	1.8	2.3
Japan	1.4	0.9	1.7	1.3	0.8	0.5	0.7	0.9	1.5	1.5	1.6	2.1
United Kingdom	2.3	1.9	1.6	1.4	1.5	1.7	1.8	2.0	2.0	2.1	1.9	1.7
Emerging market and developing economies	3.6	3.7	4.3	4.5	4.7	4.7	4.3	3.9	4.4	4.6	4.5	5.0
East Asia and Pacific	6.5	6.3	6.4	6.2	6.1	6.0	6.4	6.4	6.5	6.5	6.5	6.5
Cambodia	7.0	7.0	6.8	6.9	6.7	6.7	..	..	..	..	..	..
China	6.9	6.7	6.8	6.4	6.3	6.2	6.7	6.7	6.8	6.9	6.9	6.8
Fiji	3.6	0.4	3.8	3.5	3.3	3.2	..	..	..	..	..	..
Indonesia	4.9	5.0	5.1	5.3	5.3	5.3	5.2	5.0	4.9	5.0	5.0	5.1
Lao PDR	7.4	7.0	6.7	6.6	6.9	6.9	..	..	..	..	..	..
Malaysia	5.0	4.2	5.8	5.2	5.0	4.7	4.0	4.3	4.5	5.6	5.8	6.2
Mongolia	2.2	1.4	2.8	3.1	7.3	5.5	-0.1	-7.3	11.0	4.1	6.0	6.5
Myanmar	7.0	5.9	6.4	6.7	6.9	6.9	..	..	..	..	..	..
Papua New Guinea	8.0	2.4	2.1	2.5	2.4	3.4	..	..	..	..	..	..
Philippines	6.1	6.9	6.7	6.7	6.7	6.5	7.1	7.1	6.6	6.4	6.7	6.9
Solomon Islands	2.5	3.3	3.0	3.0	2.8	2.7	..	..	..	..	..	..
Thailand	2.9	3.2	3.5	3.6	3.5	3.4	3.6	3.2	3.0	3.3	3.8	4.3
Timor-Leste	4.0	5.7	2.4	4.2	5.0	5.0	..	..	..	..	..	..
Vietnam	6.7	6.2	6.7	6.5	6.5	6.5	5.6	6.6	6.8	5.1	6.2	7.5
Europe and Central Asia	1.0	1.7	3.8	2.9	3.0	3.0	2.0	0.5	2.4	2.9	3.8	5.2
Albania	2.2	3.4	3.8	3.6	3.5	3.5	3.2	2.7	4.1	4.0	4.1	..
Armenia	3.2	0.2	3.7	3.8	4.0	4.0	..	..	..	..	..	..
Azerbaijan	1.1	-3.1	-1.4	0.9	1.5	2.6	..	..	..	..	..	..
Belarus	-3.8	-2.6	1.8	2.1	2.4	2.4	-1.5	-3.6	-1.9	0.4	1.7	..
Bosnia and Herzegovina	3.0	3.1	3.0	3.2	3.4	3.5	2.6	3.8	3.6	2.8	1.7	..
Bulgaria	3.6	3.9	3.8	3.9	4.0	3.9	4.5	3.0	4.3	3.6	3.9	3.8
Croatia	2.3	3.2	3.0	2.6	2.8	3.0	2.9	3.1	3.5	2.6	3.0	3.3
Georgia	2.9	2.8	4.3	4.2	4.7	5.0	3.1	2.6	2.8	5.3	4.9	4.4
Hungary	3.4	2.2	3.9	3.8	3.1	2.9	3.1	2.5	1.9	4.3	3.3	3.9
Kazakhstan	1.2	1.1	3.7	2.6	2.8	3.0	-1.5	1.3	2.0	3.5	4.7	..
Kosovo	4.1	3.4	4.4	4.8	4.8	4.7	..	..	..	..	..	..
Kyrgyz Republic	3.9	3.8	3.5	4.2	4.8	4.6	..	..	..	..	..	..
Macedonia, FYR	3.8	2.4	1.5	3.2	3.9	4.0	2.3	2.4	3.3	0.0	-1.3	0.2
Moldova	-0.4	4.3	3.5	3.8	3.6	3.3	..	..	..	..	..	..
Montenegro	3.4	2.9	4.2	2.8	2.5	2.1	..	..	..	..	..	..
Poland	3.8	2.9	4.5	4.0	3.5	3.1	3.2	2.1	3.5	4.5	4.3	5.1
Romania	3.9	4.8	6.4	4.5	4.1	3.5	6.0	4.3	4.8	5.7	6.1	8.8
Russia	-2.8	-0.2	1.7	1.7	1.8	1.8	-0.5	-0.4	0.3	0.5	2.5	1.8
Serbia	0.8	2.8	2.0	3.0	3.5	4.0	2.0	2.8	2.5	1.1	1.4	2.1
Tajikistan	6.0	6.9	5.2	5.0	5.5	5.7	..	..	..	..	..	..
Turkey	6.1	3.2	6.7	3.5	4.0	4.0	4.9	-0.8	4.2	5.3	5.4	11.1
Turkmenistan	6.5	6.2	6.4	6.3	6.3	6.3	..	..	..	..	..	..
Ukraine	-9.8	2.3	2.0	3.5	4.0	4.0	1.5	2.3	4.8	2.5	2.3	2.1
Uzbekistan	8.0	7.8	6.2	5.6	6.3	6.5	..	..	..	..	..	..

Real GDP growth *(continued)*

	Annual estimates and forecasts[1]						Quarterly growth[2]					
	2015	2016	2017e	2018f	2019f	2020f	16Q2	16Q3	16Q4	17Q1	17Q2	17Q3e
Latin America and the Caribbean	-0.6	-1.5	0.9	2.0	2.6	2.7	2.2	1.4	1.8	2.5	1.8	2.2
Argentina	2.6	-2.2	2.7	3.0	3.0	3.2	-3.7	-3.7	-1.9	0.4	2.9	4.2
Belize	2.9	-0.8	0.8	2.2	1.7	1.7	..	..	..	..	..	..
Bolivia	4.9	4.3	3.9	3.8	3.4	3.3	3.2	4.9	3.7	3.3	3.8	..
Brazil	-3.5	-3.5	1.0	2.0	2.3	2.5	-3.4	-2.7	-2.5	0.0	0.4	1.4
Chile	2.3	1.6	1.7	2.4	2.7	2.8	1.7	1.8	0.5	0.1	1.0	2.2
Colombia	3.1	2.0	1.8	2.9	3.4	3.4	2.4	1.3	1.7	1.3	1.2	2.0
Costa Rica	4.7	4.3	3.9	3.6	3.5	3.5	4.3	3.9	4.9	3.9	4.0	..
Dominican Republic	7.0	6.6	4.5	4.9	4.7	4.7	8.6	5.8	5.9	5.3	2.7	..
Ecuador	0.2	-1.5	1.4	0.8	0.9	1.0	-1.7	-1.5	1.0	2.2	3.3	..
El Salvador	2.3	2.4	2.1	1.8	1.8	1.9	2.4	2.4	2.6	2.3	2.3	..
Grenada	6.2	3.9	2.4	2.2	2.1	2.1	..	..	..	..	..	..
Guatemala	4.1	3.1	3.2	3.4	3.5	3.5	3.7	2.6	3.0	3.0	2.3	..
Guyana	3.1	3.4	2.9	3.8	3.7	3.7	2.0	4.5	5.3	2.5	-0.7	4.5
Haiti[3]	1.2	1.4	1.1	2.2	2.5	2.5	..	..	..	..	..	..
Honduras	3.6	3.6	4.1	3.6	3.5	3.5	4.0	2.9	4.2	5.6	3.6	6.2
Jamaica	0.9	1.4	1.4	1.8	2.0	2.0	1.5	2.1	1.4	0.1	-0.1	..
Mexico	3.3	2.9	1.9	2.1	2.6	2.6	3.3	2.1	3.3	3.2	1.9	1.5
Nicaragua	4.9	4.7	4.5	4.4	4.4	4.4	7.3	4.5	3.8	6.6	4.3	..
Panama	5.8	4.9	5.5	5.6	5.6	5.7	..	..	..	..	..	..
Paraguay	3.0	4.0	3.8	4.0	4.0	4.0	6.3	5.3	3.4	7.1	1.1	3.0
Peru	3.3	4.0	2.6	3.8	3.8	4.0	3.9	4.7	3.1	2.2	2.4	2.5
St. Lucia	2.0	0.9	2.0	2.2	1.8	1.8	..	..	..	..	..	..
St. Vincent and the Grenadines	1.4	1.9	2.5	2.7	2.8	2.8	..	..	..	..	..	..
Suriname	-2.7	-5.1	0.0	2.2	1.2	1.2	..	..	..	..	..	..
Trinidad and Tobago	-0.6	-5.4	-3.2	1.9	2.2	1.6	..	..	..	..	..	..
Uruguay	0.4	1.5	2.5	2.8	3.2	3.2	1.3	1.1	3.4	4.3	2.8	2.2
Venezuela, RB	-8.2	-16.1	-11.9	-4.2	0.6	0.9	..	..	..	..	..	..
Middle East and North Africa	2.8	5.0	1.8	3.0	3.2	3.2	3.8	4.9	6.2	5.2	5.1	..
Algeria	3.7	3.3	2.2	3.6	2.5	1.6	..	..	..	..	..	..
Bahrain	2.9	3.2	2.4	2.0	1.6	1.7	2.8	3.7	1.5	2.9	3.3	..
Djibouti	6.5	6.5	7.1	7.0	7.0	7.0	..	..	..	..	..	..
Egypt, Arab Rep.[3]	4.4	4.3	4.2	4.5	5.3	5.8	4.5	3.5	4.0	4.5	5.0	..
Iran, Islamic Rep.	-1.3	13.4	3.6	4.0	4.3	4.3	9.0	11.7	17.1	16.0	..	..
Iraq	4.8	11.0	-0.8	4.7	1.7	1.9	..	..	..	..	..	..
Jordan	2.4	2.0	2.1	2.2	2.4	2.5	1.9	1.8	2.0	2.2	2.0	..
Kuwait	0.6	3.6	-1.0	1.9	3.5	3.5	..	..	..	..	..	..
Lebanon	0.8	2.0	2.0	2.2	2.0	2.0	..	..	..	..	..	..
Morocco	4.5	1.2	4.1	3.1	3.2	3.2	..	..	..	..	..	..
Oman	4.7	5.4	0.7	2.3	2.5	2.5	..	..	..	..	..	..
Qatar	3.6	2.2	1.7	2.6	3.0	3.0	1.8	3.9	1.7	2.4	0.6	..
Saudi Arabia	4.1	1.7	0.3	1.2	2.1	2.2	0.9	1.2	2.2	-0.5	-1.0	..
Tunisia	1.1	1.0	2.0	2.7	3.3	4.0	1.1	1.3	1.2	1.9	1.7	2.1
United Arab Emirates	3.8	3.0	1.4	3.1	3.3	3.3	..	..	..	..	..	..
West Bank and Gaza	3.4	4.1	3.0	3.0	2.9	2.9	..	..	..	..	..	..

Real GDP growth *(continued)*

	Annual estimates and forecasts[1]						Quarterly growth[2]					
	2015	2016	2017e	2018f	2019f	2020f	16Q2	16Q3	16Q4	17Q1	17Q2	17Q3e
South Asia	7.1	7.5	6.5	6.9	7.2	7.2	7.7	7.4	6.9	6.1	5.7	6.2
Afghanistan	1.1	2.2	2.6	3.4	3.1	3.1	..	..	..	..	..	..
Bangladesh[3,4]	6.6	7.1	7.2	6.4	6.7	6.7	..	..	..	..	..	..
Bhutan[3,4]	6.6	8.0	6.7	6.9	7.6	7.6	..	..	..	..	..	..
India[3,4]	8.0	7.1	6.7	7.3	7.5	7.5	7.9	7.5	7.0	6.1	5.7	6.3
Maldives	3.3	4.7	4.8	4.9	5.0	5.0	..	..	..	..	..	..
Nepal[3,4]	2.7	0.4	7.5	4.6	4.5	4.5	..	..	..	..	..	..
Pakistan[3,4]	4.1	4.5	5.3	5.5	5.8	6.0	..	..	..	..	..	..
Sri Lanka	4.8	4.4	4.1	5.0	5.1	5.1	2.4	4.6	5.3	3.9	4.0	3.3
Sub-Saharan Africa	3.1	1.3	2.4	3.2	3.5	3.6	0.4	0.2	0.5	1.0	2.1	..
Angola	3.0	0.0	1.2	1.6	1.5	1.5	..	..	..	..	..	..
Benin	2.1	4.0	5.4	6.0	6.3	6.7	..	..	..	..	..	..
Botswana[3]	-1.7	4.3	4.5	4.7	4.8	4.8	3.9	6.9	4.2	0.8	1.0	..
Burkina Faso	4.0	5.9	6.4	6.0	6.0	6.0	..	..	..	..	..	..
Burundi	-3.9	-0.6	0.5	1.5	2.5	2.5	..	..	..	..	..	..
Cabo Verde	0.9	3.8	3.5	3.6	3.8	3.8	..	..	..	..	..	..
Cameroon	5.8	4.5	3.7	4.1	4.3	4.3	..	..	..	..	..	..
Chad	1.8	-6.4	-2.7	3.7	2.9	6.8	..	..	..	..	..	..
Comoros	1.0	2.2	2.5	2.7	2.9	2.9	..	..	..	..	..	..
Congo, Dem. Rep.	6.9	2.4	2.6	3.0	3.3	3.3	..	..	..	..	..	..
Congo, Rep.	2.6	-2.8	-1.1	2.3	1.5	1.5	..	..	..	..	..	..
Côte d'Ivoire	8.9	8.3	7.6	7.2	7.2	7.2	..	..	..	..	..	..
Equatorial Guinea	-9.1	-9.0	-8.5	-6.0	-4.2	-4.2	..	..	..	..	..	..
Ethiopia[3]	9.6	7.5	8.5	8.2	7.8	7.8	..	..	..	..	..	..
Gabon	4.0	2.1	1.1	2.4	3.7	3.7	..	..	..	..	..	..
Gambia, The	4.1	2.2	3.0	3.5	4.2	4.2	..	..	..	..	..	..
Ghana	3.8	3.7	6.1	8.3	5.5	5.5	1.1	4.6	4.5	6.6	9.0	9.3
Guinea	3.5	6.6	6.7	5.8	5.9	5.9	..	..	..	..	..	..
Guinea-Bissau	6.1	5.8	5.5	5.2	5.4	5.4	..	..	..	..	..	..
Kenya	5.7	5.8	4.9	5.5	5.9	5.9	6.3	5.7	6.1	4.7	5.0	..
Lesotho	5.6	2.3	4.0	4.0	4.2	4.2	..	..	..	..	..	..
Liberia	0.0	-1.6	2.5	3.9	5.0	6.0	..	..	..	..	..	..
Madagascar	3.1	4.2	4.1	5.1	5.6	5.4	..	..	..	..	..	..
Malawi	2.8	2.5	4.5	5.0	5.4	5.4	..	..	..	..	..	..
Mali	5.7	5.8	5.3	5.0	4.7	4.7	..	..	..	..	..	..
Mauritania	1.4	2.0	3.5	3.0	4.6	4.6	..	..	..	..	..	..
Mauritius	3.5	3.7	3.9	3.8	3.7	3.7	..	..	..	..	..	..
Mozambique	6.6	3.8	3.1	3.2	3.4	3.4	..	..	..	..	..	..
Namibia	6.0	1.1	1.7	3.0	3.5	3.5	..	..	..	..	..	..
Niger	4.0	5.0	5.2	5.2	5.4	5.6	..	..	..	..	..	..
Nigeria	2.7	-1.6	1.0	2.5	2.8	2.8	-1.6	-2.3	-1.6	-1.0	0.7	1.4
Rwanda	8.9	5.9	5.2	5.9	6.8	6.8	..	..	..	..	..	..
Senegal	6.5	6.7	6.8	6.9	7.0	7.0	..	..	..	..	..	..
Seychelles	3.5	4.4	4.2	3.8	3.5	3.5	..	..	..	..	..	..
Sierra Leone	-20.6	6.3	5.6	6.3	6.7	6.7	..	..	..	..	..	..

Real GDP growth *(continued)*

	Annual estimates and forecasts[1]						Quarterly growth[2]					
	2015	2016	2017e	2018f	2019f	2020f	16Q2	16Q3	16Q4	17Q1	17Q2	17Q3e
Sub-Saharan Africa (continued)												
South Africa	1.3	0.3	0.8	1.1	1.7	1.7	0.3	0.7	0.7	1.0	1.3	0.8
Sudan	4.9	4.7	4.1	3.7	3.7	3.7	..	..	..	..	..	..
Swaziland	1.5	1.3	0.9	1.9	1.8	1.8	..	..	..	..	..	..
Tanzania	7.0	7.0	6.6	6.8	6.9	6.9	8.5	7.0	5.5	5.7	7.8	..
Togo	5.3	5.0	5.0	5.3	5.4	5.4	..	..	..	..	..	..
Uganda[3]	5.2	4.7	4.0	5.1	5.7	6.0	3.3	2.8	2.9	4.5	5.3	..
Zambia	2.9	3.0	4.2	4.5	5.0	5.0	4.5	3.4	3.9	3.0	3.2	..
Zimbabwe	1.4	0.7	2.8	0.9	0.2	0.2	..	..	..	..	..	..

Sources: World Bank and Haver Analytics.

Notes: e = estimate; f = forecast.

1. Aggregate growth rates calculated using constant 2010 U.S. dollar GDP weights.

2. Year-over-year quarterly growth of not-seasonally-adjusted real GDP, except for Ecuador, Tunisia, and the United States, where only seasonally-adjusted data are available. Data for Bosnia and Herzegovina are from the production approach.

Year-over-year quarterly growth in the United Kingdom is calculated using seasonally-adjusted real GDP.

Regional averages are calculated based on data from following countries.

East Asia and Pacific: China, Indonesia, Malaysia, Mongolia, Philippines, Thailand, and Vietnam.

Europe and Central Asia: Albania, Belarus, Bosnia and Herzegovina, Bulgaria, Croatia, Georgia, Hungary, Kazakhstan, the former Yugoslav Republic of Macedonia, Poland, Romania, Russia, Serbia, Turkey, and Ukraine.

Latin America and the Caribbean: Argentina, Bolivia, Brazil, Chile, Colombia, Costa Rica, Dominican Republic, Ecuador, El Salvador, Guatemala, Guyana, Honduras, Jamaica, Mexico, Nicaragua, Paraguay, Peru, and Uruguay.

Middle East and North Africa: Bahrain, the Arab Republic of Egypt, the Islamic Republic of Iran, Jordan, Qatar, Saudi Arabia, and Tunisia.

South Asia: India and Sri Lanka.

Sub-Saharan Africa: Botswana, Ghana, Kenya, Nigeria, South Africa, Tanzania, Uganda, and Zambia.

3. Annual GDP is on fiscal year basis, as per reporting practice in the country.

4. GDP data for Pakistan are based on factor cost. For Bangladesh, Nepal, and Pakistan, the column labeled 2017 refers to FY2016/17. For Bhutan and India, the column labeled 2016 refers to FY2016/17.

For additional information, please see www.worldbank.org/gep.

Data and Forecast Conventions

The macroeconomic forecasts presented in this report are prepared by staff of the Prospects Group of the Development Economics Vice-Presidency, in coordination with staff from the Macroeconomics, Trade, and Investment Global Practice and from regional and country offices, and with input from regional Chief Economist offices. They are the result of an iterative process that incorporates data, macroeconometric models, and judgment.

Data. Data used to prepare country forecasts come from a variety of sources. National Income Accounts (NIA), Balance of Payments (BOP), and fiscal data are from Haver Analytics; the World Development Indicators by the World Bank; the World Economic Outlook, Balance of Payments Statistics, and International Financial Statistics by the International Monetary Fund. Population data and forecasts are from the United Nations World Population Prospects. Country- and lending-group classifications are from the World Bank. DECPG databases include commodity prices, data on previous forecast vintages, and in-house country classifications. Other internal databases include high-frequency indicators such as industrial production, consumer price indexes, house prices, exchange rates, exports, imports, and stock market indexes, based on data from Bloomberg, Haver Analytics, OECD Analytical House Prices Indicators, IMF Balance of Payments Statistics, and IMF International Financial Statistics.

Aggregations. Aggregate growth for the world and all sub-groups of countries (such as regions and income groups) is calculated as GDP-weighted average (at 2010 prices) of country-specific growth rates. Income groups are defined as in the World Bank's classification of country groups.

Forecast Process. The process starts with initial assumptions about advanced-economy growth and commodity price forecasts. These are used as conditioning assumptions for the first set of growth forecasts for EMDEs, which are produced using macroeconometric models, accounting frameworks to ensure national account identities and global consistency, estimates of spillovers from major economies, and high-frequency indicators. These forecasts are then evaluated to ensure consistency of treatment across similar EMDEs. This is followed by extensive discussions with World Bank country teams, who conduct continuous macroeconomic monitoring and dialogue with country authorities. Throughout the forecasting process, staff use macroeconometric models that allow the combination of judgement and consistency with model-based insights.

Global Economic Prospects: Selected Topics, 2015-18

Growth and Business Cycles		
Global output gap		
	Is the global economy turning the corner?	January 2018, Box 1.1
Low-income countries		
	Recent developments and outlook	January 2018, Box 1.2
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	Recent developments and outlook	January 2017, Box 1.1
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Regional perspectives		
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	What is potential growth?	January 2018, Box 3.1
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The global economy is enjoying a broad-based cyclical recovery. Investment, manufacturing, and trade are on the rebound. Financing conditions are benign, monetary policies are generally accommodative, and the worst impacts of the recent commodity price collapse are dissipating. However, the global economic outlook remains clouded by a number of risks. These include the possibility of financial market disruptions, rising protectionist sentiment, and heightened geopolitical tensions. Subdued productivity and slowing potential growth is of particular concern.

In addition to discussing global and regional economic developments and prospects, this edition of *Global Economic Prospects* includes a chapter on the causes of the broad-based slowdown in potential growth and suggests a number of remedies. The report also contains Special Focus sections on the impact of the 2014-16 oil price collapse and the relationship between education demographics and global inequality.

Global Economic Prospects is a World Bank Group Flagship Report that examines global economic developments and prospects, with a special focus on emerging market and developing countries, on a semiannual basis (in January and June). The January edition includes in-depth analyses of topical policy challenges faced by these economies, while the June edition contains shorter analytical pieces.

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