CHAPTER 1

# RECENT DEVELOPMENTS AND PROSPECTS

## Recent Developments and Prospects

Major macroeconomic realignments are affecting prospects differentially across countries and regions. These include the slowdown and rebalancing in China; a further decline in commodity prices, especially for oil, with sizable redistributive consequences across sectors and countries; a related slowdown in investment and trade; and declining capital flows to emerging market and developing economies. These realignments—together with a host of noneconomic factors, including geopolitical tensions and political discord—are generating substantial uncertainty. On the whole, they are consistent with a subdued outlook for the world economy—but risks of much weaker global growth have also risen.

### The World Economy in Recent Months

Preliminary data suggest that global growth during the second half of 2015, at 2.8 percent, was weaker than previously forecast, with a sizable slowdown during the last quarter of the year (Figure 1.1). The unexpected weakness in late 2015 reflected to an important extent softer activity in advanced economies—especially in the United States, but also in Japan and other advanced Asian economies. The picture for emerging markets is quite diverse, with high growth rates in China and most of emerging Asia, but severe macroeconomic conditions in Brazil, Russia, and a number of other commodity exporters.

- Growth in the United States fell to 1.4 percent at a seasonally adjusted annual rate in the fourth quarter of 2015. While some of the reasons for this decline—including very weak exports—are likely to prove temporary, final domestic demand was weaker as well, with a decline in nonresidential investment, including outside the energy sector. Despite signs of weakening growth, labor market indicators continued to improve. In particular, employment growth was very strong, labor force participation rebounded, and the unemployment rate continued its downward trend, with a 4.5 percent reading in March.
- The recovery was broadly in line with the January forecast in the euro area, as strengthening domestic demand offset a weaker external impulse. Among countries, growth was weaker than expected in Italy but the recovery was stronger in Spain.
- In Japan, growth came out significantly lower than expected during the fourth quarter, reflecting in particular a sharp drop in private consumption.
- Economic activity in other Asian advanced economies closely integrated with China—such as Hong Kong Special Administrative Region and Taiwan Province of China—weakened sharply during the first half of 2015, owing in part to steep declines in exports. Activity picked up by less than expected during the second half of the year, as domestic demand remained subdued and the recovery in exports was relatively modest.
- Growth in China was in contrast slightly stronger than previously forecast, reflecting resilient domestic demand, especially consumption. Robust growth in the services sector offset recent weakness in manufacturing activity.
- In Latin America, the downturn in Brazil was deeper than expected, while activity for the remainder of the region was broadly in line with forecasts.
- The recession in Russia in 2015 was broadly in line with expectations, and conditions worsened in most other Commonwealth of Independent States (CIS) economies, affected by spillovers from Russia as well as the adverse impact of lower oil prices on net oil-exporting countries.
- Macroeconomic indicators suggest that economic activity in sub-Saharan Africa and the Middle East—for which quarterly GDP series are not broadly available—also fell short of expectations, a result of the drop in oil prices, declines in other commodity prices, and geopolitical and domestic strife in a few countries.
- More generally, geopolitical tensions have been weighing on global growth. Output contractions in three particularly affected countries—Ukraine, Libya, and Yemen, which accounted for about half a percentage point of global GDP in 2013—subtracted 0.1 percentage point from global output during 2014–15.

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

*(Percent change, unless noted otherwise)*

| | | Projections | | Difference from January 2016 *WEO Update*[1] | | Difference from October 2015 WEO[1] | |
|---|---|---|---|---|---|---|---|
| | 2015 | 2016 | 2017 | 2016 | 2017 | 2016 | 2017 |
| **World Output** | **3.1** | **3.2** | **3.5** | **–0.2** | **–0.1** | **–0.4** | **–0.3** |
| **Advanced Economies** | **1.9** | **1.9** | **2.0** | **–0.2** | **–0.1** | **–0.3** | **–0.2** |
| United States | 2.4 | 2.4 | 2.5 | –0.2 | –0.1 | –0.4 | –0.3 |
| Euro Area | 1.6 | 1.5 | 1.6 | –0.2 | –0.1 | –0.1 | –0.1 |
| Germany | 1.5 | 1.5 | 1.6 | –0.2 | –0.1 | –0.1 | 0.1 |
| France | 1.1 | 1.1 | 1.3 | –0.2 | –0.2 | –0.4 | –0.3 |
| Italy | 0.8 | 1.0 | 1.1 | –0.3 | –0.1 | –0.3 | –0.1 |
| Spain | 3.2 | 2.6 | 2.3 | –0.1 | 0.0 | 0.1 | 0.1 |
| Japan | 0.5 | 0.5 | –0.1 | –0.5 | –0.4 | –0.5 | –0.5 |
| United Kingdom | 2.2 | 1.9 | 2.2 | –0.3 | 0.0 | –0.3 | 0.0 |
| Canada | 1.2 | 1.5 | 1.9 | –0.2 | –0.2 | –0.2 | –0.5 |
| Other Advanced Economies[2] | 2.0 | 2.1 | 2.4 | –0.3 | –0.4 | –0.6 | –0.5 |
| **Emerging Market and Developing Economies** | **4.0** | **4.1** | **4.6** | **–0.2** | **–0.1** | **–0.4** | **–0.3** |
| Commonwealth of Independent States | –2.8 | –1.1 | 1.3 | –1.1 | –0.4 | –1.6 | –0.7 |
| Russia | –3.7 | –1.8 | 0.8 | –0.8 | –0.2 | –1.2 | –0.2 |
| Excluding Russia | –0.6 | 0.9 | 2.3 | –1.4 | –0.9 | –1.9 | –1.7 |
| Emerging and Developing Asia | 6.6 | 6.4 | 6.3 | 0.1 | 0.1 | 0.0 | 0.0 |
| China | 6.9 | 6.5 | 6.2 | 0.2 | 0.2 | 0.2 | 0.2 |
| India[3] | 7.3 | 7.5 | 7.5 | 0.0 | 0.0 | 0.0 | 0.0 |
| ASEAN-5[4] | 4.7 | 4.8 | 5.1 | 0.0 | 0.0 | –0.1 | –0.2 |
| Emerging and Developing Europe | 3.5 | 3.5 | 3.3 | 0.4 | –0.1 | 0.5 | –0.1 |
| Latin America and the Caribbean | –0.1 | –0.5 | 1.5 | –0.2 | –0.1 | –1.3 | –0.8 |
| Brazil | –3.8 | –3.8 | 0.0 | –0.3 | 0.0 | –2.8 | –2.3 |
| Mexico | 2.5 | 2.4 | 2.6 | –0.2 | –0.3 | –0.4 | –0.5 |
| Middle East, North Africa, Afghanistan, and Pakistan | 2.5 | 3.1 | 3.5 | –0.5 | –0.1 | –0.8 | –0.6 |
| Saudi Arabia | 3.4 | 1.2 | 1.9 | 0.0 | 0.0 | –1.0 | –1.0 |
| Sub-Saharan Africa | 3.4 | 3.0 | 4.0 | –1.0 | –0.7 | –1.3 | –0.9 |
| Nigeria | 2.7 | 2.3 | 3.5 | –1.8 | –0.7 | –2.0 | –1.0 |
| South Africa | 1.3 | 0.6 | 1.2 | –0.1 | –0.6 | –0.7 | –0.9 |
| *Memorandum* | | | | | | | |
| European Union | 2.0 | 1.8 | 1.9 | –0.2 | –0.1 | –0.1 | –0.1 |
| Low-Income Developing Countries | 4.5 | 4.7 | 5.5 | –0.9 | –0.4 | –1.1 | –0.6 |
| Middle East and North Africa | 2.3 | 2.9 | 3.3 | –0.6 | –0.2 | –0.9 | –0.8 |
| World Growth Based on Market Exchange Rates | 2.4 | 2.5 | 2.9 | –0.2 | –0.1 | –0.5 | –0.3 |
| **World Trade Volume (goods and services)** | **2.8** | **3.1** | **3.8** | **–0.3** | **–0.3** | **–1.0** | **–0.8** |
| Imports | | | | | | | |
| Advanced Economies | 4.3 | 3.4 | 4.1 | –0.3 | 0.0 | –0.8 | –0.4 |
| Emerging Market and Developing Economies | 0.5 | 3.0 | 3.7 | –0.4 | –0.6 | –1.4 | –1.7 |
| Exports | | | | | | | |
| Advanced Economies | 3.4 | 2.5 | 3.5 | –0.4 | –0.1 | –0.9 | –0.4 |
| Emerging Market and Developing Economies | 1.7 | 3.8 | 3.9 | 0.0 | –0.5 | –1.0 | –1.4 |
| **Commodity Prices (U.S. dollars)** | | | | | | | |
| Oil[5] | –47.2 | –31.6 | 17.9 | –14.0 | 3.0 | –29.2 | 7.8 |
| Nonfuel (average based on world commodity export weights) | –17.5 | –9.4 | –0.7 | 0.1 | –1.1 | –4.3 | –1.0 |
| **Consumer Prices** | | | | | | | |
| Advanced Economies | 0.3 | 0.7 | 1.5 | –0.4 | –0.2 | –0.5 | –0.2 |
| Emerging Market and Developing Economies[6] | 4.7 | 4.5 | 4.2 | 0.2 | 0.1 | 0.2 | 0.0 |
| **London Interbank Offered Rate (percent)** | | | | | | | |
| On U.S. Dollar Deposits (six month) | 0.5 | 0.9 | 1.5 | –0.3 | –0.7 | –0.3 | –0.7 |
| On Euro Deposits (three month) | 0.0 | –0.3 | –0.4 | 0.0 | –0.2 | –0.3 | –0.5 |
| On Japanese Yen Deposits (six month) | 0.1 | –0.1 | –0.3 | –0.2 | –0.4 | –0.2 | –0.5 |

Note: Real effective exchange rates are assumed to remain constant at the levels prevailing during February 2–March 1, 2016. Economies are listed on the basis of economic size. The aggregated quarterly data are seasonally adjusted.

[1]Difference based on rounded figures for the current, January 2016 *World Economic Outlook Update*, and October 2015 *World Economic Outlook* forecasts.

[2]Excludes the G7 (Canada, France, Germany, Italy, Japan, United Kingdom, United States) and euro area countries.

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

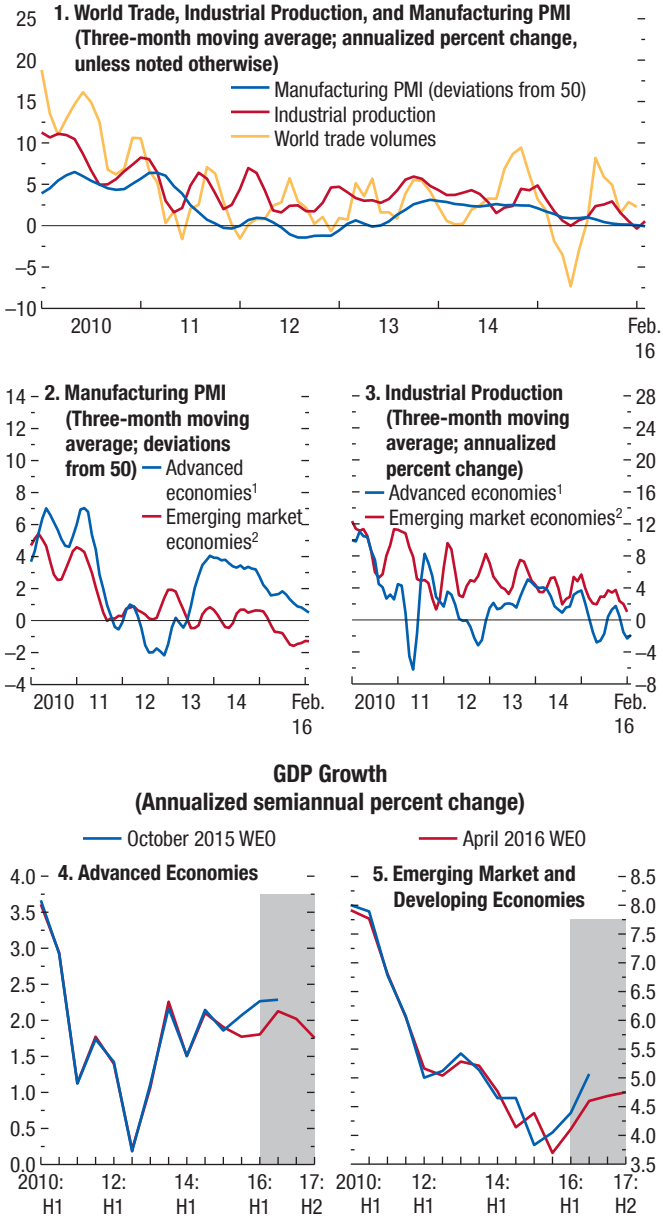
[4]Indonesia, Malaysia, Philippines, Thailand, Vietnam.

| | Year over Year | | | | Q4 over Q4[7] | | | |
|---|---|---|---|---|---|---|---|---|
| | | | Projections | | | | Projections | |
| | 2014 | 2015 | 2016 | 2017 | 2014 | 2015 | 2016 | 2017 |
| **World Output** | **3.4** | **3.1** | **3.2** | **3.5** | **3.1** | **2.9** | **3.3** | **3.4** |
| **Advanced Economies** | **1.8** | **1.9** | **1.9** | **2.0** | **1.7** | **1.8** | **2.1** | **1.9** |
| United States | 2.4 | 2.4 | 2.4 | 2.5 | 2.5 | 2.0 | 2.6 | 2.4 |
| Euro Area | 0.9 | 1.6 | 1.5 | 1.6 | 1.0 | 1.6 | 1.6 | 1.5 |
| Germany | 1.6 | 1.5 | 1.5 | 1.6 | 1.5 | 1.3 | 1.6 | 1.6 |
| France | 0.2 | 1.1 | 1.1 | 1.3 | 0.0 | 1.4 | 1.3 | 1.0 |
| Italy | –0.3 | 0.8 | 1.0 | 1.1 | –0.3 | 1.0 | 1.3 | 1.0 |
| Spain | 1.4 | 3.2 | 2.6 | 2.3 | 2.1 | 3.5 | 2.1 | 2.5 |
| Japan | 0.0 | 0.5 | 0.5 | –0.1 | –0.9 | 0.8 | 1.1 | –0.8 |
| United Kingdom | 2.9 | 2.2 | 1.9 | 2.2 | 2.8 | 1.9 | 2.0 | 2.2 |
| Canada | 2.5 | 1.2 | 1.5 | 1.9 | 2.4 | 0.5 | 1.7 | 2.0 |
| Other Advanced Economies[2] | 2.8 | 2.0 | 2.1 | 2.4 | 2.6 | 2.1 | 2.2 | 2.6 |
| **Emerging Market and Developing Economies** | **4.6** | **4.0** | **4.1** | **4.6** | **4.5** | **3.9** | **4.5** | **4.7** |
| Commonwealth of Independent States | 1.1 | –2.8 | –1.1 | 1.3 | –1.4 | –4.0 | 0.2 | 1.2 |
| Russia | 0.7 | –3.7 | –1.8 | 0.8 | –0.8 | –4.7 | 0.4 | 1.1 |
| Excluding Russia | 1.9 | –0.6 | 0.9 | 2.3 | . . . | . . . | . . . | . . . |
| Emerging and Developing Asia | 6.8 | 6.6 | 6.4 | 6.3 | 6.7 | 6.5 | 6.2 | 6.3 |
| China | 7.3 | 6.9 | 6.5 | 6.2 | 7.1 | 6.8 | 6.1 | 6.0 |
| India[3] | 7.2 | 7.3 | 7.5 | 7.5 | 7.3 | 7.2 | 7.8 | 7.6 |
| ASEAN-5[4] | 4.6 | 4.7 | 4.8 | 5.1 | 4.9 | 4.8 | 4.5 | 5.2 |
| Emerging and Developing Europe | 2.8 | 3.5 | 3.5 | 3.3 | 2.8 | 3.0 | 5.0 | 2.8 |
| Latin America and the Caribbean | 1.3 | –0.1 | –0.5 | 1.5 | 0.6 | –1.6 | 0.4 | 1.4 |
| Brazil | 0.1 | –3.8 | –3.8 | 0.0 | –0.7 | –5.9 | –1.6 | 0.5 |
| Mexico | 2.3 | 2.5 | 2.4 | 2.6 | 2.6 | 2.5 | 2.4 | 2.6 |
| Middle East, North Africa, Afghanistan, and Pakistan | 2.8 | 2.5 | 3.1 | 3.5 | . . . | . . . | . . . | . . . |
| Saudi Arabia | 3.6 | 3.4 | 1.2 | 1.9 | 2.5 | 3.6 | 0.5 | 2.3 |
| Sub-Saharan Africa | 5.1 | 3.4 | 3.0 | 4.0 | . . . | . . . | . . . | . . . |
| Nigeria | 6.3 | 2.7 | 2.3 | 3.5 | . . . | . . . | . . . | . . . |
| South Africa | 1.5 | 1.3 | 0.6 | 1.2 | 1.3 | 0.3 | 0.8 | 1.4 |
| *Memorandum* | | | | | | | | |
| European Union | 1.4 | 2.0 | 1.8 | 1.9 | 1.5 | 2.0 | 1.9 | 1.8 |
| Low-Income Developing Countries | 6.1 | 4.5 | 4.7 | 5.5 | . . . | . . . | . . . | . . . |
| Middle East and North Africa | 2.6 | 2.3 | 2.9 | 3.3 | . . . | . . . | . . . | . . . |
| World Growth Based on Market Exchange Rates | 2.7 | 2.4 | 2.5 | 2.9 | 2.4 | 2.2 | 2.7 | 2.8 |
| **World Trade Volume (goods and services)** | **3.5** | **2.8** | **3.1** | **3.8** | **. . .** | **. . .** | **. . .** | **. . .** |
| Imports | | | | | | | | |
| Advanced Economies | 3.5 | 4.3 | 3.4 | 4.1 | . . . | . . . | . . . | . . . |
| Emerging Market and Developing Economies | 3.7 | 0.5 | 3.0 | 3.7 | . . . | . . . | . . . | . . . |
| Exports | | | | | | | | |
| Advanced Economies | 3.5 | 3.4 | 2.5 | 3.5 | . . . | . . . | . . . | . . . |
| Emerging Market and Developing Economies | 3.1 | 1.7 | 3.8 | 3.9 | . . . | . . . | . . . | . . . |
| **Commodity Prices (U.S. dollars)** | | | | | | | | |
| Oil[5] | –7.5 | –47.2 | –31.6 | 17.9 | –28.7 | –43.4 | –10.3 | 12.2 |
| Nonfuel (average based on world commodity export weights) | –4.0 | –17.5 | –9.4 | –0.7 | –7.4 | –19.1 | –2.9 | 0.5 |
| **Consumer Prices** | | | | | | | | |
| Advanced Economies | 1.4 | 0.3 | 0.7 | 1.5 | 1.0 | 0.4 | 0.8 | 1.8 |
| Emerging Market and Developing Economies[6] | 4.7 | 4.7 | 4.5 | 4.2 | 4.2 | 4.6 | 4.1 | 3.8 |
| **London Interbank Offered Rate (percent)** | | | | | | | | |
| On U.S. Dollar Deposits (six month) | 0.3 | 0.5 | 0.9 | 1.5 | . . . | . . . | . . . | . . . |
| On Euro Deposits (three month) | 0.2 | 0.0 | –0.3 | –0.4 | . . . | . . . | . . . | . . . |
| On Japanese Yen Deposits (six month) | 0.2 | 0.1 | –0.1 | –0.3 | . . . | . . . | . . . | . . . |

[5]Simple average of prices of U.K. Brent, Dubai Fateh, and West Texas Intermediate crude oil. The average price of oil in U.S. dollars a barrel was $50.79 in 2015; the assumed price based on futures markets is $34.75 in 2016 and $40.99 in 2017.
[6]Excludes Argentina and Venezuela. See country-specific notes for Argentina in the "Country Notes" section of the Statistical Appendix.
[7]For World Output, the quarterly estimates and projections account for approximately 90 percent of annual world output at purchasing-power-parity weights. For Emerging Market and Developing Economies, the quarterly estimates and projections account for approximately 80 percent of annual emerging market and developing economies' output at purchasing-power-parity weights.

## Figure 1.1. Global Activity Indicators

Global trade volumes rebounded in the second half of 2015 after contracting sharply in the first half of the year. Global industrial production remained subdued throughout the year. Global growth slowed in the last quarter of 2015. In both advanced and emerging market and developing economies, the growth projections suggest some pickup in activity in 2016, but to generally weaker levels than projected in the October 2015 *World Economic Outlook*.




Sources: CPB Netherlands Bureau for Economic Policy Analysis; Haver Analytics; Markit Economics; and IMF staff estimates.
Note: IP = industrial production; PMI = purchasing managers' index.
[1]Australia, Canada, Czech Republic, Denmark, euro area, Hong Kong SAR (IP only), Israel, Japan, Korea, New Zealand, Norway (IP only), Singapore, Sweden (IP only), Switzerland, Taiwan Province of China, United Kingdom, United States.
[2]Argentina (IP only), Brazil, Bulgaria (IP only), Chile (IP only), China, Colombia (IP only), Hungary, India, Indonesia, Latvia (IP only), Lithuania (IP only), Malaysia (IP only), Mexico, Pakistan (IP only), Peru (IP only), Philippines (IP only), Poland, Romania (IP only), Russia, South Africa, Thailand (IP only), Turkey, Ukraine (IP only), Venezuela (IP only).

- Global industrial production, particularly of capital goods, remained subdued throughout 2015. This weakness is consistent with depressed investment worldwide—particularly in energy and mining—as well as the deceleration of China's manufacturing activity.

### *Low Inflation*

Headline inflation in advanced economies in 2015, at 0.3 percent on average, was the lowest since the global financial crisis, mostly reflecting the sharp decline in commodity prices, with a pickup in the late part of 2015 (Figure 1.2). Core inflation remained broadly stable at 1.6–1.7 percent but was still well below central bank targets. In many emerging markets, lower prices for oil and other commodities (including food, which has a larger weight in the consumer price indices of emerging market and developing economies) have tended to reduce inflation, but in a number of countries, such as Brazil, Colombia, and Russia, sizable currency depreciations have offset to a large extent the effect of lower commodity prices, and inflation has risen.

### *Declining Commodity Prices*

Oil prices decreased further by 32 percent between August 2015 and February 2016 (that is, between the reference period for the October *World Economic Outlook* [WEO] and that for the current WEO report) on account of strong supply from members of the Organization of the Petroleum Exporting Countries and Russia, expectations of higher supply from the Islamic Republic of Iran, and concerns about the resilience of global demand and medium-term growth prospects, as well as risk-off behavior in financial markets, leading investors to move away from commodities as well as stocks (Figure 1.3). Coal and natural gas prices also declined, as the latter are linked to oil prices, including through oil-indexed contract prices. Nonfuel commodity prices weakened as well, with metal and agricultural commodities prices declining by 9 percent and 4 percent, respectively. Excess oil supply pushed inventory levels in Organisation for Economic Co-operation and Development countries to record-high levels despite the strong oil demand that much lower prices spurred in 2015.[1] Oil prices recovered some ground in March, on the back of improved financial market sentiment.

[1]Global oil demand growth in 2015 is estimated to have been about 1.6 million barrels a day, significantly above earlier forecasts by the International Energy Agency.

### *Exchange Rates and Capital Flows*

Between August 2015 and February 2016, the currencies of advanced economies tended to strengthen, and those of commodity exporters with floating exchange rates—especially oil-exporting countries—tended to weaken further (Figure 1.4, blue bars).

Across advanced economies, the Japanese yen's appreciation (about 10 percent in real effective terms) was particularly sharp, while the U.S. dollar and the euro strengthened by about 3 percent and 2 percent, respectively. In contrast, the British pound depreciated by 7 percent, driven by expectations of a later normalization of monetary policy in the United Kingdom and concerns about a potential exit from the European Union.

Among emerging market economies, depreciations were particularly sharp in South Africa, Mexico, Russia, and Colombia. The Chinese renminbi depreciated by about 2 percent, while the Indian rupee remained broadly stable.

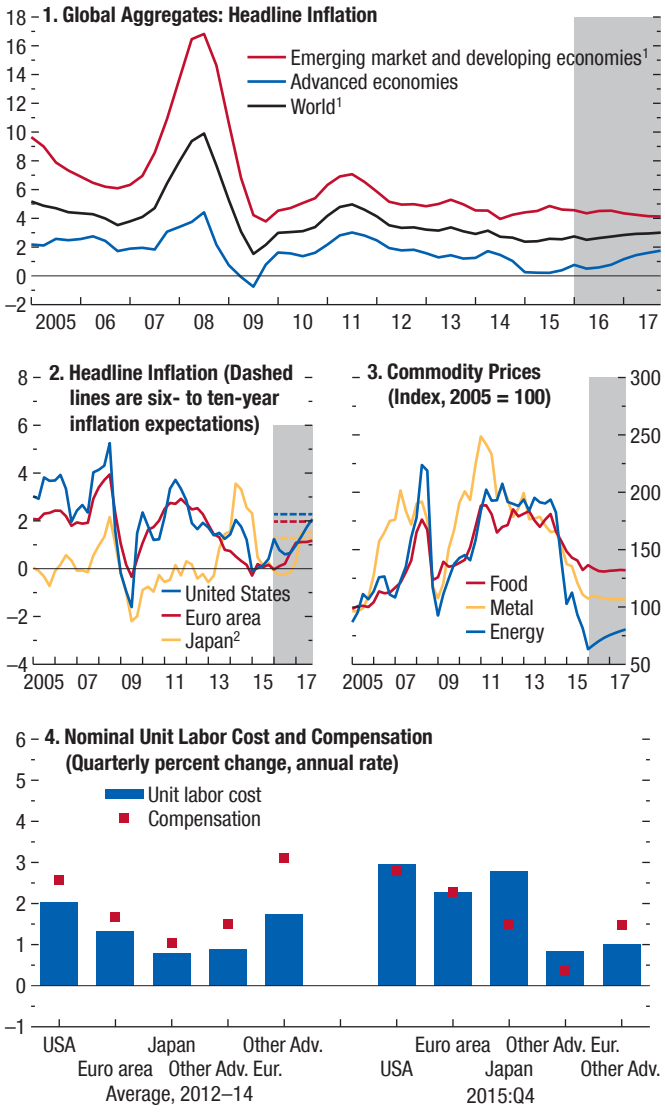
Since February, the currencies of commodity-exporting advanced and emerging market economies have generally rebounded, reflecting a decline in global risk aversion and some recovery in commodity prices (Figure 1.4, red bars). Conversely, the dollar has depreciated by about 1½ percent and the euro by about 1 percent.

The decline in demand for emerging market assets was also reflected in a slowdown in capital inflows, as discussed extensively in Chapter 2. This decline was particularly steep during the second half of 2015, with net sales by foreign investors of portfolio holdings in emerging markets for the first time since the global financial crisis (Figure 1.5). Balance of payments developments in China loom large in explaining the dynamics of aggregate flows to and from emerging markets during this period. Motivated by changing expectations about the renminbi/dollar exchange rate since last summer, Chinese corporations undertook substantial repayments of dollar-denominated external debt (generating negative capital inflows), while Chinese residents increased their acquisitions of foreign assets (boosting capital outflows). With a tightly managed exchange rate, both developments have implied a substantial decline in China's foreign exchange reserves. Across emerging market and developing economies, reserves declined in a number of oil-exporting countries with exchange rate pegs, as sharply lower oil revenues weighed on current account balances.

## Figure 1.2. Global Inflation

*(Year-over-year percent change, unless noted otherwise)*

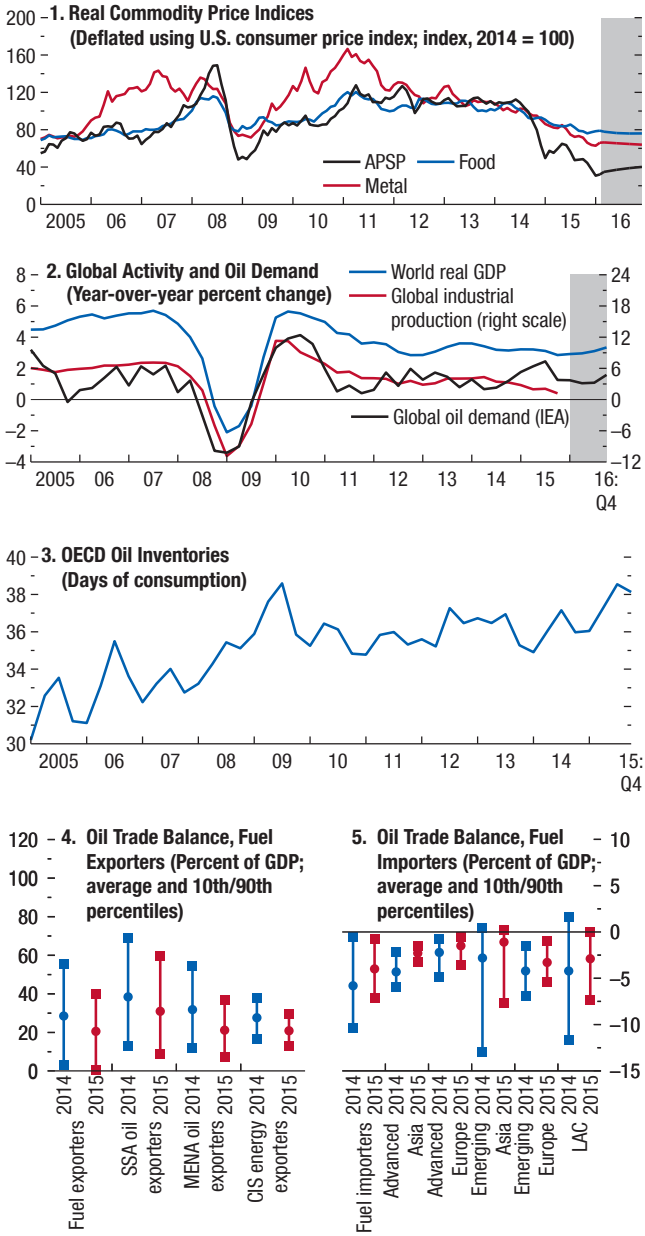
Headline inflation has declined further in advanced economies, mostly reflecting the decline in the price of oil. In emerging market economies, lower commodity prices have also contributed to lowering headline inflation, but sizable currency depreciation has led to offsets on the upside in some economies.




Sources: Consensus Economics; IMF, Primary Commodity Price System; and IMF staff estimates.
Note: Other Adv. = other advanced economies; Other Adv. Eur. = other advanced Europe; USA = United States.
[1]Excludes Venezuela.
[2]In Japan, the increase in inflation in 2014 reflects, to a large extent, the increase in the consumption tax.

## Figure 1.3. Commodity and Oil Markets

In global oil markets, spot prices declined in late 2015 and early 2016. Resilient supply and the weakening in global growth projections were behind the renewed increases in oil inventories and downward pressures on prices.

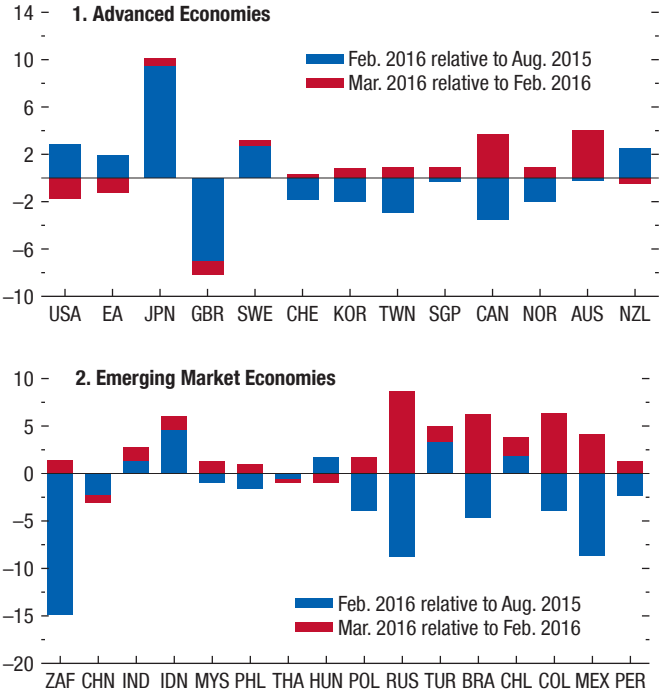



Sources: IMF, Primary Commodity Price System; International Energy Agency (IEA); Organisation for Economic Co-operation and Development (OECD); and IMF staff estimates.
Note: APSP = average petroleum spot price; CIS = Commonwealth of Independent States; LAC = Latin America and the Caribbean; MENA = Middle East and North Africa; SSA = sub-Saharan Africa.

## Figure 1.4. Real Effective Exchange Rate Changes, August 2015–February 2016

*(Percent)*

Between August 2015 and February 2016, the currencies of advanced economies tended to strengthen. Currencies of commodity exporters with floating exchange rates—especially oil-exporting countries—tended to weaken further. Since February, the currencies of commodity-exporting economies have generally rebounded, and the U.S. dollar and euro have weakened.




Source: IMF staff calculations.
Note: EA = euro area. Data labels in the figure use International Organization for Standardization (ISO) country codes.

### *Monetary Policy and Financial Conditions*

Financial market volatility, which had subsided in October–November, increased again in December and especially in early 2016, amid rising global risk aversion, substantial declines in global equity markets, widening of credit spreads, and historically low yields for safe-haven government bonds (Figures 1.6–1.9). These developments were triggered by concerns about lack of policy space in advanced economies to respond to a potential worsening in the outlook, worries about the effects of very low oil prices, and questions about the speed at which China's economy is slowing as well as its authorities' policy intentions.

Since mid-February markets have rallied, recovering most or all of the ground lost earlier this year. Sov-

ereign bond spreads, which had widened noticeably between September 2015 and February 2016 in Latin America—particularly in Brazil—narrowed again in March. Spreads broadly moved sideways in a number of other emerging markets in Asia and Europe and narrowed in Russia.

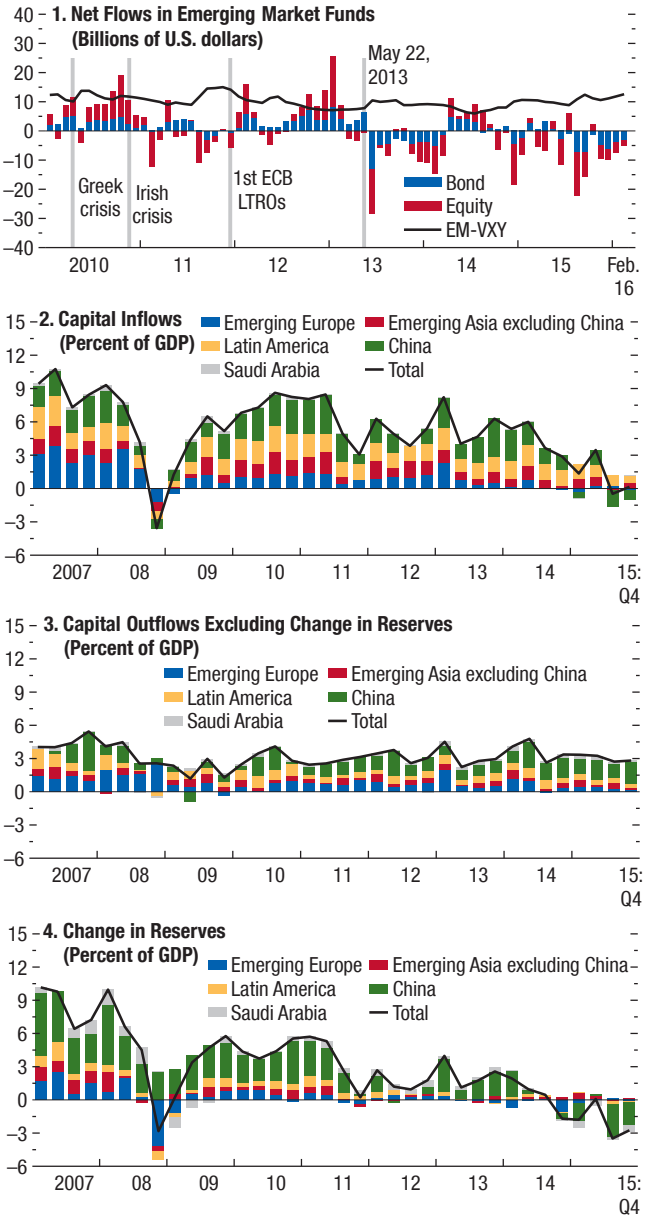
Financial conditions in advanced economies, while remaining accommodative overall, have seen some tightening associated with increasing yields in segments of corporate debt markets. Declining inflation expectations in the euro area are also contributing to tighter financial conditions by pushing up real interest rates. At the same time, long-term government bond yields in Germany, Japan, the United Kingdom, and the United States have declined sharply since September (30 to 60 basis points), reflecting both flight to safety and increased risk aversion, as well as actual and anticipated monetary policy responses to generally weaker inflation and growth expectations. Market turbulence had reflected to an important extent concerns regarding the prospects of financial sectors relating to fears of a persistent softening in global growth and its impact on already-weak profitability, unaddressed debt overhang legacies and changes in the regulatory environment in Europe, exposures to the commodity sector, and persistently low interest rates.

Monetary policy in advanced economies remains very accommodative, but with asymmetric shifts in the policy stance. In December the U.S. Federal Reserve raised policy rates above the zero lower bound for the first time since 2009, and it has communicated that any future policy actions will remain data dependent. On the other hand, the European Central Bank (ECB) announced a package of further easing measures in March, comprising an expansion of its asset purchase program, including purchases of corporate bonds, new longer-term refinancing operations, and a further reduction in all policy rates. And in late January the Bank of Japan introduced a negative interest rate on marginal excess reserves. In the United Kingdom, policy rates remain on hold at 50 basis points, and with a more subdued inflation outlook, expectations of interest rate increases have moved farther into the future.

The monetary policy stance has also moved in different directions across emerging markets. A number of commodity exporters have raised policy rates in response to currency depreciation and associated changes in inflation and inflation expectations (notably Mexico and South Africa, but also Chile, Colombia, and Peru). In contrast, policy rates have been eased in

## Figure 1.5. Emerging Market Economies: Capital Flows

Capital flows to emerging market and developing economies reached their lowest level since the global financial crisis in the second half of 2015. With capital outflows declining less than inflows, and with relatively little change in the aggregate current account balance, the change in reserves turned negative for these economies as a group in the last two quarters of 2015. Chapter 2 examines capital flows to emerging market and developing economies in greater detail.

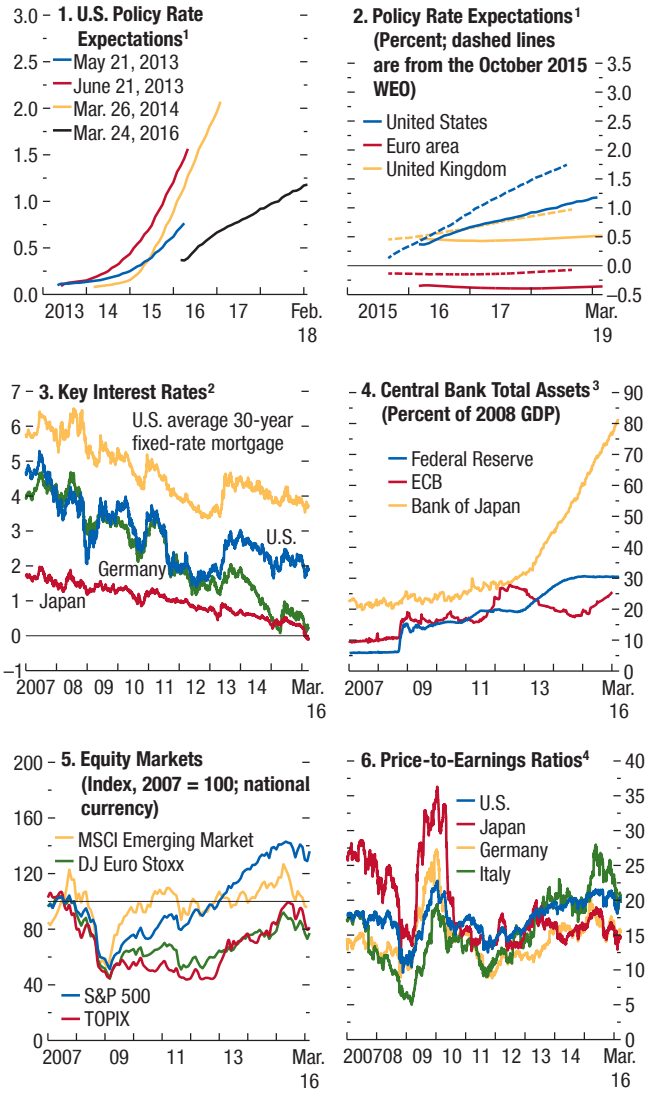



Sources: Bloomberg, L.P.; EPFR Global; Haver Analytics; IMF, *International Financial Statistics;* and IMF staff calculations.
Note: Capital inflows are net purchases of domestic assets by nonresidents. Capital outflows are net purchases of foreign assets by domestic residents. Emerging Asia excluding China comprises India, Indonesia, Malaysia, the Philippines, and Thailand; emerging Europe comprises Poland, Romania, Russia, and Turkey; Latin America comprises Brazil, Chile, Colombia, Mexico, and Peru. ECB = European Central Bank; EM-VXY = J.P. Morgan Emerging Market Volatility Index; LTROs = longer-term refinancing operations.

## Figure 1.6. Advanced Economies: Monetary and Financial Market Conditions

*(Percent, unless noted otherwise)*

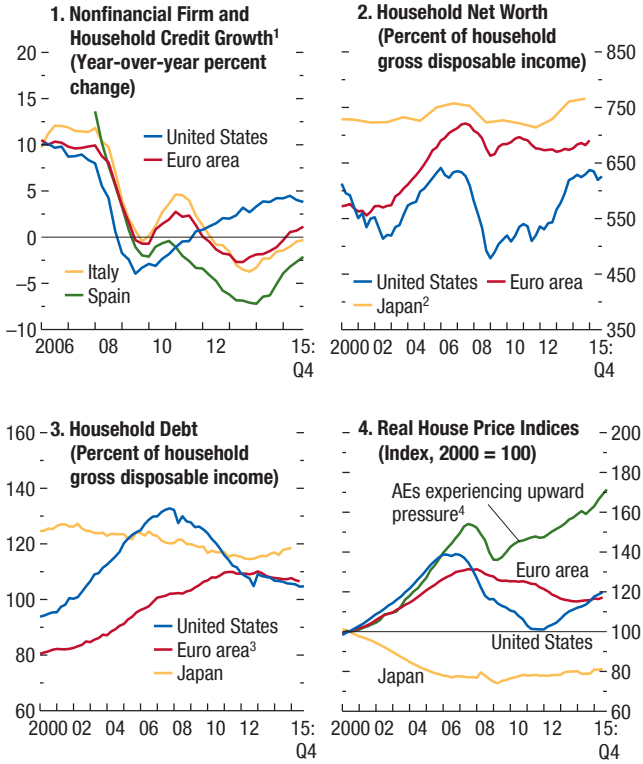
Financial market volatility, which had subsided in October and November, increased again in December and especially in early 2016. Markets have rallied since mid-February, recovering most of the ground lost earlier in the year. Longer-term bond yields generally remain low.




Sources: Bank of Spain; Bloomberg, L.P.; Haver Analytics; Thomson Reuters Datastream; and IMF staff calculations.
Note: DJ = Dow Jones; ECB = European Central Bank; MSCI = Morgan Stanley Capital International; S&P = Standard & Poor's; TOPIX = Tokyo Stock Price Index.
[1]Expectations are based on the federal funds rate futures for the United States, the sterling overnight interbank average rate for the United Kingdom, and the euro interbank offered forward rate for the euro area; updated March 24, 2016.
[2]Interest rates are 10-year government bond yields, unless noted otherwise. Data are through March 28, 2016.
[3]Data are through March 25, 2016. ECB calculations are based on the Eurosystem's weekly financial statement.
[4]Data are through March 24, 2016.

## Figure 1.7. Advanced Economies: Credit, House Prices, and Balance Sheets

With accommodative monetary conditions in the euro area, credit growth has turned positive. In the United States, household net worth has broadly stabilized at a higher level, with a small downtick at the end of 2015 due to lower equity valuations. U.S. household debt continues to decline as a share of gross disposable income.




Sources: Bank of England; Bank of Spain; Bloomberg, L.P.; European Central Bank (ECB); Haver Analytics; Organisation for Economic Co-operation and Development; and IMF staff calculations.
[1]Flow-of-funds data are used for the euro area, Spain, and the United States. Italian bank loans to Italian residents are corrected for securitizations.
[2]Interpolated from annual net worth as a percentage of disposable income.
[3]Includes subsector employers (including self-employed workers).
[4]Upward-pressure countries are those with a residential real estate vulnerability index above the median for advanced economies (AEs): Australia, Austria, Belgium, Canada, France, Hong Kong SAR, Israel, Luxembourg, New Zealand, Norway, Portugal, Spain, Sweden, and the United Kingdom.

India and more recently in Indonesia, while reserve requirements were cut in China.

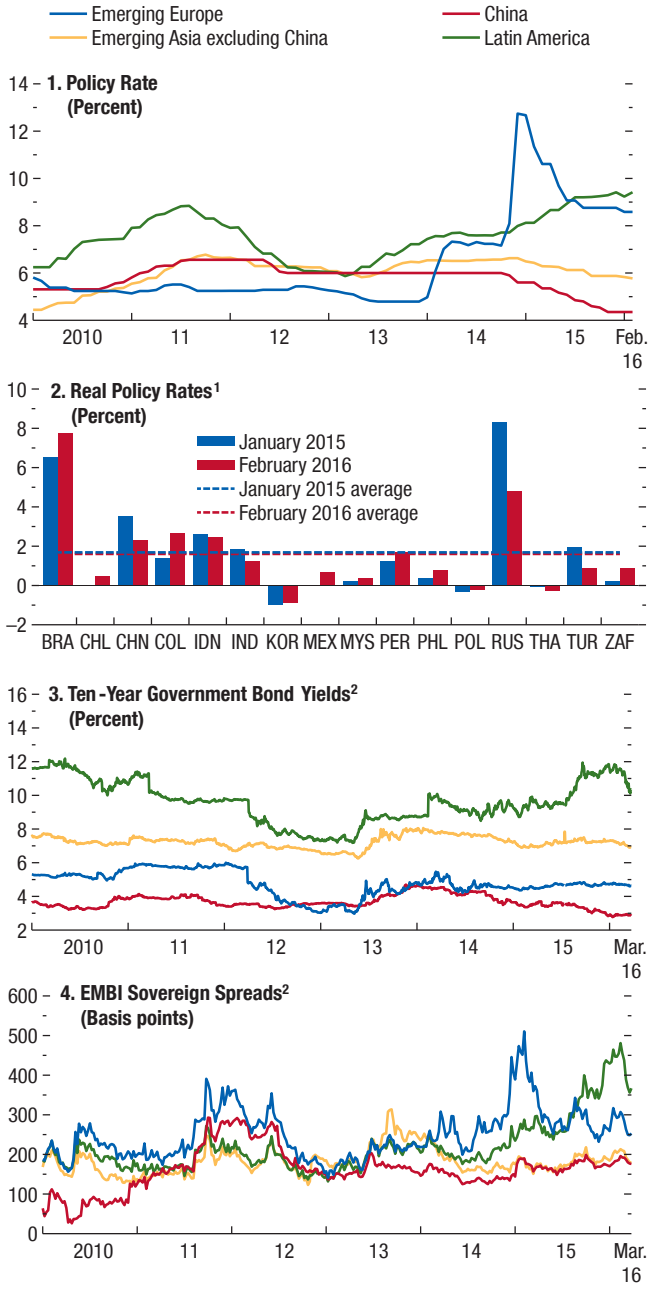
## The Macroeconomic Implications of Global Realignments

### *Trade Spillovers from China*

The current slowdown in China's growth has been driven mainly by investment and exports. The weakening in investment reflects a correction after an extended period of very rapid growth. Given China's

## Figure 1.8. Emerging Market Economies: Interest Rates

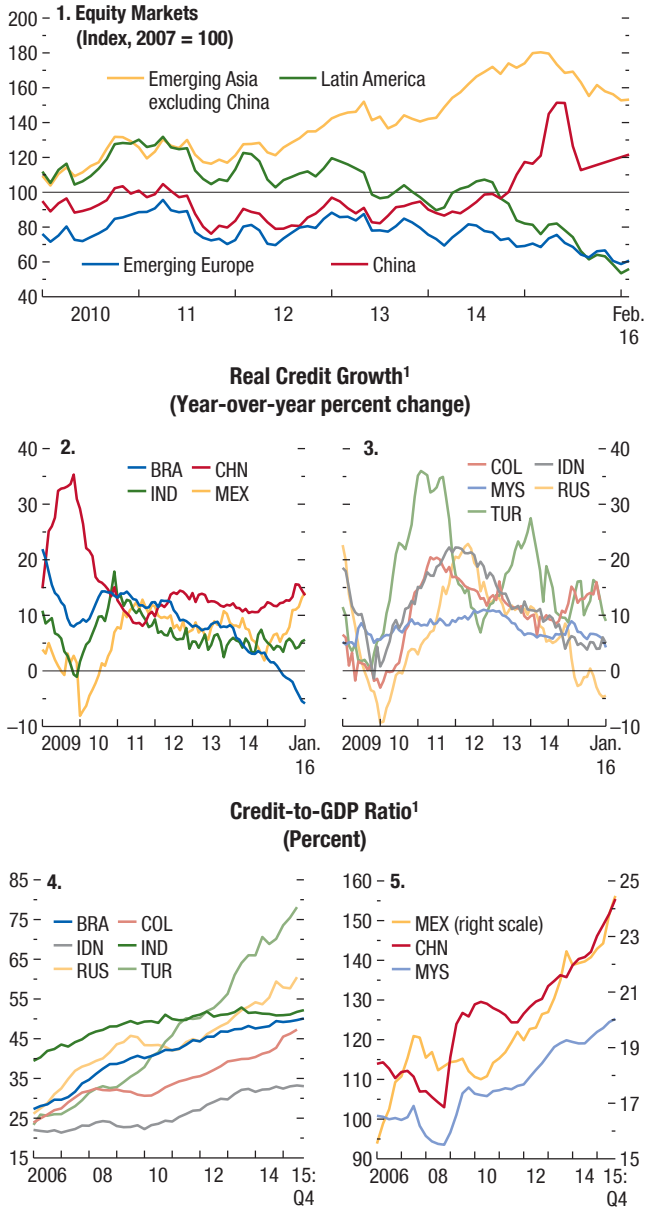
Financial conditions in emerging market economies have continued to tighten in the face of these countries' diminished growth prospects, but developments across countries have been quite differentiated. Real policy rates are generally low.




Sources: Bloomberg, L.P.; EPFR Global; Haver Analytics; IMF, *International Financial Statistics;* and IMF staff calculations.
Note: Emerging Asia excluding China comprises India, Indonesia, Malaysia, the Philippines, and Thailand; emerging Europe comprises Poland, Romania (capital inflows only), Russia, and Turkey; Latin America comprises Brazil, Chile, Colombia, Mexico, and Peru. EMBI = J.P. Morgan Emerging Market Bond Index. Data labels in the figure use International Organization for Standardization (ISO) country codes.
[1]Deflated by two-year-ahead *World Economic Outlook* inflation projections.
[2]Data are through March 25, 2016.

## Figure 1.9. Emerging Market Economies: Equity Markets and Credit

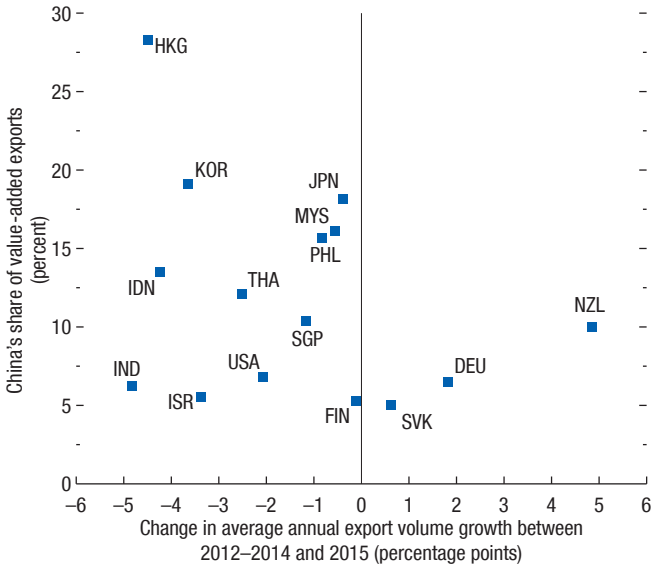
Equity prices in most emerging market economies weakened in late 2015 and early 2016. Real credit growth has continued to decelerate in some emerging market economies but has picked up again in others. The credit-to-GDP ratio continues to increase in many emerging market economies.




Sources: Haver Analytics; IMF, International Financial Statistics (IFS) database; and IMF staff calculations.
Note: Data labels in the figure use International Organization for Standardization (ISO) country codes.
[1]Credit is other depository corporations' claims on the private sector (from IFS), except in the case of Brazil, for which private sector credit is from the Monetary Policy and Financial System Credit Operations published by Banco Central do Brasil.

**Figure 1.10. China's Share of Value-Added Exports and Change in Export Volume Growth[1]**

Countries where China accounts for a relatively high share of value-added exports tended to experience weaker export growth in 2015, but with some exceptions.




Sources: IMF, *Direction of Trade Statistics*;Organisation for Economic Co-operation and Development and World Trade Organization, Trade in Value Added database; and IMF staff calculations.
Note: China's share of value-added exports is calculated as value added absorbed in China divided by total foreign-absorbed value added. Data labels in the figure use International Organization forStandardization (ISO) country codes.
[1]Data for value-added exports are from the latest year available, as of 2011. Commodity exporters are excluded.

size, openness, and high investment rate and the high import content of its investment and exports, the slowdown has entailed sizable global spillovers through trade channels. These trade effects are both direct (reduced demand for trading partners' products) and indirect (impact on world prices for specific goods that China imports—for example, commodities), affecting other countries' exchange rates and asset markets.

- **Trade**—China is one of the main (top 10) trading partners of more than 100 economies that account for about 80 percent of world GDP. Given its key role in global and regional supply chains—importing intermediate and capital goods and exporting processed goods—China can also be a conduit for shocks that originate in other countries. Furthermore, over the past decade, China's role as a source of final demand has increased markedly: China's imports of final capital goods and consumption goods from Europe and the United States are material. IMF staff analysis suggests that a 1 percentage point investment-driven drop in China's output growth would reduce Group of Twenty (G20) growth by ¼ percentage point. Indeed, Figure 1.10 suggests that among countries in which China accounts for a large share of exports of value added, those with the highest shares tended to experience larger declines of export growth in 2015 relative to 2012–14.
- **Commodities**—China is a major importer across a range of commodities, especially metals, for which it accounted for about 40 percent of total global demand in 2014. China's investment slowdown has had a significant impact on the demand for and prices of those commodities closely related to investment activities—indeed, metal prices have fallen steadily since early 2011 (by almost 60 percent on average). This has generated substantial excess capacity in mining sectors and forced exporters to adjust to lower revenues (see Chapter 2 of the October 2015 WEO). In contrast, China's demand for oil remained strong in 2015, also reflecting the accumulation of inventories.
- **Manufacturing**—Excess capacity in some segments of the Chinese manufacturing sector can contribute to lowering the prices of specific manufactured products (for example, steel) and hence affect China's competitors, reducing their profits and possibly investment rates.

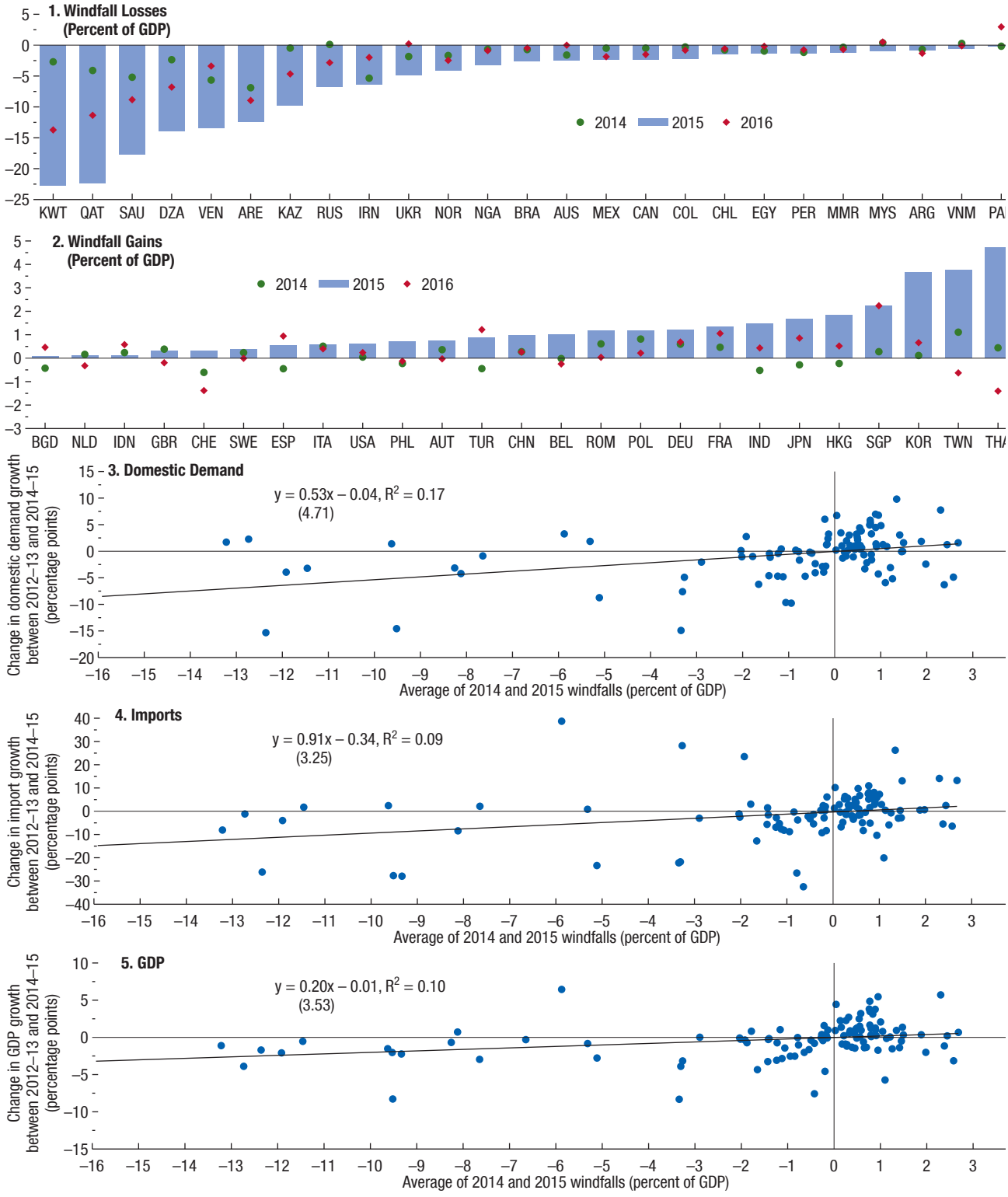
### *Commodity Price Declines and Disposable Income*

The recent further declines in prices of commodities, especially oil, have compounded sizable shifts in international relative prices since 2011. These shifts have generated sharp changes in disposable income across countries. A simple proxy for these changes can be constructed by calculating the impact of variations in terms of trade on a country's disposable income.[2] As shown in panel 1 of Figure 1.11, the steep declines in oil prices during the second half of 2014 and late 2015 triggered large income losses for oil-exporting countries and gains for oil-importing countries. Relative to GDP, the windfall losses for oil-exporting countries

[2]The proportional effect on disposable income for year $t$ is calculated as the percentage change in export prices between years $t$ and $t$–1 multiplied by nominal exports in year $t$–1, minus the percentage change in import prices between years $t$ and $t$–1 multiplied by nominal imports in year $t$–1, with the preceding difference divided by nominal GDP in year $t$–1.

## Figure 1.11. Terms-of-Trade Windfall Gains and Losses, Domestic Demand, Imports, and Output

The recent declines in commodity prices have generated sharp changes in disposable income across countries. Domestic demand has tended to strengthen in countries with terms-of-trade gains and weaken in those with losses. The responses of real output have typically been smaller, as net exports have tended to improve in countries with losses and weaken in those with gains, in some cases facilitated by exchange rate adjustments.




Source: IMF staff estimates.

Note: See note 2 in the chapter for the definition of windfall gains and losses. The change in growth is calculated as the difference between the average growth rate in 2014–15 and the average growth rate in 2012–13. The sample includes countries with populations above 1 million; the bottom 10 percent of countries (by GDP level, adding up to 0.5 percent of global output) are excluded. The numbers in parentheses in the equations represent *t*-statistics. Data labels use International Organization for Standardization (ISO) country codes.

were larger and more concentrated than the windfall benefits for oil-importing countries.[3]

These changes in disposable income have had sizable macroeconomic repercussions. Domestic demand has tended to strengthen in countries with terms-of-trade gains and weaken among those with losses, with dramatic contractions among some of the hardest hit (Figure 1.11, panels 2–4). On average, a 1 percentage point loss in income induced by weaker terms of trade subtracted about 0.6 percentage point from domestic demand growth in 2014–15 relative to 2012–13. Among the components of domestic demand, investment responded particularly strongly, as discussed in the following section. The response of real imports was larger than that of domestic demand: for instance, a country experiencing a windfall loss of 1 percent of GDP saw, on average, a 1 percentage point decline in real import growth. For countries experiencing terms-of-trade losses, weaker imports—together with a mild but positive response in export growth—cushioned the impact of the terms-of-trade decline on domestic output: for each percentage point loss in income, real GDP growth weakened on average by about 0.22 percentage point (Figure 1.11, panel 5).

### *Investment in Energy and Mining*

One important channel through which changes in commodity prices affect aggregate demand is through their impact on investment, particularly in energy and mining, which are very capital-intensive activities. Investment was high during the commodity price boom but has declined sharply in recent years. For instance, estimates of investment spending in the oil and gas sector in major energy exporters indicate a fall of 24 percent in 2015 in dollar terms relative to a year earlier (Figure 1.12). The decline corresponds to 0.28 percent of 2014 global GDP measured at market exchange rates. While this may overstate the decline in real terms in light of the appreciation of the dollar (which reduces the dollar value of capital spending undertaken in different currencies), the direct drag on 2015 global GDP growth is still sizable.

As shown in the second panel of Figure 1.12, investment weakness appears to have extended to exporters of extractive products more broadly; countries where energy and mining products account for a larger share of GDP experienced large declines in domestic investment in 2015 relative to the previous three years. In turn, the weakness in investment has contributed to weakness in global manufacturing activity and trade.

### *Slowdown in Global Investment and Trade*

Figure 1.13 provides further evidence on the global slowdown in investment and shows how declining real investment growth is mirrored by weakness in real import growth.[4] Trade growth was particularly weak in relation to GDP growth in 2015 in emerging market and developing economies (Figure 1.13, panel 3). Box 1.1 explores in more detail the weakness in trade.

The discussion earlier in this section suggests that the slowdown and rebalancing in China plays an important role in explaining these trends, given China's large share of global trade (more than 10 percent) and especially global investment (about 25 percent). Indeed, China's import growth declined by about 4 percentage points and its investment growth by about 2 percentage points between 2014 and 2015. But declining investment and imports in some commodity exporters also played a major role. Brazil, Russia, and a small group of other commodity-exporting countries facing macroeconomic difficulties, altogether accounting for about 5 percent of global trade and investment in 2014, experienced dramatic contractions in investment during 2015 of close to 20 percent and commensurate declines in imports. These developments reflect, in addition to the weakness in commodity-related investment, the significant exchange rate depreciation in many of these countries and the impact of sanctions in Russia, as well as the high sensitivity of capital spending and imports to aggregate demand during periods of economic turmoil. For the remaining emerging market and developing economies, the decline in trade and investment growth was more muted and broadly in line with the slowdown in aggregate economic activity (Figure 1.13, panel 4).

### *Global Implications of Lower Oil Prices*

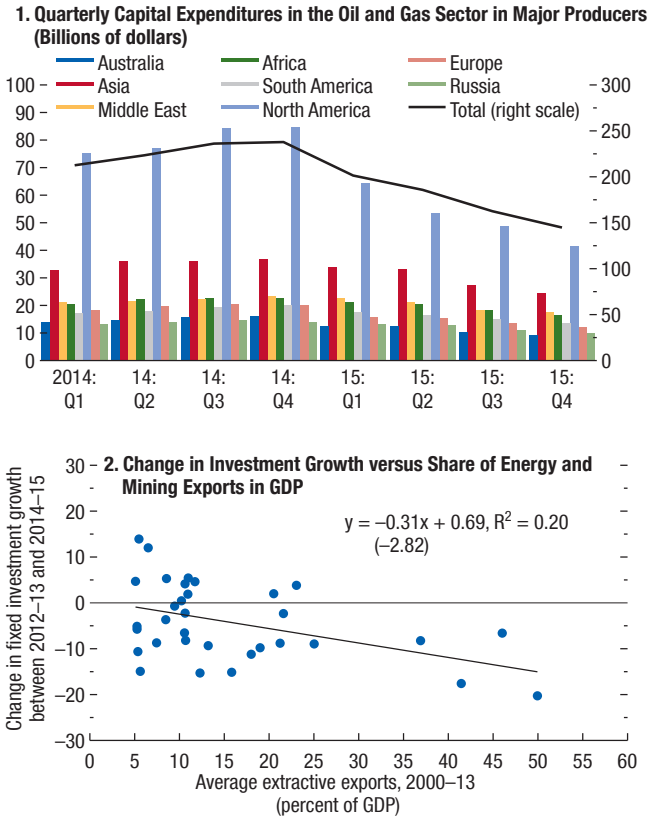
Scenarios outlining the global impact of a supply-driven oil price decline presented in the April 2015 WEO indicate that a positive oil supply shock should

[3]Emerging market and developing economies that are fuel exporters accounted for about 12 percent of global GDP measured at purchasing power parity in 2014–15.

[4]Indeed, the correlation between the two series over the past two decades is close to 0.9 for the various country groupings.

## Figure 1.12. Energy and Mining Investment

Capital investment in the energy and mining sectors contracted sharply in 2015 amid weaker commodity prices. Countries where energy and mining exports accounted for a larger share of GDP tended to experience weaker investment growth during 2014–15.

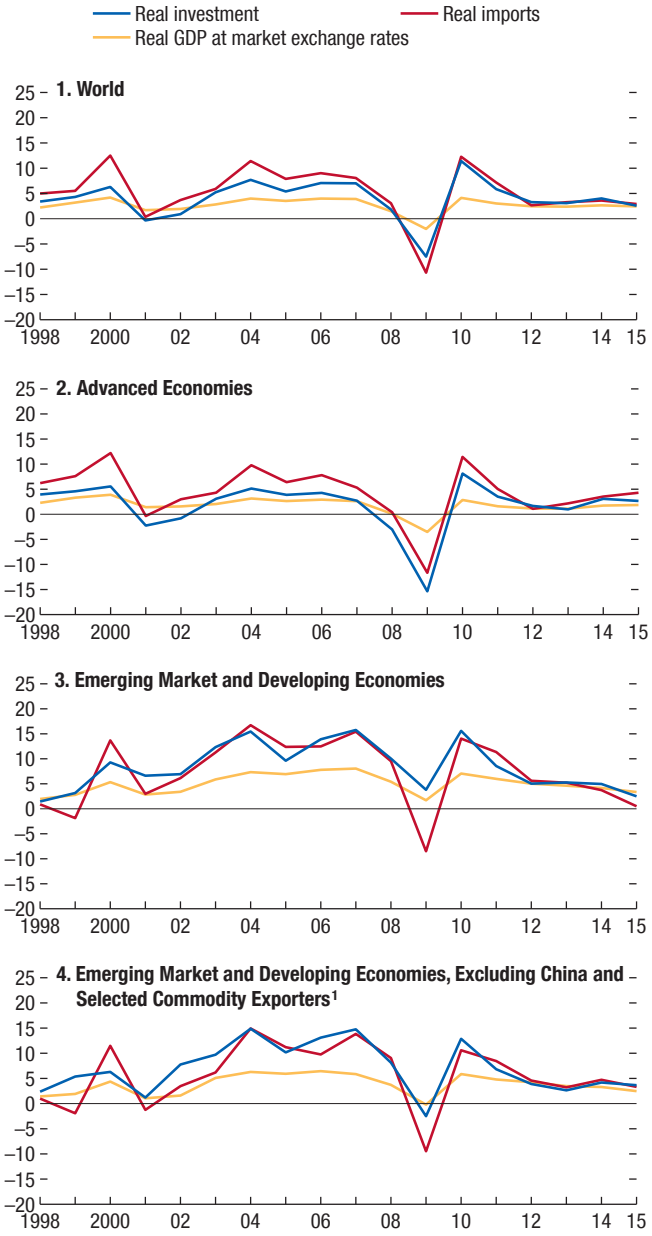



Sources: Rystad Energy; and IMF staff estimates.
Note: In panel 2, the change in fixed investment growth is calculated as the difference between the average growth rate in 2014–15 and the average growth rate in 2012–13. The sample in panel 2 includes countries with populations above 1 million and with energy and mining exports above 5 percent of GDP. The numbers in parentheses in the equations represent *t*-statistics.

## Figure 1.13. Global Investment and Trade Slowdown

*(Percent change)*

After bouncing back following the global financial crisis, global trade and investment have slowed notably, both in absolute terms and in relation to world GDP growth. This slowdown has been more pronounced in emerging market and developing economies. The slowdown and rebalancing in China play an important role in explaining these trends, but so do declining investment and imports in some commodity exporters facing macroeconomic difficulties. For the remainder of emerging market and developing economies, the decline in trade and investment growth is more muted.




Source: IMF staff calculations.
[1]Selected commodity exporters = Angola, Bahrain, Belarus, Brazil, Ecuador, Kazakhstan, Russia, Ukraine, Venezuela.

be expansionary for the global economy, primarily reflecting a higher marginal propensity to consume in countries receiving the windfall from oil compared to oil-exporting countries, as well as a boost to aggregate supply stemming from the decline in the cost of an input to production. The disappointing performance of the global economy over the past year has led some observers to question whether an oil price decline is truly "a shot in the arm" for world growth. Part of the explanation is that demand shocks have slowed global economic activity, while also contributing to the decline in oil prices. But at the same time, a number of factors have muted the positive impact of a

supply-driven oil price decline—especially for the most recent period.

The first—and arguably the most important—of these factors concerns the ability of oil-exporting countries to smooth the negative shock, reducing expenditure by less than the amount of the loss in oil revenues. Expectations that oil prices may stay low for a protracted period of time reinforce pressures on oil-exporting countries to adjust spending downward. Furthermore, with oil prices already much lower when the latest decline started in the second half of 2015, a number of oil-exporting countries find themselves in much more difficult macroeconomic situations and with much tighter external financing conditions, circumstances that limit their ability to avoid sharp expenditure cuts. Indeed, downward revisions to domestic demand in fuel-exporting emerging market and developing economies have been sizable: the level of demand in 2015 was some 9 percentage points lower than in the April 2014 WEO forecasts, with the difference now expected to widen to 15 percentage points in 2016.

A second factor is the limited extent to which oil importers' private consumption levels have risen in response to their higher disposable incomes. While private consumption growth has picked up in most oil-importing advanced economies, it has done so less strongly than previous episodes of oil price declines would have suggested, possibly owing to continued deleveraging in some of these economies. For some oil-importing emerging market economies, the expansionary effects of lower oil prices have also been dampened by a low pass-through of global spot oil price changes to retail prices, owing to a concomitant reduction in subsidies in some cases and increased taxation, higher profit margins for refiners or distributors, or the use of forward contracts in others.

A third factor is the impact of oil price declines on capital expenditure. Even in countries that are commodity importers, the sharp decline in capital expenditure in the energy and mining sector worldwide has taken a toll on aggregate investment. This impact may in part reflect the fact that, at least in some advanced economies, such as the United States, firms operating in the energy sector were increasing leverage (with outlays exceeding cash flow) prior to the price decline. The redistribution of resources away from these firms—and the associated tightening of their access to credit—has led them to cut spending substantially and thereby exert a drag on aggregate demand.

A fourth factor is that falling oil prices coincide with a period of slow economic growth characterized by exceptionally low inflation and policy interest rates in oil-importing advanced economies. Hence, major central banks have little or no capacity to lower their policy interest rates further to support growth and combat deflationary pressures, which have been exacerbated by a falling oil price. But when central banks cannot lower the policy interest rate, even a decline in inflation owing to the positive supply effect of lower production costs raises the real rate of interest, with negative effects on demand.

The analysis presented in Scenario Box 1 pulls some of these threads together. In the scenario, the oil price decline reflects mostly higher oil supply, but also weaker global demand (consistent with weaker actual and expected global growth since the initial decline in prices in the second half of 2014) and a trend increase in energy efficiency. In addition, the scenario assumes an increase in financial distress in fuel exporters as oil prices decline, which raises their external borrowing costs.

## The Forecast

### Policy Assumptions

After a period of consolidation, fiscal policy is projected to be neutral in advanced economies as a whole in 2016—somewhat expansionary in some countries, such as Canada, Germany, Italy, and the United States, and somewhat contractionary in Japan, Spain, and the United Kingdom (Figure 1.14). The projected neutral policy stance in emerging markets masks a substantial diversity across countries and regions but for the group as a whole is tighter than projected in the October 2015 WEO, to an important extent reflecting the sharper fiscal adjustment planned in oil-exporting countries (see the April 2016 *Fiscal Monitor*).

Turning to monetary policy, the forecast is based on the assumption that the policy interest rate in the United States increases gradually but steadily (Figure 1.6). Short-term interest rates stay negative in the euro area through part of 2017 and close to zero (in effective terms) in Japan through 2018. Monetary policy stances across emerging market economies remain divergent, reflecting the variety in circumstances.

## Scenario Box 1. The Estimated Impact of Lower Oil Prices

*This scenario uses the IMF's G20 Model (G20MOD) to estimate the net macroeconomic impact of the decline in oil prices since 2014 based on estimates of the three components underlying that decline: higher oil supply, expectations of weaker global demand independent of oil prices, and improved energy efficiency. The latter two factors imply lower demand for oil. The model-based estimates indicate that the decline in oil prices associated with higher oil supply has a positive impact on global GDP. However, this positive impact is more than offset by the weakness in global economic activity, which underpins the demand-driven component of the oil price decline.*

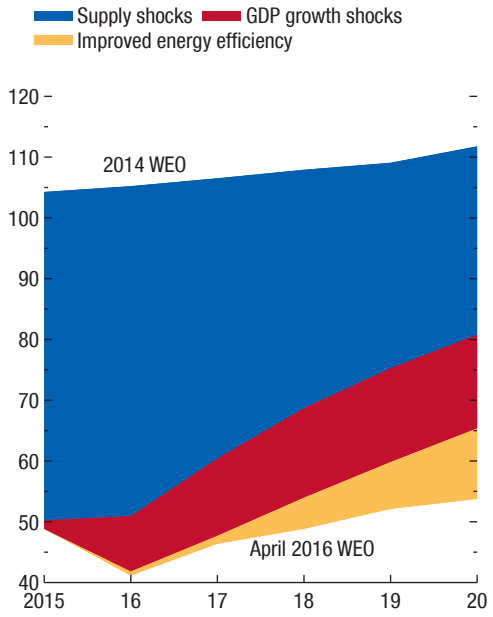
### *Factors Driving the Decline in Oil Prices*

Oil prices fell by roughly 50 percent in 2015 relative to 2014 (in annual average terms). Prices in futures markets suggest a further 10 percent average decline in 2016 and only a very gradual recovery afterward. As detailed by Arezki, Toscani, and van der Ploeg (forthcoming) and shown in Scenario Figure 1, the decline in current and expected oil prices relative to the path expected at the time of the April 2014 WEO can be decomposed into three key factors: increases in oil supply, weaker global demand, and improved energy efficiency. This decomposition is done using historical and forecast data on oil supply from the International Energy Agency's (IEA's) *World Energy Outlook* and the oil model described by Benes and others (2015). As Scenario Figure 1 shows, higher oil supply is estimated to account for almost all the decline in oil prices in 2015 and the major, but diminishing, share in the decline in oil prices that futures markets suggest will persist for an extended period (blue-shaded area). Weaker actual and expected global demand, while accounting for very little of the decline in 2015, accounts for a growing share thereafter (red-shaded area). Improved energy efficiency is projected to account for a small, but increasing, share of the decline from 2016 onward (yellow-shaded area).

### *Estimating the Net Global Impact*

To estimate the net impact of the decline in oil prices on global GDP, these three factors are combined in their respective proportions in G20MOD. In addition, the scenario also estimates the potential impact of the fiscal pressures and financial market stress that lower oil prices have caused in key oil-exporting countries and regions. The scenario presented in Scenario Figure 2 thus includes four layers: higher oil supply; weaker global demand; improved energy efficiency; and increased fiscal and financial stress in key oil-exporting countries.

**Scenario Figure 1. Decomposition of the Change in Oil Prices: 2014 *World Economic Outlook* versus April 2016 *World Economic Outlook***
*(2013 U.S. dollars)*



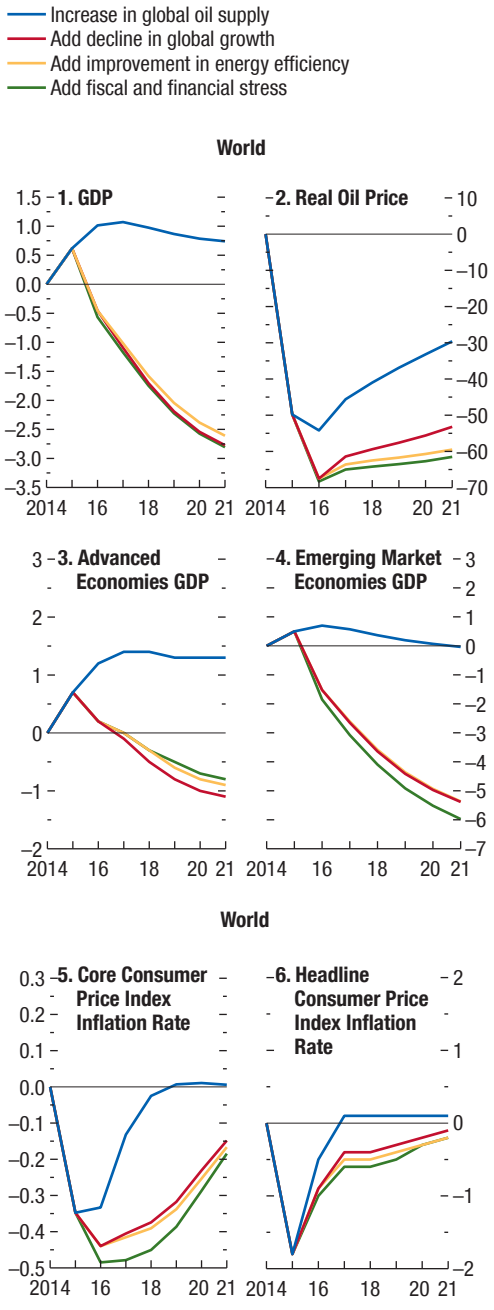

Source: IMF staff calculations.

### *Higher Oil Supply*

The first layer (blue line in the figure) is the marginal impact of the reduction in oil prices driven solely by increases in the global supply of oil. This increase in supply reduces oil prices by roughly 50 percent in 2015 and 2016, and then gradually moderates, so that by 2021 oil prices are about 30 percent below the price expected in 2014. This decline in oil prices, driven by the supply increase, has a positive impact on global GDP that peaks at about 1 percent in 2016 and 2017 before it gradually moderates to about ¾ percent by 2021 as oil prices recover. Advanced economies, which are less dependent on oil exports, benefit the most, with a sustained improvement in GDP of more than 1 percent. Emerging market economies as a group, where more oil production is concentrated, benefit in the near term, but their combined GDP

## Scenario Box 1. The Estimated Impact of Lower Oil Prices *(continued)*

**Scenario Figure 2. Oil Scenario**
*(Percent difference)*




Source: IMF staff estimates.

returns to baseline by 2021 as the adjustment to the reduction in oil sector revenue is completed.

### *Weaker Global Demand*

The second layer (red line) adds the decline in global aggregate demand that is required to account for the estimated share of the fall in oil prices presented in the decomposition in Figure 1. That is, this layer captures the weakness in global GDP growth that is independent of oil prices. Consistent with the evolution of WEO forecasts since 2014, the weakening in global demand is more heavily concentrated in emerging markets. The addition of the weakening in global demand results in global GDP that is now almost 3 percent below baseline by 2021. Hence adding the demand layer more than offsets the positive impact on advanced economies' GDP coming from the supply-induced decline in oil prices. For emerging market economies, output is well below baseline after the demand component is added.

### *Improved Energy Efficiency*

The third layer (yellow line) adds the forecast improvement in energy efficiency, which is essentially a decline in the demand for oil that is independent of global GDP growth, leading to lower oil prices. This efficiency-related decline in the price of oil has a small positive impact on global GDP, with the benefits accruing largely to advanced economies.

### *Additional Stress in Key Oil-Exporting Countries*

The final layer (green line) adds the additional fiscal and financial stress in key oil-exporting countries that could arise from the collapse in their oil export revenues. Although fiscal policy in oil-exporting countries adjusts endogenously to the worsening in revenue, the adjustment in the baseline version of the model takes place via reduced transfers to households, and these measures do not have large multiplier effects. However, given the magnitude of the fiscal adjustment in countries like Russia, Saudi Arabia, and other oil-exporting countries, public expenditure may also need to bear some of the burden. Hence it is assumed that public consumption and investment also need to be cut to maintain fiscal sustainability. In addition, it is assumed that risk premiums rise in a number of oil exporters with lower net external assets, by 100 basis points in 2016 and 2017. The result is a further reduction in global GDP of roughly ¼ percent, concentrated in emerging market economies.

## Other Assumptions

Global financial conditions are assumed to remain broadly accommodative, but with some segments—notably commodities and related industries and oil-exporting countries—facing tighter financing conditions. The process of monetary policy normalization in the United States is assumed to proceed smoothly, without sharp movements in long-term interest rates. The tightening of financial conditions for some emerging market economies over the past few months, with rising interest rate spreads and declining equity prices, is expected to persist. Oil prices are projected to increase gradually over the forecast horizon, from an average of about $35 a barrel in 2016 to $41 a barrel in 2017. In contrast, nonfuel commodity prices are expected to stabilize around recent levels. Geopolitical tensions are assumed to stay elevated in 2016, with the situation in Russia and Ukraine remaining difficult and strife continuing in some countries in the Middle East. These tensions are generally assumed to ease, allowing for a gradual recovery in the most severely affected economies in 2017 and beyond.

## Global Outlook for 2016 and 2017

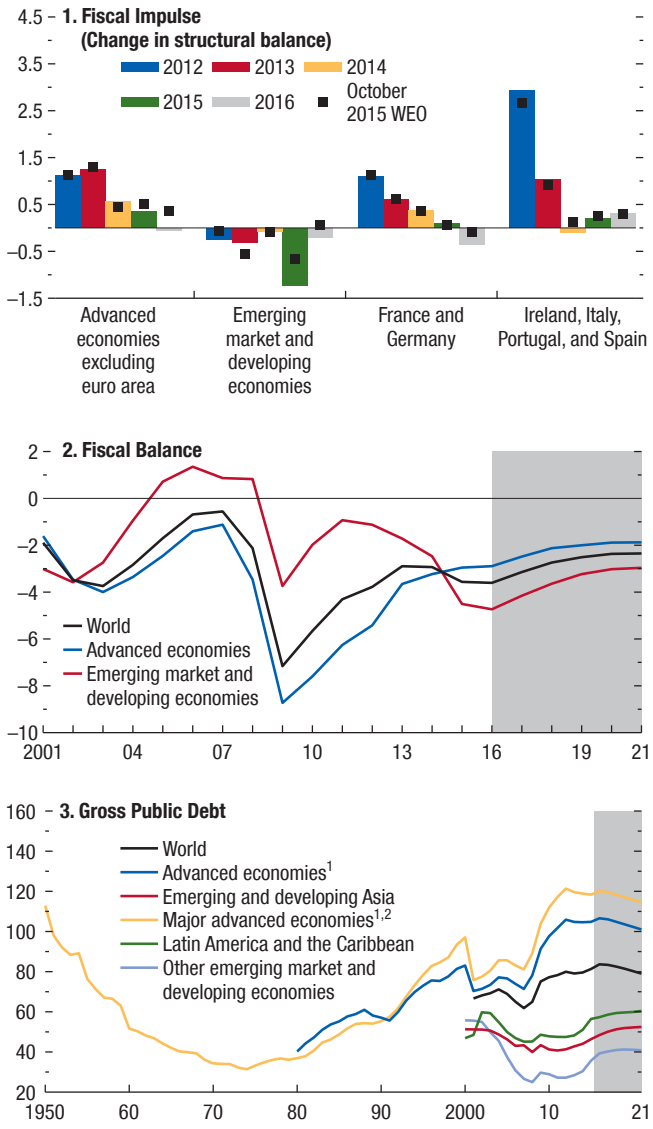
Global output is estimated to have grown by 3.1 percent in 2015, with 1.9 percent growth for advanced economies and 4.0 percent growth for emerging market and developing economies. Global growth is projected to remain modest in 2016, at 3.2 percent, before picking up to 3.5 percent in 2017 (Table 1.1).

Emerging market and developing economies will still account for the lion's share of world growth in 2016, yet their growth rate is projected to increase only modestly relative to 2015, remaining 2 percentage points below the average of the past decade. This growth projection reflects a combination of factors: weakness in oil-exporting countries; a moderate slowdown in China (0.4 percentage point), where growth continues to shift away from manufacturing and investment; and a still-weak outlook for exporters of non-oil commodities, including in Latin America, following further price declines. Oil-importing emerging market economies are benefiting from terms-of-trade gains but in some instances are facing tighter financing conditions and weakness in external demand, which counter the positive terms-of-trade impact on domestic demand and growth. The modest acceleration of growth in advanced economies to a large extent reflects support from lower energy prices (Figure 1.3) and

### Figure 1.14. Fiscal Policies

*(Percent of GDP, unless noted otherwise)*

After a period of consolidation, fiscal policy is projected to be neutral in 2016 in advanced economies. The projected broadly neutral fiscal policy stance inemerging market economies masks a substantial diversity across countries and regions.




Source: IMF staff estimates.
[1]Data through 2000 exclude the United States.
[2]Canada, France, Germany, Italy, Japan, United Kingdom, United States.

accommodative monetary policies, notwithstanding the expected gradual Federal Reserve tightening in the United States.

The projected pickup in growth in 2017, in turn, reflects stronger performance in emerging market economies. In particular, growth in countries experiencing severe macroeconomic conditions in 2015–16 (including Brazil, Russia, and some countries in Latin America and in the Middle East), while remaining weak or negative, is projected to rise, with a return to positive growth in both Latin America and the CIS and a sizable pickup in growth in sub-Saharan Africa. These developments more than offset the projected continuation of the slowdown in China.

Among advanced economies, growth is again projected to increase marginally, as the projected decline in growth in Japan due to the planned consumption tax increase is more than offset by slightly stronger performance in most other advanced economies.

The outlook is weaker than that in the January 2016 *WEO Update* for both advanced economies and emerging markets. Relative to the October 2015 WEO, global growth has been revised downward by 0.4 percentage point in 2016 and 0.3 percentage point in 2017.

## Global Outlook for the Medium Term

Global growth is projected to increase further beyond 2017, to just below 4 percent by the end of the forecast horizon in 2021, reflecting a further pickup in growth in emerging market and developing economies. This outcome relies on a number of important assumptions, which—as discussed in the following section—are subject to sizable downside risks:

- A gradual normalization of conditions in several economies currently under stress
- A successful rebalancing of China's economy, with trend growth rates that—while lower than those of the past two decades—remain high
- A pickup in activity in commodity exporters, albeit with growth rates more modest than in the past
- Resilient growth in other emerging market and developing economies

In this context, the gradual increase in the global weight of fast-growing countries such as China and India also plays a role in boosting global growth. Growth in advanced economies is projected to remain at about 2 percent as output gaps close and then slow owing to diminished growth in the labor force as populations continue to age.

## Economic Outlook for Individual Countries and Regions

- Growth is projected to continue in the *United States* at a moderate pace, supported by strengthening balance sheets, no further fiscal drag in 2016, and an improving housing market. These forces are expected to offset the drag to net exports coming from the strengthening of the dollar and slower growth in trading partners, the additional decline in energy investment, weaker manufacturing, and tighter domestic financial conditions for some sectors of the economy (for example, oil and gas and related industries). As a result, growth is projected to level off at 2.4 percent in 2016, with a modest uptick in 2017. Longer-term growth prospects are weaker, with potential growth estimated to be only about 2 percent, weighed down by an aging population and low total factor productivity growth.
- The modest *euro area* recovery is projected to continue in 2016–17, with weakening external demand outweighed by the favorable effects of lower energy prices, a modest fiscal expansion, and supportive financial conditions. Potential growth is expected to remain weak, as a result of crisis legacies (high private and public debt, low investment, and eroding skills due to high long-term unemployment), aging effects, and slow total factor productivity growth. Output in the euro area is expected to grow at about 1.5 percent in 2016 and 1.6 percent in 2017 and remain around 1.5 percent in the medium term. Growth is expected to increase modestly in *Germany* (to 1.6 percent by 2017), *France* (to 1.1 percent in 2016 and 1.3 percent in 2017), and *Italy* (to 1 percent in 2016 and 1.1 percent in 2017). Growth in *Spain* is projected to soften (to 2.6 percent in 2016 and 2.3 percent in 2017) while remaining above the euro area average. Activity is expected to decelerate in *Portugal* (to 1.4 percent in 2016 and 1.3 percent in 2017), while *Greece* is expected to return to growth in 2017 after contracting further this year.
- In *Japan,* growth is projected to remain at 0.5 percent in 2016, before turning slightly negative to –0.1 percent in 2017 as the scheduled increase in the consumption tax rate (of 2 percentage points) goes into effect. The recent appreciation of the yen and weaker demand from emerging market

economies are projected to restrain activity during the first half of 2016, but lower energy prices and fiscal measures adopted through the supplementary budget are expected to boost growth (with fiscal stimulus alone adding 0.5 percentage point to output). The Bank of Japan's quantitative and qualitative easing measures—including negative interest rates on marginal excess reserve deposits adopted in February—are expected to support private demand. Japan's medium- to long-term growth prospects remain weak, primarily reflecting a declining labor force.

- The picture for other advanced economies is more mixed, reflecting in part uneven effects from lower commodity prices, as well as different degrees of spillovers from the economic rebalancing in China.
  - In the *United Kingdom*, growth (forecast at 1.9 percent in 2016 and 2.2 percent in 2017) is expected to be driven by domestic private demand supported by lower energy prices and a buoyant property market, which help to offset headwinds from fiscal consolidation and heightened uncertainty ahead of the June referendum on European Union membership.
  - Strong growth projected for *Sweden* (about 3.7 percent in 2016, easing to 2.8 percent in 2017) is underpinned by expansionary monetary policy, higher residential investment in response to rising house prices, and higher public spending owing to large refugee inflows.
  - In *Switzerland*, growth is expected to increase modestly to 1.2 percent in 2016 and 1.5 percent in 2017, as the drag from last year's exchange rate appreciation wanes.
  - Commodity-exporting advanced economies continue to adjust to reduced income and resource-related investment. In *Norway,* GDP growth is projected to soften to 1.0 percent this year as the decline in oil prices weighs on investment and consumption and to recover gradually afterward. In *Canada*, growth is expected to recover to 1.5 percent in 2016, with the drag from the energy sector offset partially by a more competitive currency and an expected increase in public investment, before it accelerates to 1.9 percent in 2017. In *Australia*, growth is expected to remain below potential at 2.5 percent in 2016 but to rise above potential to 3 percent over the next two years, supported in part by a more competitive currency.
  - Among other advanced economies in Asia, the downturn in China's imports in 2015 has been an important drag. In 2016, growth will soften in *Singapore* (to 1.8 percent) and *Hong Kong Special Administrative Region* (to 2.2 percent) and pick up modestly in *Korea* (to 2.7 percent) and more noticeably in *Taiwan Province of China* (to 1.5 percent, after the sharp drop to 0.7 percent in 2015). Growth in all four of these economies is expected to pick up more robustly from 2017 onward, as China's import demand recovers. Population aging is increasingly weighing on potential growth in these economies, most notably in Korea and Singapore.
- Growth in *China* is projected to slow to 6.5 percent this year and 6.2 percent in 2017, slightly higher than the projections in the October 2015 WEO, reflecting announced policy stimulus. A further weakening is expected in the industrial sector, as excess capacity continues to unwind, especially in real estate and related upstream industries, as well as in manufacturing. Services sector growth should be robust as the economy continues to rebalance from investment to consumption. High income growth, a robust labor market, and structural reforms designed to support consumption are assumed to keep the rebalancing process on track over the forecast horizon.
- Elsewhere in emerging and developing Asia, activity remains robust. In *India*, growth is projected to notch up to 7.5 percent in 2016–17, as forecast in October. Growth will continue to be driven by private consumption, which has benefited from lower energy prices and higher real incomes. With the revival of sentiment and pickup in industrial activity, a recovery of private investment is expected to further strengthen growth. Among the ASEAN-5 economies (*Indonesia, Malaysia, Philippines, Thailand, Vietnam*), growth will ease in 2016 in Malaysia and Vietnam (to 4.4 percent and 6.3 percent, respectively) but increase moderately in Indonesia, the Philippines, and Thailand (to 4.9 percent, 6.0 percent, and 3.0 percent, respectively). Growth in the ASEAN-5 is envisaged to pick up further in 2017 and thereafter, underpinned by strong domestic demand and a gradual increase in exports.
- In *Latin America and the Caribbean*, overall growth in 2016 is expected to be negative for a second consecutive year (at –0.5 percent). However, across all countries in the region, economic activity is

expected to strengthen in 2017, with growth picking up to 1.5 percent. There are substantial differences across regions and countries. While South America remains heavily affected by the decline in commodity prices, Mexico, Central America, and the Caribbean are beneficiaries of the U.S. recovery and, in most cases, lower oil prices. Indeed, most countries in the region continue to grow, even if modestly.

- *Mexico* is expected to continue to grow at a moderate pace (2.4 percent in 2016 and 2.6 percent in 2017), supported by healthy private domestic demand and spillovers from a robust U.S. economy.
- In *Brazil*, output is expected to contract by a further 3.8 percent in 2016 (following a contraction of 3.8 percent in 2015), as the recession takes its toll on employment and real incomes and domestic uncertainties continue to constrain the government's ability to formulate and execute policies. With many of the large shocks from 2015–16 expected to have run their course, and helped by a weaker currency, growth is projected to turn positive during 2017; nevertheless, output on average will likely remain unchanged from the previous year. These forecasts are subject to large uncertainty.
- Among oil-exporting South American countries, the projected deceleration of activity in *Colombia* (with growth easing to 2.5 percent in 2016 from 3.1 percent in 2015) reflects low oil prices, as well as tightening macroeconomic policies and financial conditions. *Venezuela* is projected to remain in a deep recession in 2016 (with output projected to contract by 8 percent following the contraction of 5.7 percent in 2015), amid political uncertainty and as the renewed decline in the price of oil has deepened existing macroeconomic imbalances and pressures, including an average inflation rate projected to rise to close to 500 percent in 2016. *Ecuador*'s outlook is highly uncertain and depends on the availability of external financing. Under the baseline scenario, the country's output is expected to contract this year (by 4.5 percent) amid lower oil prices, a loss of competitiveness on the back of an appreciating dollar, fiscal consolidation, and tight financing conditions.
- Elsewhere in South America, the ongoing push to correct macroeconomic imbalances and microeconomic distortions in *Argentina* has improved prospects for growth over the medium term, but the adjustment is likely to generate a mild recession in 2016. The protracted decline in the price of copper and tighter financial conditions are weighing on *Chile*'s outlook (with growth declining to 1.5 percent in 2016 from 2.1 percent in 2015). *Peru*'s growth is expected to pick up in 2016 and 2017 (to 3.7 and 4.1 percent, respectively), mostly driven by stronger activity in the resource sector.

- The economic outlook for the *Commonwealth of Independent States* remains very weak, reflecting the recession in *Russia* and its regional spillovers, as well as the effect of lower oil prices on oil-exporting countries. Output in the region is projected to decline further by 1.1 percent in 2016. A recovery is expected to take hold in 2017, with growth forecast at 1.3 percent. In Russia, growth is projected at –1.8 percent in 2016 (following a contraction of 3.7 percent last year), as international sanctions compound the effects of lower oil prices and structural weaknesses. *Ukraine*'s economy is projected to return to positive growth in 2016, supported by improving consumer and investor confidence, gradually rising real incomes, and a gradual easing of credit conditions. The sustained decline in oil prices, Russia's recession, and the slowdown and rebalancing of China's economy are weighing on growth in the Central Asia and Caucasus region by suppressing exports, remittances, and investment. The region's growth forecast has been downgraded to 1.2 percent in 2016, reflecting weak external demand, lower oil production, and weak confidence in Kazakhstan, weaker public investment in Azerbaijan and Turkmenistan, and lower remittances in the oil-importing countries. Growth is expected to recover only modestly to 2.5 percent in 2017.
- Growth in *emerging and developing Europe* is projected to remain broadly stable at 3.5 percent in 2016 and 3.3 percent in 2017. Activity in the region has benefited from lower oil prices and the gradual recovery in the euro area, but elevated corporate debt is hindering private investment. In *Turkey,* growth is projected to remain stable at 3.8 percent in 2016, with a large minimum wage increase sustaining domestic demand in the face of geopolitical uncertainty, weak external demand, and slowing credit growth. Growth is expected to moderate in *Hungary* as the effects of the high absorption of European Union funds gradually dissipate, but to pick up slightly in southeastern Europe.

- Growth in *sub-Saharan Africa* is expected to remain weak this year at 3.0 percent, about ½ percentage point lower than in 2015, and 1.3 percentage points lower than forecast in the October 2015 WEO. Growth is projected to pick up to 4.0 percent in 2017, helped by a small rebound in commodity prices and timely policy implementation. The ongoing slowdown is primarily driven by unfavorable external conditions: resource-intensive countries have suffered from the decline in commodity prices, while the region's frontier markets are adversely affected by tighter global financing conditions.
  - Sub-Saharan Africa's oil-exporting countries are now projected to grow at 2.0 percent in 2016 (a downward revision of 2.1 percentage points relative to the October 2015 forecast) and 3.4 percent in 2017. Within this group, growth in 2016 is expected to ease to 2.5 percent in *Angola* (down from 3.0 percent in 2015) and 2.3 percent in *Nigeria* (from 2.7 percent growth last year), as the negative impact of lower oil prices is compounded by disruptions to private sector activity through exchange rate restrictions.
  - The effect of the decline in oil prices on the region's oil-importing countries has been smaller than expected, as many of these economies export other nonrenewable resources whose prices have also dropped. In *South Africa,* growth is expected to be halved to 0.6 percent in 2016 owing to lower export prices, elevated policy uncertainty, and tighter monetary and fiscal policy. In *Zambia,* the impact of the drought on electricity production is adding to downward pressure from low copper prices, and growth will remain subdued at 3.4 percent (slightly below the 3.6 percent achieved in 2015). In *Ghana*, growth is projected to increase in 2016 to 4.5 percent, from 3.5 percent last year, when it was hampered by power shortages and fiscal consolidation. In many other oil importers, inflationary pressures stemming from the pass-through of a strong U.S. dollar (which notably limited the decline of fuel prices in domestic-currency terms) and high food prices (due to the drought in eastern and southern Africa) have also offset to some extent the benefits of lower oil prices. Nonetheless, ongoing investment in infrastructure and strong consumption in countries such as *Côte d'Ivoire, Kenya, Rwanda, Senegal,* and *Tanzania* are expected to drive growth at rates of 6–7 percent or more this year and next. By contrast, *Ethiopia*'s economy is held back by a drought, with growth projected to decline substantially to 4.5 percent (from 10.2 percent in 2015).
- The outlook across the *Middle East, North Africa, Afghanistan, and Pakistan* (MENAP) region has weakened considerably because of further declines in oil prices and intensifying conflicts and security risks. Growth in the region overall is projected at 3.1 percent in 2016 and 3.5 percent in 2017, 0.8 percentage point and 0.7 percentage point weaker, respectively, than projected in the October 2015 WEO.
  - With oil prices now expected to remain low for longer, oil-exporting MENAP countries have taken substantial further steps to restrain government spending, cut subsidies, and raise revenues. Even with these measures, fiscal deficits are projected to widen this year. Growth in the member countries of the Cooperation Council for the Arab States of the Gulf (GCC) is now expected to decline from 3.3 percent in 2015 to 1.8 percent in 2016 and pick up to more than 2 percent over the medium term. However, increased oil production in the postsanctions *Islamic Republic of Iran* and in *Iraq*, as well as the bottoming out of activity in *Yemen* as the conflict is assumed to ease gradually, is projected to raise the aggregate growth rate of oil-exporting MENAP countries to 2.9 percent in 2016 and 3.1 percent in 2017 from 1.9 percent last year.
  - Growth in oil-importing MENAP countries is expected to remain subdued as gains from greater political stability, economic reforms, reduced drag from fiscal consolidation, and lower oil prices are offset by spillovers from security disruptions, social tensions, and spillovers from regional conflicts, and, more recently, slowdowns in member countries of the GCC.

## Global Inflation

With the December 2015 declines in oil prices mostly expected to persist this year, consumer price inflation has been revised downward across almost all advanced economies and is projected to remain below central bank targets in 2016. Excluding Venezuela (where average inflation is projected to rise to close to 500 percent this year and even further next year), inflation in emerging market and developing economies is projected to fall to 4.5 percent in 2016, from 4.7

percent in 2015, reflecting the decline in commodity prices and the dissipating effects of last year's currency depreciations.

- In the euro area, headline inflation is projected to reach 0.4 percent in 2016 (from about zero in 2015) and to increase further to 1.1 percent in 2017 with support from monetary policy easing by the ECB. Inflation is thereafter expected to rise only very gradually over the medium term.
- In Japan, inflation is expected to be negative at –0.2 percent in 2016 because of lower energy prices and the strengthening of the yen in recent months. Over the medium term, inflation is projected to rise to 1.0–1.5 percent, as accommodative monetary policy conditions and the closing of the output gap apply upward pressure on prices.
- In the United States, inflation in 2016 is projected to rise to 0.8 percent from 0.1 percent in 2015 amid a tightening labor market, even though dollar appreciation and pass-through from lower oil prices are exerting downward pressure on prices. Consumer price index inflation is projected to rise over the medium term to about 2¼ percent, with inflation measured with the personal consumption expenditure deflator—the Federal Reserve's preferred inflation measure—reaching 2 percent.
- Average inflation in other advanced economies will also remain below central bank targets, mostly as a result of the decline in oil prices. Inflation is projected to return to target next year in Korea (partly because the Bank of Korea recently reduced its inflation target), but only over the medium term in Singapore and Sweden. Consumer prices in Switzerland are projected to decline in 2016 and 2017 given the appreciation of the currency last year.

In emerging market economies, the downward pressure from lower oil prices is offset to varying degrees by the pass-through of nominal exchange rate depreciations to domestic prices, especially in countries with strong depreciations, such as Brazil, Colombia, Russia, and more recently, Kazakhstan. In subsequent years, inflation is expected to ease gradually toward official targets.

- In China, inflation is forecast to remain low at about 1.8 percent in 2016, reflecting lower commodity prices, the real appreciation of the renminbi, and somewhat weaker domestic demand.
- In India, monetary conditions remain consistent with achieving the inflation target of 5 percent in the first half of 2017, although an unfavorable monsoon and an expected public sector wage increase pose upside risks. In Brazil, average inflation is expected to fall slightly to 8.7 percent this year from 9.0 percent last year, as the effects of the large administered price adjustments and currency depreciation in 2015 diminish. In Russia, inflation is projected to decline from 15.5 percent in 2015 to 8.4 percent in 2016. In Turkey, inflation for 2016 is projected at 9.8 percent, almost 5 percentage points above target.
- A few other emerging markets, especially in central and southeastern Europe, such as Hungary and Poland, are projected to experience headline consumer price inflation well below target in 2016.

## External Sector Outlook

Global trade growth is projected to remain moderate but to pick up gradually from 2016 onward, primarily reflecting stronger growth in domestic demand in emerging market and developing economies.

The main factor affecting the evolution of global current account balances in 2015 has once again been the decline in oil prices. As a result of this decline, the aggregate current account balance of oil-exporting emerging market and developing economies has turned into a deficit for the first time since 1998 (Figure 1.15, panel 1). Among oil-importing surplus regions, more than half of the $370 billion worsening of the current account balance in oil-exporting countries was offset by higher surpluses in China and other oil-importing advanced Asian economies, particularly Japan. Across oil-importing countries and regions with current account deficits, changes were roughly offsetting, with some worsening of the current account balance in the United States offset by improving current account balances in European deficit countries. And the global current account discrepancy (an apparent surplus in the world current account), which had reached $378 billion in 2014, shrank by about 40 percent in 2015.

Similar factors are expected to be at play in 2016, in light of the further decline in average oil prices relative to their 2015 levels, albeit on a more modest scale. In subsequent years imbalances are forecast to narrow as China rebalances and the surpluses of advanced European economies gradually decline as a share of world GDP, more than offsetting the return to surplus of oil-exporting countries given the forecast of higher oil prices. This rebalancing notwithstanding, net external creditor and debtor positions are projected to expand

further as a share of both domestic and global GDP, with a particularly sharp increase in the net international investment position of creditor countries in advanced Europe, such as Germany and the Netherlands, reflecting projections of continued large current account surpluses (Figure 1.15, panel 2).

Exchange rate movements over the past year have reflected important shifts in underlying economic fundamentals, such as changes in commodity prices, trading partners' growth prospects, and external vulnerabilities. In particular, as shown in panel 3 of Figure 1.15 for a sample of countries without exchange rate pegs, real effective exchange rates have tended to appreciate in countries with terms-of-trade gains and depreciate in those with losses. Indeed, the measure of income gains and losses from terms-of-trade changes described earlier in the chapter can by itself explain more than half of the variation in real effective exchange rate movements since 2014.

Growth rates in creditor countries have continued to exceed those in debtor countries (Figure 1.16), reflecting primarily strong growth in China, a pattern that is expected to persist in 2016.[5] The growth differential is mostly explained by different growth rates of domestic demand, but also by some reliance on net external demand on the part of creditors. For 2015–16, such reliance on net external demand reflects primarily developments in creditor countries that are oil exporters, where import demand has declined sharply following the collapse in oil prices. Stronger reliance on domestic demand in a number of creditor countries would help facilitate global rebalancing while sustaining world growth.

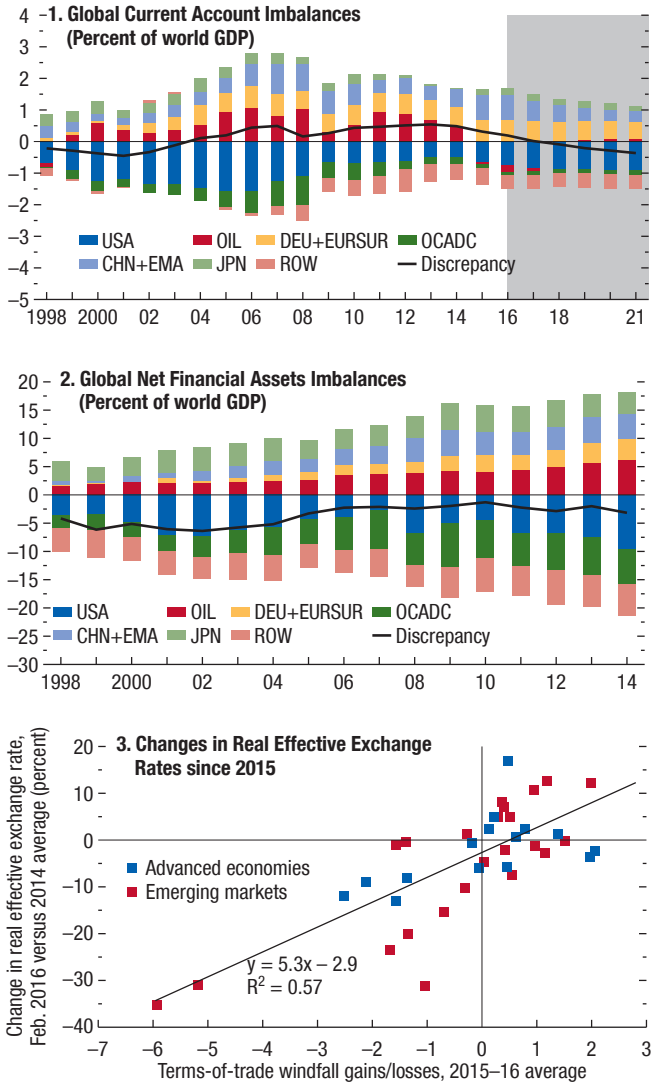
## A Pronounced Increase in Downside Risks

WEO growth forecasts form a central, or modal, scenario—growth rates that the IMF staff estimates to be the most likely in each year of the forecast horizon. The weakening in global growth in late 2015 and the escalation of threats to global economic activity since the start of this year have led the staff to reduce the projected growth rates under the central scenario.

[5]Creditor countries and regions include China, advanced Asia, and creditor countries in advanced Europe (such as Germany and the Netherlands), as well as most oil-exporting countries. Debtor countries and regions include the United States, debtor nations in advanced and developing Europe (such as Italy, Spain, Turkey, and the United Kingdom), Latin America, India and some other economies in emerging Asia, and Australia and New Zealand.

### Figure 1.15. External Sector

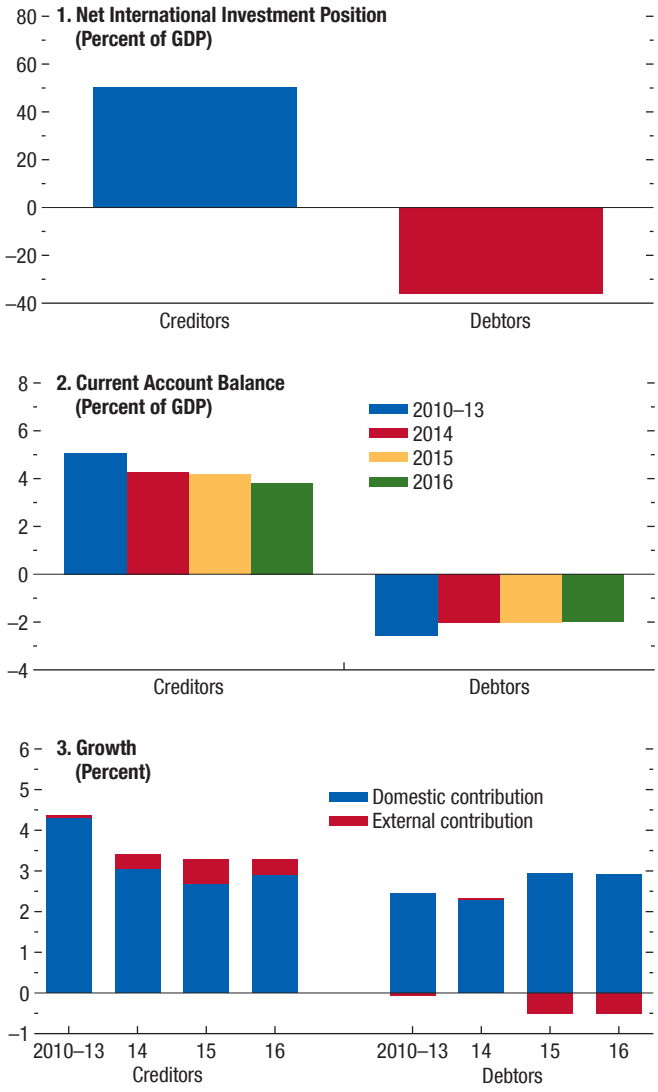
Global current account imbalances have declined in recent years, mostly reflecting the reduced balances of oil exporters. Nonetheless, net creditor and debtor positions continue to widen. In countries with flexible exchange rates, exchange rate movements over the past year have been correlated with terms-of-trade movements.




Source: IMF staff estimates.
Note: CHN+EMA = China and emerging Asia (Hong Kong SAR, Indonesia, Korea, Malaysia, Philippines, Singapore, Taiwan Province of China,Thailand); DEU+EURSUR = Germany and other European advanced surplus economies (Austria, Denmark, Luxembourg, Netherlands, Sweden, Switzerland); OCADC = other European countries with precrisis current account deficits (Greece, Ireland, Italy, Portugal, Spain, United Kingdom, WEO group of emerging and developing Europe); OIL = Norway and WEO group of emerging market and developing economy fuel exporters; ROW = rest of the world. Data labels in the figure use International Organization for Standardization (ISO) country codes.

### Figure 1.16. Creditors versus Debtors

Growth rates in creditor countries have continued to exceed those in debtor countries, reflecting primarily strong growth in China. The growth differential is mostly explained by different growth rates of domestic demand, but also some reliance on net external demand by creditors, especially by oil exporters in 2015 and 2016.




Source: IMF staff estimates.
Note: In panel 1, data on the net international investment position are the latest available (2015:Q3 for most countries).

Alongside these reduced central projections, the staff views the likelihood of outcomes worse than those in the central scenario as having increased. Put differently, not only is the central WEO scenario now less favorable and less likely; in addition, the even weaker downside outcomes have become more likely.

Heightened downside risks stem from both an intensification of the hazards highlighted in the January 2016 *WEO Update* and further bouts of financial turbulence leading to a tightening in financial conditions, including in advanced economies. Over the near term, the main risks to the outlook revolve around (1) the threat of a disorderly pullback of capital flows and growing risks to financial stability in emerging market economies, (2) the international ramifications of the economic transition in China, (3) growing strains in countries that are heavily reliant on oil exports, (4) the possible impact of tighter financial conditions and bouts of financial market volatility on confidence and growth if they persist, (5) more protracted recessions in emerging market economies that are currently experiencing distress, (6) geopolitical risks, and (7) the United Kingdom's potential exit from the European Union. Materialization of any of these risks could raise the likelihood of other adverse developments. Perceptions of limited policy space to respond to negative shocks, in both advanced and emerging market economies, are exacerbating concerns about these adverse scenarios. In the euro area, the persistence of low inflation and its interaction with the debt overhang is also a growing concern.

Beyond the immediate juncture, the danger of secular stagnation and an entrenchment of excessively low inflation in advanced economies, as well as of lower-than-anticipated potential growth worldwide, has become more tangible.

## Financial Stability Risks in Emerging Markets

After five years of declining economic growth and a downward shift in capital inflows that gained momentum in 2015, emerging market economies are increasingly vulnerable to a change in investor sentiment. As highlighted in Chapter 3 of the October 2015 *Global Financial Stability Report* (GFSR), sizable currency depreciations over the past two to two and a half years have eroded the financial buffers of companies that have high dollar-denominated debt but limited claims or earnings in dollars. Fiscal buffers have also diminished; public-debt-to-GDP ratios of most emerging market economies are now noticeably above their 2007 levels (April 2016 *Fiscal Monitor*). The once-rapid accumulation of international reserves has given way to reserve losses in some economies.

A stronger pullback of capital flows could tighten financial conditions in emerging market economies and put additional downward pressure on their cur-

rencies, leading to adverse balance sheet effects and possibly funding challenges. The trigger for such a development could take a variety of forms: increased investor concerns about stressed emerging market economies and commodity sectors, idiosyncratic events in the larger emerging market economies, or the materialization of other risks to the outlook, such as a weakening in global demand due to protracted financial market turbulence. Regardless of the trigger, a flight from riskier asset classes could spark disruptive declines in asset prices and currency values, generating contagion effects and harming growth further. The countries that are potentially more vulnerable to a discrete change in investor sentiment are those with larger external financing needs, weaker net international investment positions, and higher yield spreads.

### International Ramifications of Developments in China

China's transition to a new growth model and a more market-based economy is inherently challenging and has been bumpy at times. Corporate profitability in China has eroded over the past few years, as growth has declined toward a more sustainable pace following a period of rapid credit growth and investment. Lower corporate earnings, in turn, are hindering the ability of Chinese firms to service their debt obligations, raising banks' levels of nonperforming loans (Chapter 1 of the April 2016 GFSR). As bank lending capacity is increasingly constrained, Chinese firms are turning to capital markets. The combination of corporate balance sheet weakness, a high level of nonperforming loans, and inefficiencies in bond and equity markets is posing risks to financial stability, complicating the authorities' task of achieving a smooth rebalancing of the economy while reducing vulnerabilities from excess leverage. Limited progress on key reforms and increasing risks in the corporate and financial sectors have led to medium-term growth concerns, triggering turbulence in Chinese and global financial markets. Policy actions to dampen market volatility have, at times, been ineffective and poorly communicated.

A sharper-than-forecast slowdown in China could have strong international spillovers through trade, commodity prices, and confidence, with attendant effects on global financial markets and currency valuations as discussed in Chapter 2 of the April 2016 *Regional Economic Outlook: Asia and Pacific*. That outcome could lead to a more generalized slowdown in both emerging market and advanced economies, especially if it should further compromise investment, potential growth, and expectations of future income.

### Risks of Further Strains in Oil-Exporting Countries

With diminishing fiscal buffers, the renewed declines in oil prices in late 2015 and early 2016 could force oil-exporting countries to cut spending more significantly than envisaged in the WEO forecast. Additional retrenchment in spending could be motivated by a tightening of global financial conditions and market perceptions of heightened sovereign risk, as discussed in Scenario Box 1.

These risks would be exacerbated if oil prices were to decline even further. And in the current low-inflation environment, a scenario of even lower oil prices comes with a risk of a further reduction in inflation expectations and possibly also core inflation rates in advanced economies, raising real interest rates and deflation risks. At the same time, further declines in oil prices could bolster the perception that prices will stay low for long, boosting oil-importing countries' spending out of the windfall and thereby cushioning some of these adverse effects.

### Recent Turbulence in Financial Markets and Losses in Equity Wealth

Equity markets worldwide posted large losses in early 2016, with price declines in advanced economies especially large for banking sector stocks. From the end of December 2015 to mid-February 2016, stock price indices in advanced economies fell by more than 12 percent and those in emerging market economies by about 9 percent. Markets have since rebounded, bringing the year-to-date changes to about –2 percent for advanced economies and into positive territory for emerging market economies as of the end of March. Nevertheless, stock price indices remain well below the peaks reached in the spring of 2015, especially for emerging market economies. As discussed in the April 2016 GFSR, a lasting increase in financial market turbulence and persistent declines in equity valuations could tighten financial conditions, by increasing risk premiums and some interest rates, while reducing capital availability for firms, further depressing investment levels, which have yet to fully recover (Chapter 3 of the April 2015 WEO). Such asset market disruptions could also generate adverse wealth and confidence effects that harm private consumption, especially in

those advanced economies in which equity holdings are an important part of household wealth. Though the global equity valuation losses so far in 2016 are likely to have a very small adverse impact on consumption, the decline follows larger losses in the second half of 2015 that, if increasingly seen as persistent by households, would weaken consumer demand and growth in advanced economies and, ultimately, in the global economy. Weaker growth would leave the global economy vulnerable to further shocks and raise recession risks, feeding back into weaker investor risk appetite.

### Possible Delays in Normalization of Conditions in Economies in Recession

The economies of Brazil and Russia, which together account for about 6 percent of world output based on purchasing-power-parity exchange rates, have been contracting since mid-2014. Lower-than-expected growth in Brazil was a major contributor to the downward revisions to estimated 2015 growth in the January 2016 *WEO Update*. The baseline WEO forecast factors in a very gradual normalization of conditions in these two economies, with a somewhat reduced pace of contraction in 2016 and zero or mildly positive growth in 2017. The outlook for Brazil and Russia remains uncertain, however, and possible delays in their return to more normal conditions could once again push global growth below the current forecast.

### Geopolitical Tensions and Strife

The incidence of armed conflicts and terrorist acts has increased in the last couple of years. Ongoing events in parts of Africa and the Middle East, as well as in Ukraine, could further heighten domestic and international tensions, with increased disruptions in trade, tourism, and financial flows. In Europe, the surge of refugees is presenting major challenges to the absorptive capacity of EU labor markets and testing political systems, fueling skepticism about economic integration, as well as EU governance, and potentially hindering policymakers' ability to respond to both legacy and emergent economic challenges.

### Potential Exit of the United Kingdom from the European Union

A British exit from the European Union could pose major challenges for both the United Kingdom and the rest of Europe. Negotiations on postexit arrangements would likely be protracted, resulting in an extended period of heightened uncertainty that could weigh heavily on confidence and investment, all the while increasing financial market volatility. A U.K. exit from Europe's single market would also likely disrupt and reduce mutual trade and financial flows, curtailing key benefits from economic cooperation and integration, such as those resulting from economies of scale and efficient specialization.

### Secular Stagnation, Hysteresis, and Lower Potential Output

In advanced economies, the risk of a protracted shortfall in domestic demand and a further weakening of potential output due to hysteresis effects remains a concern, especially in view of heightened risks to near-term activity. In some economies, especially in vulnerable euro area countries, demand remains particularly sluggish, and slack in labor markets remains sizable. The declines in the price of oil and other commodities since December 2015 raise the risk of deflation in advanced economies. The scenario presented later, in the "Policy Priorities" section, provides an illustration of how secular stagnation could affect global economic activity.

A rising likelihood of lower potential output due to a protracted demand shortfall is increasingly a worry for emerging market economies as well, in particular for economies experiencing deep and prolonged recessions. A combination of ongoing supply-side constraints, persistently weak investment, and in some cases, high unemployment rates and skill losses could weigh on medium-term supply potential in these economies, especially where structural reform momentum is weak. Last but not least, economies facing domestic strife and surging refugee outflows are facing a massive loss of future economic potential.

### The Fan Chart: Risks around the Global GDP Forecast

With a lower baseline forecast for global growth and a slightly wider confidence band around the baseline forecast, the fan chart documents a moderate but noticeable increase in the probability of global growth declining below 2 percent as compared to a year ago (Figure 1.17).[6] Analysis based on the IMF's Global

[6]The indicators used in the construction of the fan chart are based on prices of derivatives or on the distribution of forecasts of

Projection Model similarly suggests an increase in the probability of a recession in major advanced economies over a four-quarter horizon relative to the probabilities computed in April and October 2015 (Figure 1.18). That increase reflects a combination of lower growth in the baseline and a negative shift in the distribution of future shocks to demand and financial variables, consistent with adverse confidence effects given heightened perceptions of limited policy space. The simulations also suggest an increase in the risk of deflation in the euro area, Japan, and the United States for the last quarter of 2016, consistent with heightened downside risks to growth and the recent decline in oil prices. Deflation probabilities would decline in subsequent quarters if oil and other commodity prices evolve as assumed under the current WEO baseline.

## Policy Priorities

In qualitative terms, the policy challenges currently facing most countries are similar to those highlighted in recent WEO reports. The main priorities are to lift both actual and potential output in advanced economies and to contain vulnerabilities and build resilience in emerging market and developing economies as they adjust to diminished growth prospects. Yet with expectations of global growth once again scaled down and a manifest increase in the downside risks facing most economies, the urgency of policy action to safeguard near-term growth—and of planning timely policy responses should downside risks materialize—has increased further.

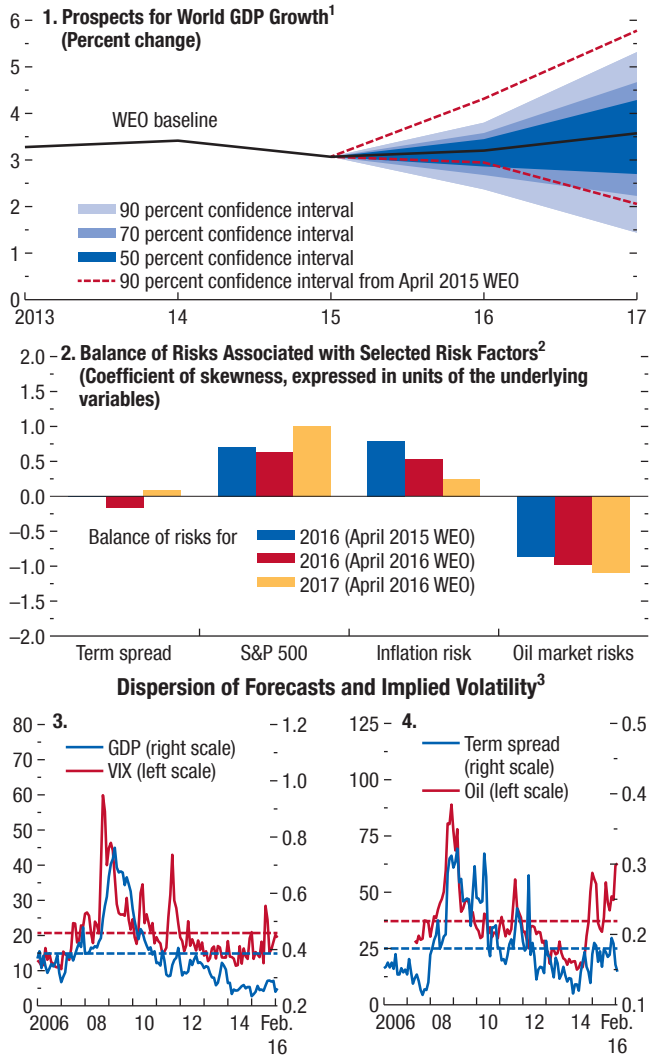
### Advanced Economies: Tackling Demand and Supply Weaknesses amid Growing Headwinds

Growth in advanced economies is expected to be modest under the baseline, reflecting subdued demand and a broad-based weakening of potential growth. The main factors underlying the weakening in potential growth are population aging, which would reduce trend employment at current rates of labor market participation; sluggish investment, held back in part by weak demand and impaired balance sheets; and a weakening of total factor productivity growth

the underlying variables. The chart compares the current confidence intervals with those in the April 2015 WEO to ensure that a forecast horizon of equal length is used; the horizon for current- and next-year forecasts are longer in April than in October, when more data affecting current- and next-year outcomes are known.

### Figure 1.17. Risks to the Global Outlook

With a lower baseline forecast for global growth and a slightly wider confidence band around the baseline forecast, the fan chart shows that risks of weaker growth outcomes have increased.




Sources: Bloomberg, L.P.; Chicago Board Options Exchange (CBOE); Consensus Economics; Haver Analytics; and IMF staff estimates.

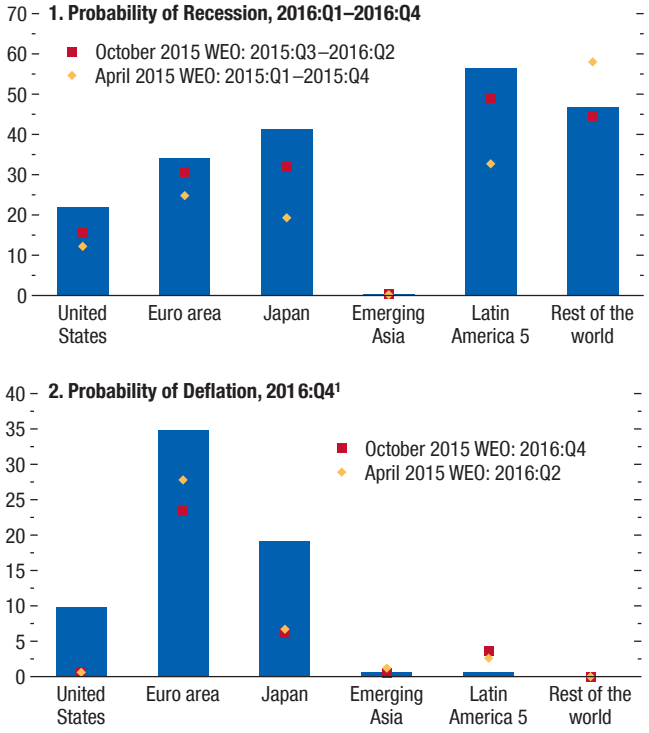
[1]The fan chart shows the uncertainty around the WEO central forecast with 50, 70, and 90 percent confidence intervals. As shown, the 70 percent confidence interval includes the 50 percent interval, and the 90 percent confidence interval includes the 50 and 70 percent intervals. See Appendix 1.2 of the April 2009 WEO for details. The 90 percent intervals for the current-year and one-year-ahead forecasts from the April 2015 WEO are shown relative to the April 2015 baseline.

[2]The bars depict the coefficient of skewness expressed in units of the underlying variables. The values for inflation risks and oil price risks enter with the opposite sign since they represent downside risks to growth.

[3]GDP measures the purchasing-power-parity-weighted average dispersion of GDP growth forecasts for the G7 economies (Canada, France, Germany, Italy, Japan, United Kingdom, United States), Brazil, China, India, and Mexico. VIX is the CBOE Volatility Index. Term spread measures the average dispersion ofterm spreads implicit in interest rate forecasts for Germany, Japan, the UnitedKingdom, and the United States. Oil is the CBOE crude oil volatility index. Forecastsare from Consensus Economics surveys. Dashed lines represent the averagevalues from 2000 to the present.

**Figure 1.18. Recession and Deflation Risks**
*(Percent)*

Analysis based on the IMF's Global Projection Model suggests an increase in the probability of a recession in major advanced economies over a four-quarter horizon relative to the probabilities computed in April and October 2015. The model's simulations also suggest an increase in the risk of deflation in the euro area, Japan, and the United States, consistent with heightened downside risks to growth and weaker commodity prices.




Source: IMF staff estimates.
Note: Emerging Asia comprises China, Hong Kong SAR, India, Indonesia, Korea, Malaysia, the Philippines, Singapore, Taiwan Province of China, and Thailand; Latin America 5 comprises Brazil, Chile, Colombia, Mexico, and Peru; Rest of the world comprises Argentina, Australia, Bulgaria, Canada, Czech Republic, Denmark, Israel, New Zealand, Norway, Russia, South Africa, Sweden, Switzerland, Turkey, United Kingdom, and Venezuela.
[1]Deflation is defined as a fall in the price level on a year-over-year basis in the quarter indicated in the figure.

that predates the crisis (see Chapter 3 of the April 2015 WEO). Increasing headwinds from the growth slowdown in emerging market economies and the recent tightening in financial conditions are threatening to further weaken near-term demand in advanced economies.

Securing higher and sustainable growth in advanced economies requires a three-pronged approach consisting of mutually reinforcing (1) structural reforms, (2) continued monetary policy accommodation, and (3) fiscal support—in the form of growth-friendly fiscal policies where adjustment is needed and fiscal stimulus where space allows. In practice, fiscal space should be assessed using a risk management approach, comparing the evolution of public debt and GDP along a trajectory with no policy response, accounting for risks of a further slowdown and stagnation, with that under a forceful policy response that boosts the trajectory of output and mitigates downside risks. On the supply side, Chapter 3 documents that structural reforms—tailored to country needs—can make important contributions to potential output and employment in many advanced economies over the medium term. Yet as discussed in that chapter, certain types of structural reform can also boost demand in the short term, whereas others require supportive macroeconomic policies to accelerate their benefits and minimize their possible contractionary and deflationary short-term side effects. Comprehensive strategies that take into account both the short- and medium-term impacts are therefore needed to maximize the credibility of reforms and the likelihood that they will build confidence and stimulate near-term investment and consumption.

Reforms that entail fiscal stimulus are the most valuable at this juncture, including those that reduce labor tax wedges and increase public spending on active labor market policies. Such measures nonetheless remain effective when implemented in a budget-neutral way, for example, as part of broad reforms of tax and spending policies.

Product market reforms aimed at reducing anticompetitive barriers to firm entry—such as those in certain network industries, retail trade, and professional services—can rapidly buoy output by boosting investment and hiring as new firms expand. Nonetheless, complementary policies aimed at addressing the weak bank and corporate balance sheets that are currently inhibiting investment are key to enhancing the short-term investment impact of these reforms.

Other labor market reforms, including reforms of unemployment benefits and—especially—employment protection rules, boost productivity in the medium term but could be contractionary in the short term under the current weak economic conditions. These measures therefore require supportive macroeconomic policies to avoid a drag on demand and deflationary side effects.

Country-specific structural reform priorities continue to differ to some extent.

- In the *United States*, boosting the labor supply will require an expansion of the earned income tax

credit; an increase in the federal minimum wage; stronger family benefits (including child care assistance); and a comprehensive, skills-based immigration reform. Enhanced infrastructure spending and innovation incentives are critical to fostering investment in the short term and productivity in the medium term.

- In the *euro area*, priorities vary across countries. With persistently high youth unemployment rates in many countries, skill erosion and its effect on trend employment are palpable concerns. Lowering disincentives to employment—including the labor tax wedge—and putting in place better-targeted active labor market policies would be important to boost demand and minimize the scarring effect of long-term unemployment. Reforms of product, services, and labor markets, public administration, and insolvency regimes would help improve firms' productivity, competitiveness, and investment prospects. Such reforms could also help expedite the disbursement of pan–European Union investment funds to support investment and innovation at the national level. At the regional level, a strong push to complete the single markets in services, capital, transport, energy, and digital technologies would promote productivity-enhancing economic integration. The European Union also needs a more effective economic governance framework—including outcome-based structural reform benchmarks, effective use of EU legislation, and full use of Stability and Growth Pact flexibility for structural reforms.
- In *Japan*, structural reforms that raise productivity are vital for tackling medium-term risks and raising potential output, while income policies are needed to bolster wage-price dynamics and increase monetary policy effectiveness. Structural reforms should focus on boosting the supply of labor (including of women), reforming labor markets to remove duality, further deregulating product and services markets, and supporting investment through corporate governance reform, as well as improving the provision of risk capital by the financial system.
- In *Europe* more broadly, policy actions to support the integration of migrants into the labor force are crucial to allay concerns about social exclusion and long-term fiscal costs, while unlocking the potential long-term economic benefits of refugee inflows. Policies that can help facilitate integration include minimizing restrictions that prevent refugees from taking up work during the asylum application phase, strengthening active labor market policies specifically targeted to refugees, and providing wage subsidies to private employers that hire immigrants. Initiatives to make self-employment easier and facilitate skill recognition could also help refugees succeed. Finally, reducing restrictions on refugees' geographical mobility, including those linked to housing, would allow them to move to locations where the probability of good job matches is high.

On the demand side, macroeconomic policy support can raise actual output while enhancing the benefits of structural reforms. Monetary policy should remain accommodative where output gaps are negative and inflation is too low. In addition, given the uncertain effects of product and labor market reforms on prices, and amid persistent low inflation in many countries, strong and credible monetary policy frameworks are essential. Specifically, such frameworks—including quantitative easing or negative deposit rates, where relevant—can keep medium-term inflation expectations anchored and ease the zero-lower-bound constraint on policy interest rates, thus preempting risks that structural reforms will create deflation, increase the real interest rate, and weigh on aggregate demand in the short term.

- In the *United States*, the mid-December increase in the federal funds rate reflected a stronger U.S. economy. At present, a broad range of indicators suggest a notable improvement in the labor market, accompanied by signs of firming wage and price pressures. The pace of further rate increases should therefore be gradual. An effective monetary policy communication strategy will remain essential, particularly in an environment of higher financial market volatility in which spillovers through financial channels could be material.
- In the *euro area*, the ECB's asset purchase program has supported the recovery by improving confidence and financial conditions. But persistently low inflation and subdued growth point to the need for policy to remain accommodative for an extended period. The wide range of mutually reinforcing policy measures taken recently by the ECB are appropriate, in view of the increased downside risks to the outlook. They strengthen its forward guidance and signal a strong commitment to meet its price stability objective over the medium term. They will also facilitate the pass-through of improved bank funding conditions to the real economy by encouraging greater lending

while reducing the impact of negative deposit rates on bank profitability. The ECB should continue to signal strongly its willingness to use all available instruments until its price stability objective is met. These monetary policy efforts should be supported by measures to strengthen bank balance sheets, which would help improve monetary policy transmission, bolster credit supply, and reduce banking sector vulnerabilities. Enhanced prudential oversight to provide banks with incentives to clean up balance sheets, reforms to enhance debt enforcement regimes and insolvency frameworks, and the development of distressed debt markets (including through asset management vehicles) are priorities in this regard (see Aiyar and others 2015).

- In *Japan*, the introduction of a negative rate on marginal reserve deposits by the Bank of Japan underscores its commitment to maintaining inflation momentum. Building on recent achievements, the authorities should consider adopting a (softly enforceable) wage growth target, supported by higher public sector and minimum wages. The central bank should also consider providing stronger guidance to markets by moving toward more forecast-oriented monetary policy communication. The latter would increase the transparency of the bank's assessment of inflation prospects and signal its commitment to the inflation target by facilitating the communication of envisaged policy changes when inflation gets off track.

In addition to an accomodative monetary policy stance, fiscal support is also essential. Fiscal policy should be growth friendly, especially in countries where fiscal consolidation is necessary. Specifically, it should support demand in the short run, protecting the most vulnerable, and increase potential output over the medium term by encouraging job creation and fostering productivity, including through innovation (see Chapter 2 of the April 2016 *Fiscal Monitor*). Where public debt is high or financing conditions are unfavorable, commitments to credible medium-term consolidation plans can create policy space. Fiscal stimulus should be implemented where space is available and should focus on boosting future productive capacity, such as through infrastructure investment. Such a fiscal policy stance would raise demand, improve productivity, offset the short-term economic costs of some structural reforms (for example, to employment protection legislation and unemployment benefit systems in some euro area countries), and amplify the gains from others (for example, labor tax wedge reductions or increased spending on active labor market policies).

- In the *United States*, the bipartisan budget agreement of December 2015 reduced immediate risks related to fiscal brinkmanship, but further fiscal efforts are needed to stabilize the debt-to-GDP ratio over the medium term as interest rates gradually increase and the country's demographic transition intensifies. Building on the 2013 and 2015 bipartisan budget arrangements, a further agreement on a credible medium-term deficit reduction plan would provide the space to fund much-needed investments in infrastructure, raise productivity and innovation, and enhance workers' skills.
- In the *euro area*, countries with fiscal space under the Stability and Growth Pact should do more to support demand—for example, by expanding public investment. Prompt and effective implementation—and possibly expansion—of the EU scheme to provide public and private investment would raise growth in the short and medium term, including through positive spillovers within the region. Expenditures necessary to absorb and integrate refugees should be considered on a case-by-case basis when assessing fiscal efforts to attain Stability and Growth Pact targets.
- In *Japan*, a commitment to fiscal consolidation centered on a preannounced path of gradual consumption tax hikes and a strengthening of fiscal institutions would create near-term policy space to maintain growth momentum.

The importance of timely policy actions in the event of a downside scenario and their implications for global output are illustrated in Scenario Box 2. The scenario assumes that secular-stagnation forces give rise to a persistent output shortfall, with a widening of the negative output gap, but also an erosion of potential output due to persistently deficient aggregate demand. The scenario then assumes a concerted policy response relying on both demand-side and supply-side measures (a temporary fiscal expansion consisting of measures with large short-term multipliers and targeted to raise long-term potential output, accompanied by product and labor market reform commitments). This policy response can fully offset the initial negative shocks and raise output above the initial baseline.

## Emerging Market and Developing Economies: Managing Vulnerabilities and Bolstering Potential Output

The challenges facing policymakers in emerging market and developing economies are diverse, reflect-

## Scenario Box 2. Responding to Secular Stagnation Forces

This scenario uses the IMF's G20 Model (G20MOD) to illustrate the importance of policymakers' responding quickly to the negative self-reinforcing growth dynamics that could be unleashed should secular stagnation develop in advanced economies. The scenario also illustrates the additional benefits to Group of Twenty (G20) countries of following through on their remaining Brisbane Growth Strategies structural reform commitments, which will further add to sustainable output.

The first layer of the scenario (blue line in Scenario Figure 3) considers the implications of secular stagnation's appearing in advanced economies (see also the second risk scenario in the October 2014 WEO). The layer embodies lower-than-expected private investment and higher-than-expected private saving, leading to weaker domestic demand that in turn harms these economies' supply potential. One hysteresis mechanism is capital-embodied technology, which implies that lower investment results in slower productivity growth. In addition, overall weak demand leads to higher unemployment that results in a reduced labor supply as (1) skill depreciation generates a higher natural rate of unemployment and (2) discouraged workers withdraw from the labor force. Taken together, these scarring effects on productivity growth and the labor force push the path of output progressively below the baseline over time.

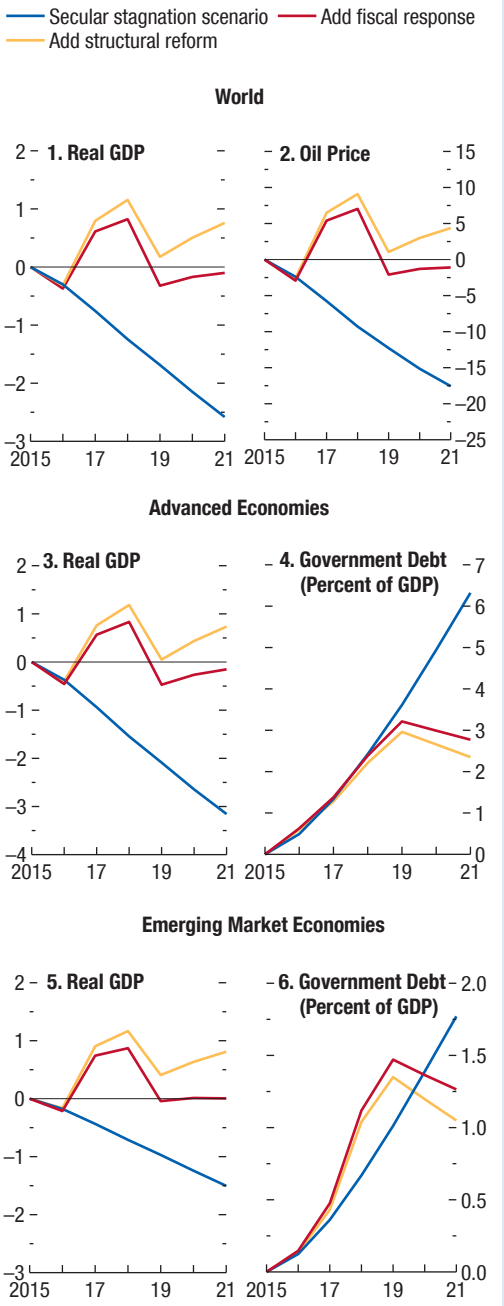
In the second layer (red line), it is assumed that in year 2, after seeing weaker activity in the first year, many advanced economies and a few large emerging market economies launch a collective expansionary fiscal response.

For illustrative purposes, the fiscal response is assumed to amount to 2 percent of GDP in the second and third years in those countries that have the fiscal space to participate. Assumptions on which advanced economies implement the coordinated fiscal response are guided by the considerations in Chapter 1 of the April 2016 *Fiscal Monitor* (see in particular Figure 1.6). For advanced economies as a group, this collective policy implies a fiscal impulse of roughly 1.5 percent of GDP, and for emerging market economies, about 1 percent of GDP.

The fiscal response is designed both to have large short-term multipliers and to raise long-term potential output; it includes measures such as infrastructure investment, active labor market policies, and investments in research and development, as well as

### Scenario Figure 3. Secular Stagnation and Reform

*(Percent difference, unless noted otherwise)*




Source: IMF staff estimates.

### Scenario Box 2. Responding to Secular Stagnation Forces *(continued)*

transfers targeted to households that would be hardest hit by a reduction in activity. It is also assumed that monetary authorities worldwide fully accommodate the fiscal response to further amplify the benefits.

In the final layer (yellow line), G20 countries are assumed to follow through on those product and labor market reforms from their Brisbane Growth Strategies that have not yet been fully implemented. Their Brisbane Growth Strategies commitments in terms of higher infrastructure spending are already incorporated in the fiscal response.

In the secular stagnation layer (blue line), global growth is roughly 0.4 percentage point below baseline, with inflation falling roughly ½ percentage point below baseline by the end of the WEO horizon. The ½-percentage-point-lower advanced economy growth has significant spillovers to emerging market economies, both directly through lower external demand and indirectly via commodity prices and equity prices (as emerging market equity markets are assumed to reflect some of the weakness in advanced economy equity markets). When policymakers respond in the second year with collective and well-targeted fiscal measures, the negative growth spiral starts to quickly reverse (red line). However, some of the scarring effects on supply are slow to dissipate and are not fully offset by the supply-friendly measures in the fiscal response; output is therefore still below baseline at the end of the WEO horizon. However, if policymakers take advantage of the robust aggregate demand conditions when the fiscal measures are first introduced to press ahead with other product and labor market reform commitments (yellow line), then the medium-term scarring effects can be more than fully offset, and global output is above baseline by the end of the WEO horizon, with even more benefits to come beyond. Of course, an additional boost to potential output could come from the adoption of structural reforms that go beyond the commitments in the Brisbane Growth Strategies.

ing the heterogeneity in circumstances and the way in which individual countries are being affected by the various realignments in the global economy. Common challenges center on dealing with slowing growth and increased vulnerabilities after a decade or so of buoyant activity, facilitated in many cases by rapid credit expansion. Priorities range from ensuring a successful rebalancing of the Chinese economy and managing the cross-border spillovers of the slowdown in China to containing the vulnerabilities associated with tighter financial conditions and declining capital inflows as growth softens, and adjusting to lower commodity prices. Countries that are enjoying terms-of-trade gains from lower commodity prices should use the windfall to rebuild buffers. These near-term challenges notwithstanding, policymakers in emerging market economies also should act to lift medium-term growth, to safeguard hard-won gains in living standards and ensure continued convergence toward advanced economy income levels.

### *Supporting a Smooth Transition to More Balanced Growth in China*

As discussed in the previous sections, the slowdown and rebalancing of the Chinese economy have substantial international ramifications. Even countries that have few direct trade linkages with China are being affected through the Chinese slowdown's impact on prices of commodities and manufactured goods, and on global confidence and risk sentiment. Yet a well-managed rebalancing of China's growth model would ultimately lift global growth and reduce tail risks. The international community should therefore support China's efforts to reform and rebalance its economy.

The main challenge faced by the Chinese authorities is to transit to a more consumption- and service-oriented growth model while reducing the vulnerabilities from excess leverage bequeathed by the prior investment boom. Strengthening the influence of market forces in the Chinese economy, including in the foreign exchange market, is also a key objective.

Further structural measures, such as social security reform, will be needed to ensure that consumption increasingly and durably takes up the baton from investment. Any further policy support to secure a gradual growth slowdown should take the form of on-budget fiscal stimulus that supports the rebal-

ancing process. Broader reforms should give market mechanisms a more decisive role in the economy and eliminate distortions, with emphasis on state enterprise reforms, ending implicit guarantees, reforms to strengthen financial regulation and supervision, and increased reliance on interest rates as an instrument of monetary policy. Good progress has been made in financial liberalization and laying the foundations for stronger local-government finances. However, the reform strategy for state-owned enterprises needs to be more ambitious. Specifically, it should provide a clearer road map to a substantially greater role for the private sector and to hard budget constraints—and at an accelerated pace. The authorities should also communicate their policies, including exchange rate policies, clearly and be willing to accept the moderately lower growth that is consistent with rebalancing.

### *Policies to Manage Vulnerabilities*

As discussed in Chapter 2, emerging market economies have so far withstood the slowdown in capital flows generally well, with fewer adverse effects compared to past episodes of generalized capital flow retraction. That chapter finds that the ongoing slowdown is tightly linked to the decline in the growth rates of emerging market economies relative to advanced economies and that swings in capital flows have tended to be smaller in countries with more flexible exchange rates, lower public debt levels, and higher levels of foreign exchange reserves.

Although exchange rate flexibility has so far helped insulate countries' capital inflows from global factors and their own diminishing growth prospects, policymakers need to stay vigilant in regard to the possible adverse balance sheet effects of large currency depreciations, especially given the buildup of dollar-denominated corporate debt in emerging markets in the aftermath of the global financial crisis. Adjustments to large depreciations so far have been orderly, with little signs of systemic stress among corporate borrowers. Yet some companies' financial buffers are likely to have diminished as a result of the large depreciations, especially in a context of sluggish earnings. Exchange rate flexibility should remain the first line of defense against adverse shocks in countries with floating rates, but foreign exchange intervention may become necessary when pressures become acute and signs of disorderly markets emerge.

Keeping financial stability risks in check gains importance in an environment of reduced global risk appetite. Strong supervision and macroprudential frameworks and close monitoring of the possible vulnerabilities of both borrowers and lenders are essential. As financial conditions tighten, policymakers face a delicate balancing act: they need to prevent a further buildup of vulnerabilities in domestic financial institutions, while taking care not to exacerbate the tightening of credit conditions in a context of subdued activity.

### *Managing the Adjustment to Lower Commodity Prices*

With renewed declines in commodity prices, emerging market and developing economies that are heavily reliant on commodity exports are confronting a significant deterioration in their fiscal and external positions. Given that commodity prices are projected to stay low over an extended period, these countries will need to make sizable adjustments to domestic spending. Exchange rate flexibility will be important for cushioning the impact of adverse terms-of-trade shocks in many of these economies, although the effects of exchange rate depreciations on private and public sector balance sheets and on domestic inflation rates need to be closely monitored. In many cases, fiscal adjustments—based on a combination of spending cuts and revenue increases—will also be needed. Making public sector expenditures more efficient and broadening the revenue base toward noncommodity activities would make the adjustment less painful. Establishing transparent fiscal policy frameworks that provide anchors for longer-term policy objectives would bolster credibility and help keep financing conditions more favorable. The latter would allow expenditures to reflect medium- rather than short-term price developments and thus help avoid excessive procyclicality during the adjustments.

Oil-importing emerging market and developing economies, on the other hand, have enjoyed significant terms-of-trade windfall gains from the sharp drop in oil prices. Lower oil prices have alleviated inflation pressures and reduced external vulnerabilities. In some importing countries with oil-related subsidies, the windfall gains from lower oil prices have been used to increase public sector savings and strengthen fiscal positions. Whether all the gains should be saved depends on the extent of economic slack, the availability of fiscal space, and country-specific needs. In particular, terms-of-trade gains may provide an opportunity to finance critical structural reforms or growth-enhancing spending.

### *Policy Requirements for Individual Emerging Market Economies*

- In response to the oil price collapse, policymakers in *Russia* will need to implement an ambitious medium-term fiscal consolidation, anchored in a rules-based framework. In addition, boosting potential growth will require stronger governance and protection of property rights, lower administrative barriers and regulation, and greater competition and efficiency in capital allocation.
- In *India,* lower commodity prices, a range of supply-side measures, and a relatively tight monetary stance have resulted in a faster-than-expected fall in inflation, making room for nominal interest rate cuts, but upside risks to inflation could necessitate a tightening of monetary policy. Fiscal consolidation should continue, underpinned by revenue reforms and further reductions in subsidies. Sustaining strong growth over the medium term will require labor market reforms and dismantling of infrastructure bottlenecks, especially in the power sector.
- In *Brazil*, the government should persevere with its fiscal consolidation efforts to foster a turnaround in confidence and investment. With the scope for cutting discretionary spending severely limited, tax measures are necessary in the short term, but the most important challenge is to address rigidities and unsustainable mandates on the spending side. A reduction in inflation toward the 4.5 percent target by 2017 will require a tight monetary policy stance. Structural reforms to raise productivity and competitiveness—including the infrastructure concessions program—are essential to reinvigorate potential growth.
- The steep decline in oil prices is weighing heavily on the macroeconomic outlook in *Saudi Arabia.* Despite the significant fiscal consolidation in 2015, further spending restraint and revenue measures—including energy price reforms, containing the wage bill, prioritizing capital spending, and expanding non-oil tax revenues—will be necessary, in addition to a credible and well-communicated medium-term fiscal consolidation plan. Structural reforms to rebalance the economy toward non-oil activities and the private sector are essential. Adequate buffers support the maintenance of the pegged exchange rate regime, and further fiscal consolidation will help support the regime over the long term.

## Policy Priorities for Low-Income Countries

Economic activity in low-income countries has weakened (Box 1.2). In 2015, growth was the lowest in the past two decades, falling short of the October WEO forecast. Near-term growth expectations have also been marked down significantly. Economic weakness in advanced economies, slower growth in emerging market economies, and the sharp retreat in commodity prices are all partly responsible for the subdued outlook for low-income countries. In addition, greater access to foreign-market financing has increased some low-income countries' exposure to more demanding global financial conditions.

Policies must respond to the heightened challenges and vulnerabilities. As low-income countries face a similarly unfavorable external environment—lower commodity prices, lower external demand, and tighter financial conditions—many of their policy priorities are similar to those of emerging markets:

- Given the subdued outlook for commodity prices, policies for *commodity-exporting low-income countries* will need to be recalibrated. Exchange rate flexibility has allowed many of these countries to cope better with terms-of-trade shocks; further flexibility could still help with the adjustment in some countries. However, some tightening of the macroeconomic policy stance and a strengthening of monetary policy frameworks may be also required to limit second-round effects of depreciation on inflation, which runs substantially higher than in emerging markets. Enhanced financial sector regulation and supervision will also be necessary to manage foreign-currency exposures in balance sheets. To preserve hard-won macroeconomic stability with commodity prices projected to remain low, there is an urgent need for more fiscal adjustment where policy buffers are running low and debt levels have already risen. To improve economic resilience over the medium term, fiscal buffers should be rebuilt as commodity prices recover, and structural reforms should be implemented to achieve economic diversification and higher productivity.
- *Low-income countries that are less resource dependent* and continue to enjoy strong economic growth should focus on rebuilding eroded policy buffers. Strong macroeconomic policies and prudent debt management will also help some low-income countries that are exposed to global financial markets and the related volatility in capital inflows.

Low-income countries should not lose sight of the Sustainable Development Goals.[7] In achieving these goals, a key priority is to create necessary fiscal space by enhancing domestic resource mobilization and improving the efficiency of government spending, while protecting the vulnerable and fostering inclusive growth. These efforts should also help alleviate the pressures on public finances that some commodity-exporting low-income countries are currently facing. Deeper domestic financial markets could also increase the scope for domestic financing of the Sustainable Development Goals. More efficient public investment management can help ensure that infrastructure investment raises productive capacity without jeopardizing public debt sustainability.

Low-income countries also need to act now to build resilience to the challenges of climate change by identifying key risks and investing in targeted infrastructure and disaster management capacity. In that regard, the international community could help by providing needed financing, capacity-building support, and policy advice.

## Multilateral Actions to Boost Growth and Resilience

In the current environment, policymakers across the globe face a particularly challenging task. With the threat of a synchronized slowdown, and an even higher salience of significant downside risks, short-term domestic macroeconomic policies need to remain supportive of activity and confidence. Yet policy space is restricted in many economies. Despite this limitation, a more proactive multilateral approach to containing downside risks would be desirable.

- Should a significant shortfall in growth threaten to push the global economy back into recession, a collective macroeconomic policy reaction would be needed. Policymakers in the larger economies should proactively identify additional policy actions that could be implemented quickly and in a concerted fashion if there are signs that global downside risks are materializing. The simulations in Scenario Box 2 emphasize the global benefits of prompt and collective policy action in a downside scenario.
- Collective efforts are also urgently needed to enhance the global financial safety net. At a time of higher risks of financial turmoil and contagion, progress on this front would help mitigate the risks faced by commodity exporters and emerging market and developing economies that are susceptible to shocks despite strong medium-term fundamentals. There also remains a pressing need at the global level to complete and implement the regulatory reform agenda. In addition, advanced and emerging market economies should continue to strengthen the regulation and supervision of rapidly expanding financial activities outside the banking system.
- There are solid grounds for the international community to support countries that are bearing the brunt of geopolitical or other noneconomic spillovers. The world economy lacks mechanisms to handle externalities due to such shocks—for example, global epidemics and refugee flows triggered by geopolitical conflicts. Many of the affected countries are shouldering a burden for others, often with limited absorptive capacity and fiscal space. In light of the global-public-good nature of their efforts, a concerted worldwide initiative to provide support is amply justified, with those at risk from the spillovers contributing financial resources and multilateral agencies, including the IMF, assessing how they can best help channel those resources to the areas in greatest need.

[7]The Sustainable Development Goals, which replaced the Millennium Development Goals in September 2015, focus on economically, socially, and environmentally sustainable development and include ending poverty and hunger, providing inclusive and equitable education, ensuring access to energy and water, and promoting full employment, among others. See Fabrizio and others 2015.

# Annex 1.1. Regional Projections

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

*(Annual percent change, unless noted otherwise)*

| | Real GDP | | | Consumer Prices[1] | | | Current Account Balance[2] | | | Unemployment[3] | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Projections | | | Projections | | | Projections | | | Projections | |
| | 2015 | 2016 | 2017 | 2015 | 2016 | 2017 | 2015 | 2016 | 2017 | 2015 | 2016 | 2017 |
| **Europe** | **2.1** | **2.0** | **2.1** | **0.6** | **1.1** | **1.9** | **2.5** | **2.5** | **2.3** | . . . | . . . | . . . |
| **Advanced Europe** | **1.8** | **1.6** | **1.8** | **0.1** | **0.5** | **1.3** | **3.0** | **3.0** | **2.8** | **9.5** | **8.9** | **8.6** |
| Euro Area[4] | 1.6 | 1.5 | 1.6 | 0.0 | 0.4 | 1.1 | 3.0 | 3.5 | 3.2 | 10.9 | 10.3 | 9.9 |
| Germany | 1.5 | 1.5 | 1.6 | 0.1 | 0.5 | 1.4 | 8.5 | 8.4 | 8.0 | 4.6 | 4.6 | 4.8 |
| France | 1.1 | 1.1 | 1.3 | 0.1 | 0.4 | 1.1 | –0.1 | 0.6 | 0.3 | 10.4 | 10.1 | 10.0 |
| Italy | 0.8 | 1.0 | 1.1 | 0.1 | 0.2 | 0.7 | 2.1 | 2.3 | 2.0 | 11.9 | 11.4 | 10.9 |
| Spain | 3.2 | 2.6 | 2.3 | –0.5 | –0.4 | 1.0 | 1.4 | 1.9 | 2.0 | 22.1 | 19.7 | 18.3 |
| Netherlands | 1.9 | 1.8 | 1.9 | 0.2 | 0.3 | 0.7 | 11.0 | 10.6 | 10.2 | 6.9 | 6.4 | 6.2 |
| Belgium | 1.4 | 1.2 | 1.4 | 0.6 | 1.2 | 1.1 | 0.5 | 0.5 | 0.1 | 8.3 | 8.3 | 8.2 |
| Austria | 0.9 | 1.2 | 1.4 | 0.8 | 1.4 | 1.8 | 3.6 | 3.6 | 3.5 | 5.7 | 6.2 | 6.4 |
| Greece | –0.2 | –0.6 | 2.7 | –1.1 | 0.0 | 0.6 | 0.0 | –0.2 | –0.3 | 25.0 | 25.0 | 23.4 |
| Portugal | 1.5 | 1.4 | 1.3 | 0.5 | 0.7 | 1.2 | 0.5 | 0.9 | 0.4 | 12.4 | 11.6 | 11.1 |
| Ireland | 7.8 | 5.0 | 3.6 | 0.0 | 0.9 | 1.4 | 4.5 | 4.0 | 3.5 | 9.4 | 8.3 | 7.5 |
| Finland | 0.4 | 0.9 | 1.1 | –0.2 | 0.4 | 1.4 | 0.1 | 0.0 | –0.1 | 9.3 | 9.3 | 9.0 |
| Slovak Republic | 3.6 | 3.3 | 3.4 | –0.3 | 0.2 | 1.4 | –1.1 | –1.0 | –1.0 | 11.5 | 10.4 | 9.6 |
| Lithuania | 1.6 | 2.7 | 3.1 | –0.7 | 0.6 | 1.9 | –2.3 | –3.0 | –2.9 | 9.1 | 8.6 | 8.5 |
| Slovenia | 2.9 | 1.9 | 2.0 | –0.5 | 0.1 | 1.0 | 7.3 | 7.6 | 7.1 | 9.1 | 7.9 | 7.6 |
| Luxembourg | 4.5 | 3.5 | 3.4 | 0.1 | 0.5 | 1.3 | 5.2 | 5.1 | 5.0 | 6.9 | 6.4 | 6.3 |
| Latvia | 2.7 | 3.2 | 3.6 | 0.2 | 0.5 | 1.5 | –1.6 | –2.0 | –2.2 | 9.9 | 9.5 | 9.1 |
| Estonia | 1.1 | 2.2 | 2.8 | 0.1 | 2.0 | 2.9 | 1.9 | 1.2 | 0.5 | 6.8 | 6.5 | 6.5 |
| Cyprus | 1.6 | 1.6 | 2.0 | –1.5 | 0.6 | 1.3 | –5.1 | –4.8 | –4.7 | 15.3 | 14.2 | 13.0 |
| Malta | 5.4 | 3.5 | 3.0 | 1.2 | 1.6 | 1.8 | 4.1 | 5.3 | 5.3 | 5.3 | 5.4 | 5.3 |
| United Kingdom[5] | 2.2 | 1.9 | 2.2 | 0.1 | 0.8 | 1.9 | –4.3 | –4.3 | –4.0 | 5.4 | 5.0 | 5.0 |
| Switzerland | 0.9 | 1.2 | 1.5 | –1.1 | –0.6 | –0.1 | 11.4 | 9.3 | 8.8 | 3.3 | 3.5 | 3.3 |
| Sweden | 4.1 | 3.7 | 2.8 | 0.7 | 1.1 | 1.4 | 5.9 | 5.8 | 5.7 | 7.4 | 6.8 | 7.0 |
| Norway | 1.6 | 1.0 | 1.5 | 2.2 | 2.8 | 2.5 | 9.0 | 6.5 | 7.3 | 4.4 | 4.6 | 4.4 |
| Czech Republic | 4.2 | 2.5 | 2.4 | 0.3 | 1.0 | 2.2 | 0.9 | 0.6 | 0.6 | 5.0 | 4.7 | 4.6 |
| Denmark | 1.2 | 1.6 | 1.8 | 0.5 | 0.8 | 1.4 | 6.9 | 6.6 | 6.5 | 6.2 | 6.0 | 5.8 |
| Iceland | 4.0 | 4.2 | 3.2 | 1.6 | 2.6 | 3.9 | 4.2 | 4.1 | 2.4 | 4.0 | 3.8 | 3.7 |
| San Marino | 1.0 | 1.1 | 1.2 | 0.4 | 0.9 | 1.1 | . . . | . . . | . . . | 8.4 | 7.9 | 7.3 |
| **Emerging and Developing Europe[6]** | **3.5** | **3.5** | **3.3** | **2.9** | **4.1** | **4.8** | **–1.9** | **–2.1** | **–2.6** | . . . | . . . | . . . |
| Turkey | 3.8 | 3.8 | 3.4 | 7.7 | 9.8 | 8.8 | –4.4 | –3.6 | –4.1 | 10.2 | 10.8 | 10.5 |
| Poland | 3.6 | 3.6 | 3.6 | –0.9 | –0.2 | 1.3 | –0.5 | –1.8 | –2.1 | 7.5 | 6.9 | 6.9 |
| Romania | 3.7 | 4.2 | 3.6 | –0.6 | –0.4 | 3.1 | –1.1 | –1.7 | –2.5 | 6.8 | 6.4 | 6.2 |
| Hungary | 2.9 | 2.3 | 2.5 | –0.1 | 0.5 | 2.4 | 5.1 | 5.4 | 5.2 | 6.9 | 6.7 | 6.5 |
| Bulgaria[5] | 3.0 | 2.3 | 2.3 | –1.1 | 0.2 | 1.2 | 2.1 | 1.7 | 0.8 | 9.2 | 8.6 | 7.9 |
| Serbia | 0.7 | 1.8 | 2.3 | 1.4 | 1.7 | 3.1 | –4.8 | –4.4 | –4.3 | 18.5 | 18.7 | 18.9 |
| Croatia | 1.6 | 1.9 | 2.1 | –0.5 | 0.4 | 1.3 | 4.4 | 2.7 | 2.1 | 16.9 | 16.4 | 15.9 |

Note: Data for some countries are based on fiscal years. Please refer to Table F in the Statistical Appendix for a list of economies with exceptional reporting periods.
[1]Movements in consumer prices are shown as annual averages. Year-end to year-end changes can be found in Tables A6 and A7 in the Statistical Appendix.
[2]Percent of GDP.
[3]Percent. National definitions of unemployment may differ.
[4]Current account position corrected for reporting discrepancies in intra-area transactions.
[5]Based on Eurostat's harmonized index of consumer prices.
[6]Includes Albania, Bosnia and Herzegovina, Kosovo, FYR Macedonia, and Montenegro.

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

*(Annual percent change, unless noted otherwise)*

| | Real GDP | | | Consumer Prices[1] | | | Current Account Balance[2] | | | Unemployment[3] | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Projections | | | Projections | | | Projections | | | Projections | |
| | 2015 | 2016 | 2017 | 2015 | 2016 | 2017 | 2015 | 2016 | 2017 | 2015 | 2016 | 2017 |
| **Asia** | **5.4** | **5.3** | **5.3** | **2.3** | **2.4** | **2.9** | **2.7** | **2.7** | **2.2** | **. . .** | **. . .** | **. . .** |
| **Advanced Asia** | **1.2** | **1.3** | **1.4** | **0.8** | **0.6** | **1.6** | **4.2** | **4.6** | **4.4** | **3.7** | **3.6** | **3.6** |
| Japan | 0.5 | 0.5 | –0.1 | 0.8 | –0.2 | 1.2 | 3.3 | 3.8 | 3.7 | 3.4 | 3.3 | 3.3 |
| Korea | 2.6 | 2.7 | 2.9 | 0.7 | 1.3 | 2.2 | 7.7 | 8.2 | 7.4 | 3.6 | 3.5 | 3.3 |
| Australia | 2.5 | 2.5 | 3.0 | 1.5 | 2.1 | 2.4 | –4.6 | –3.6 | –3.5 | 6.1 | 5.9 | 5.8 |
| Taiwan Province of China | 0.7 | 1.5 | 2.2 | –0.3 | 0.7 | 1.1 | 14.5 | 15.0 | 14.4 | 3.8 | 3.8 | 3.9 |
| Singapore | 2.0 | 1.8 | 2.2 | –0.5 | 0.2 | 1.3 | 19.7 | 21.2 | 20.5 | 1.9 | 2.0 | 2.0 |
| Hong Kong SAR | 2.4 | 2.2 | 2.4 | 3.0 | 2.5 | 2.6 | 3.0 | 3.1 | 3.2 | 3.3 | 3.2 | 3.1 |
| New Zealand | 3.4 | 2.0 | 2.5 | 0.3 | 1.5 | 1.9 | –3.0 | –3.7 | –3.7 | 5.8 | 5.9 | 5.8 |
| Macao SAR[4] | –20.3 | –7.2 | 0.7 | 4.6 | 3.0 | 3.0 | 26.2 | 20.0 | 17.2 | 1.8 | 2.0 | 2.0 |
| **Emerging and Developing Asia** | **6.6** | **6.4** | **6.3** | **2.7** | **2.9** | **3.2** | **1.9** | **1.7** | **1.1** | **. . .** | **. . .** | **. . .** |
| China | 6.9 | 6.5 | 6.2 | 1.4 | 1.8 | 2.0 | 2.7 | 2.6 | 2.1 | 4.1 | 4.1 | 4.1 |
| India | 7.3 | 7.5 | 7.5 | 4.9 | 5.3 | 5.3 | –1.3 | –1.5 | –2.1 | . . . | . . . | . . . |
| **ASEAN-5** | **4.7** | **4.8** | **5.1** | **3.3** | **2.8** | **3.5** | **1.8** | **1.1** | **0.5** | **. . .** | **. . .** | **. . .** |
| Indonesia | 4.8 | 4.9 | 5.3 | 6.4 | 4.3 | 4.5 | –2.1 | –2.6 | –2.8 | 6.2 | 5.9 | 5.7 |
| Thailand | 2.8 | 3.0 | 3.2 | –0.9 | 0.2 | 2.0 | 8.8 | 8.0 | 5.7 | 0.9 | 0.8 | 0.7 |
| Malaysia | 5.0 | 4.4 | 4.8 | 2.1 | 3.1 | 2.9 | 2.9 | 2.3 | 1.9 | 3.2 | 3.2 | 3.2 |
| Philippines | 5.8 | 6.0 | 6.2 | 1.4 | 2.0 | 3.4 | 2.9 | 2.6 | 2.4 | 6.3 | 6.0 | 5.9 |
| Vietnam | 6.7 | 6.3 | 6.2 | 0.6 | 1.3 | 2.3 | 1.4 | 0.6 | 0.2 | 2.4 | 2.4 | 2.4 |
| **Other Emerging and Developing Asia[5]** | **5.9** | **6.0** | **6.3** | **6.1** | **6.3** | **6.4** | **–2.9** | **–3.3** | **–3.7** | **. . .** | **. . .** | **. . .** |
| *Memorandum* | | | | | | | | | | | | |
| Emerging Asia[6] | 6.6 | 6.4 | 6.3 | 2.6 | 2.8 | 3.1 | 2.0 | 1.8 | 1.2 | . . . | . . . | . . . |

Note: Data for some countries are based on fiscal years. Please refer to Table F in the Statistical Appendix for a list of economies with exceptional reporting periods.
[1]Movements in consumer prices are shown as annual averages. Year-end to year-end changes can be found in Tables A6 and A7 in the Statistical Appendix.
[2]Percent of GDP.
[3]Percent. National definitions of unemployment may differ.
[4]Macao SAR is classified as an advanced economy. It is a Special Administrative Region of China, but its statistical data are maintained on a separate and independent basis.
[5]Other Emerging and Developing Asia comprises Bangladesh, Bhutan, Brunei Darussalam, Cambodia, Fiji, Kiribati, Lao P.D.R., Maldives, Marshall Islands, Micronesia, Mongolia, Myanmar, Nepal, Palau, Papua New Guinea, Samoa, Solomon Islands, Sri Lanka, Timor-Leste, Tonga, Tuvalu, and Vanuatu.
[6]Emerging Asia comprises the ASEAN-5 (Indonesia, Malaysia, Philippines, Thailand, Vietnam) economies, China, and India.

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

*(Annual percent change, unless noted otherwise)*

| | Real GDP | | | Consumer Prices[1] | | | Current Account Balance[2] | | | Unemployment[3] | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Projections | | | Projections | | | Projections | | | Projections | |
| | 2015 | 2016 | 2017 | 2015 | 2016 | 2017 | 2015 | 2016 | 2017 | 2015 | 2016 | 2017 |
| **North America** | **2.3** | **2.3** | **2.4** | **0.4** | **1.1** | **1.7** | **–2.8** | **–2.9** | **–3.3** | **. . .** | **. . .** | **. . .** |
| United States | 2.4 | 2.4 | 2.5 | 0.1 | 0.8 | 1.5 | –2.7 | –2.9 | –3.3 | 5.3 | 4.9 | 4.8 |
| Canada | 1.2 | 1.5 | 1.9 | 1.1 | 1.3 | 1.9 | –3.3 | –3.5 | –3.0 | 6.9 | 7.3 | 7.4 |
| Mexico | 2.5 | 2.4 | 2.6 | 2.7 | 2.9 | 3.0 | –2.8 | –2.6 | –2.6 | 4.3 | 4.0 | 3.9 |
| Puerto Rico[4] | –1.3 | –1.3 | –1.4 | –0.8 | –0.6 | 1.2 | . . . | . . . | . . . | 12.0 | 12.0 | 11.9 |
| **South America[5]** | **–1.4** | **–2.0** | **0.8** | **. . .** | **. . .** | **. . .** | **–3.8** | **–2.8** | **–2.2** | **. . .** | **. . .** | **. . .** |
| Brazil | –3.8 | –3.8 | 0.0 | 9.0 | 8.7 | 6.1 | –3.3 | –2.0 | –1.5 | 6.8 | 9.2 | 10.2 |
| Argentina[6] | 1.2 | –1.0 | 2.8 | . . . | . . . | 19.9 | –2.8 | –1.7 | –2.2 | 6.5 | 7.8 | 7.4 |
| Colombia | 3.1 | 2.5 | 3.0 | 5.0 | 7.3 | 3.4 | –6.5 | –6.0 | –4.3 | 8.9 | 9.8 | 9.4 |
| Venezuela | –5.7 | –8.0 | –4.5 | 121.7 | 481.5 | 1,642.8 | –7.6 | –6.6 | –2.5 | 7.4 | 17.4 | 20.7 |
| Chile | 2.1 | 1.5 | 2.1 | 4.3 | 4.1 | 3.0 | –2.0 | –2.1 | –2.7 | 6.2 | 6.8 | 7.5 |
| Peru | 3.3 | 3.7 | 4.1 | 3.5 | 3.1 | 2.5 | –4.4 | –3.9 | –3.3 | 6.0 | 6.0 | 6.0 |
| Ecuador | 0.0 | –4.5 | –4.3 | 4.0 | 1.6 | 0.2 | –2.9 | –2.3 | –0.2 | 4.8 | 5.7 | 6.5 |
| Bolivia | 4.8 | 3.8 | 3.5 | 4.1 | 4.0 | 5.0 | –6.9 | –8.3 | –7.1 | 4.0 | 4.0 | 4.0 |
| Uruguay | 1.5 | 1.4 | 2.6 | 8.7 | 9.4 | 8.4 | –3.9 | –3.9 | –3.7 | 7.6 | 7.8 | 7.6 |
| Paraguay | 3.0 | 2.9 | 3.2 | 2.9 | 3.8 | 4.5 | –1.8 | –1.2 | –1.1 | 6.1 | 6.2 | 6.1 |
| **Central America[7]** | **4.1** | **4.3** | **4.3** | **1.4** | **2.7** | **3.2** | **–4.0** | **–3.9** | **–4.0** | **. . .** | **. . .** | **. . .** |
| **Caribbean[8]** | **4.0** | **3.5** | **3.6** | **2.3** | **4.1** | **4.3** | **–4.1** | **–3.4** | **–3.5** | **. . .** | **. . .** | **. . .** |
| *Memorandum* | | | | | | | | | | | | |
| Latin America and the Caribbean[9] | –0.1 | –0.5 | 1.5 | 5.5 | 5.7 | 4.3 | –3.6 | –2.8 | –2.4 | . . . | . . . | . . . |
| East Caribbean Currency Union[10] | 2.2 | 2.6 | 2.5 | –0.6 | –0.1 | 1.3 | –12.2 | –11.7 | –12.5 | . . . | . . . | . . . |

Note: Data for some countries are based on fiscal years. Please refer to Table F in the Statistical Appendix for a list of economies with exceptional reporting periods.
[1]Movements in consumer prices are shown as annual averages. Year-end to year-end changes can be found in Tables A6 and A7 in the Statistical Appendix.
[2]Percent of GDP.
[3]Percent. National definitions of unemployment may differ.
[4]The Commonwealth of Puerto Rico is classified as an advanced economy. It is a territory of the United States, but its statistical data are maintained on a separate and independent basis.
[5]Includes Guyana and Suriname. Data for Argentina's and Venezuela's consumer prices are excluded. See country-specific notes for Argentina in the "Country Notes" section of the Statistical Appendix.
[6]See country-specific notes for Argentina in the "Country Notes" section of the Statistical Appendix.
[7]Central America comprises Belize, Costa Rica, El Salvador, Guatemala, Honduras, Nicaragua, and Panama.
[8]The Caribbean comprises Antigua and Barbuda, The Bahamas, Barbados, Dominica, the Dominican Republic, Grenada, Haiti, Jamaica, St. Kitts and Nevis, St. Lucia, St. Vincent and the Grenadines, and Trinidad and Tobago.
[9]Latin America and the Caribbean comprises Mexico and economies from the Caribbean, Central America, and South America. Data for Argentina's and Venezuela's consumer prices are excluded. See country-specific notes for Argentina in the "Country Notes" section of the Statistical Appendix.
[10]Eastern Caribbean Currency Union comprises Antigua and Barbuda, Dominica, Grenada, St. Kitts and Nevis, St. Lucia, and St. Vincent and the Grenadines as well as Anguilla and Montserrat, which are not IMF members.

## Annex Table 1.1.4. Commonwealth of Independent States Economies: Real GDP, Consumer Prices, Current Account Balance, and Unemployment

*(Annual percent change, unless noted otherwise)*

| | Real GDP | | | Consumer Prices[1] | | | Current Account Balance[2] | | | Unemployment[3] | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Projections | | | Projections | | | Projections | | | Projections | |
| | 2015 | 2016 | 2017 | 2015 | 2016 | 2017 | 2015 | 2016 | 2017 | 2015 | 2016 | 2017 |
| **Commonwealth of Independent States[4]** | **–2.8** | **–1.1** | **1.3** | **15.5** | **9.4** | **7.4** | **2.8** | **2.0** | **3.0** | **. . .** | **. . .** | **. . .** |
| **Net Energy Exporters** | **–2.4** | **–1.3** | **1.1** | **13.7** | **8.9** | **7.0** | **3.4** | **2.8** | **3.8** | **. . .** | **. . .** | **. . .** |
| Russia | –3.7 | –1.8 | 0.8 | 15.5 | 8.4 | 6.5 | 5.0 | 4.2 | 5.1 | 5.6 | 6.5 | 6.3 |
| Kazakhstan | 1.2 | 0.1 | 1.0 | 6.5 | 13.1 | 9.3 | –2.6 | –4.0 | –1.5 | 5.0 | 5.0 | 5.0 |
| Uzbekistan | 8.0 | 5.0 | 5.5 | 8.5 | 8.5 | 9.4 | 0.0 | 0.2 | 0.5 | . . . | . . . | . . . |
| Azerbaijan | 1.1 | –3.0 | 1.0 | 4.0 | 12.8 | 9.5 | 0.2 | –0.2 | 0.2 | 6.0 | 6.0 | 6.0 |
| Turkmenistan | 6.5 | 4.3 | 4.5 | 5.5 | 5.4 | 4.4 | –12.7 | –15.4 | –11.6 | . . . | . . . | . . . |
| **Net Energy Importers** | **–5.9** | **0.6** | **2.1** | **29.5** | **12.8** | **10.2** | **–2.9** | **–4.4** | **–3.9** | **. . .** | **. . .** | **. . .** |
| Ukraine | –9.9 | 1.5 | 2.5 | 48.7 | 15.1 | 11.0 | –0.3 | –2.6 | –2.3 | 9.5 | 9.2 | 8.8 |
| Belarus | –3.9 | –2.7 | 0.4 | 13.5 | 13.6 | 12.1 | –1.9 | –3.5 | –3.1 | 1.0 | 2.0 | 2.5 |
| Georgia | 2.8 | 2.5 | 4.5 | 4.0 | 4.3 | 4.5 | –11.6 | –10.3 | –9.1 | . . . | . . . | . . . |
| Armenia | 3.0 | 1.9 | 2.5 | 3.7 | 2.6 | 4.0 | –3.2 | –4.3 | –5.1 | 17.7 | 18.2 | 18.3 |
| Tajikistan | 3.0 | 3.0 | 3.5 | 5.8 | 9.2 | 8.5 | –10.2 | –8.4 | –7.3 | . . . | . . . | . . . |
| Kyrgyz Republic | 3.5 | 3.5 | 2.7 | 6.5 | 5.5 | 6.9 | –14.7 | –18.4 | –15.4 | 7.5 | 7.4 | 7.3 |
| Moldova | –1.1 | 0.5 | 2.5 | 9.6 | 9.8 | 7.4 | –6.6 | –4.0 | –4.4 | 4.9 | 4.8 | 4.7 |
| *Memorandum* | | | | | | | | | | | | |
| Caucasus and Central Asia[5] | 3.1 | 1.2 | 2.5 | 6.1 | 10.5 | 8.5 | –3.4 | –4.7 | –3.0 | . . . | . . . | . . . |
| Low-Income CIS Countries[6] | 5.8 | 4.0 | 4.7 | 7.3 | 7.5 | 8.1 | –3.8 | –3.5 | –3.1 | . . . | . . . | . . . |
| Net Energy Exporters Excluding Russia | 3.2 | 1.1 | 2.4 | 6.3 | 11.2 | 8.8 | –2.7 | –4.0 | –2.2 | . . . | . . . | . . . |

Note: Data for some countries are based on fiscal years. Please refer to Table F in the Statistical Appendix for a list of economies with exceptional reporting periods.
[1]Movements in consumer prices are shown as annual averages. Year-end to year-end changes can be found in Table A7 in the Statistical Appendix.
[2]Percent of GDP.
[3]Percent. National definitions of unemployment may differ.
[4]Georgia, Turkmenistan, and Ukraine, which are not members of the Commonwealth of Independent States (CIS), are included in this group for reasons of geography and similarity in economic structure.
[5]Caucasus and Central Asia comprises Armenia, Azerbaijan, Georgia, Kazakhstan, the Kyrgyz Republic, Tajikistan, Turkmenistan, and Uzbekistan.
[6]Low-Income CIS Countries comprise Armenia, Georgia, the Kyrgyz Republic, Moldova, Tajikistan, and Uzbekistan.

## Annex Table 1.1.5. Middle East and North African Economies, Afghanistan, and Pakistan: Real GDP, Consumer Prices, Current Account Balance, and Unemployment

*(Annual percent change, unless noted otherwise)*

| | Real GDP | | | Consumer Prices[1] | | | Current Account Balance[2] | | | Unemployment[3] | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Projections | | | Projections | | | Projections | | | Projections | |
| | 2015 | 2016 | 2017 | 2015 | 2016 | 2017 | 2015 | 2016 | 2017 | 2015 | 2016 | 2017 |
| **Middle East, North Africa, Afghanistan, and Pakistan** | **2.5** | **3.1** | **3.5** | **5.7** | **5.2** | **4.8** | **–3.6** | **–6.9** | **–5.2** | **. . .** | **. . .** | **. . .** |
| **Oil Exporters[4]** | **1.9** | **2.9** | **3.1** | **5.2** | **4.9** | **3.9** | **–3.1** | **–8.0** | **–5.6** | **. . .** | **. . .** | **. . .** |
| Saudi Arabia | 3.4 | 1.2 | 1.9 | 2.2 | 3.8 | 1.0 | –6.3 | –10.2 | –6.1 | . . . | . . . | . . . |
| Iran[5] | 0.0 | 4.0 | 3.7 | 12.0 | 8.9 | 8.2 | 0.4 | –0.8 | 0.0 | 10.8 | 11.3 | 11.6 |
| United Arab Emirates | 3.9 | 2.4 | 2.6 | 4.1 | 3.2 | 2.7 | 3.9 | –1.0 | 0.1 | . . . | . . . | . . . |
| Algeria | 3.7 | 3.4 | 2.9 | 4.8 | 4.3 | 4.0 | –15.7 | –17.1 | –16.2 | 11.3 | 11.6 | 12.1 |
| Iraq | 2.4 | 7.2 | 3.3 | 1.4 | 2.0 | 2.0 | –6.4 | –14.4 | –11.0 | . . . | . . . | . . . |
| Qatar | 3.3 | 3.4 | 3.4 | 1.7 | 2.4 | 2.7 | 4.9 | –5.0 | –4.9 | . . . | . . . | . . . |
| Kuwait | 0.9 | 2.4 | 2.6 | 3.4 | 3.4 | 3.5 | 11.5 | –1.0 | 3.3 | 2.1 | 2.1 | 2.1 |
| **Oil Importers[6]** | **3.8** | **3.5** | **4.2** | **6.7** | **5.8** | **6.5** | **–4.6** | **–4.5** | **–4.6** | **. . .** | **. . .** | **. . .** |
| Egypt | 4.2 | 3.3 | 4.3 | 11.0 | 9.6 | 9.5 | –3.7 | –5.3 | –5.3 | 12.9 | 13.0 | 12.4 |
| Pakistan | 4.2 | 4.5 | 4.7 | 4.5 | 3.3 | 5.0 | –1.0 | –1.1 | –1.6 | 6.0 | 6.1 | 6.1 |
| Morocco | 4.5 | 2.3 | 4.1 | 1.6 | 1.5 | 2.0 | –1.4 | 0.4 | 0.1 | 9.8 | 9.7 | 9.6 |
| Sudan | 3.5 | 3.7 | 4.0 | 16.9 | 13.0 | 12.3 | –7.7 | –6.3 | –5.5 | 21.6 | 20.6 | 19.6 |
| Tunisia | 0.8 | 2.0 | 3.0 | 4.9 | 4.0 | 3.9 | –8.9 | –7.7 | –7.0 | 15.0 | 14.0 | 13.0 |
| Lebanon | 1.0 | 1.0 | 2.0 | –3.7 | –0.7 | 2.0 | –25.0 | –21.3 | –21.2 | . . . | . . . | . . . |
| Jordan | 2.5 | 3.2 | 3.7 | –0.9 | 0.2 | 2.1 | –8.8 | –6.4 | –5.6 | . . . | . . . | . . . |
| *Memorandum* | | | | | | | | | | | | |
| Middle East and North Africa | 2.3 | 2.9 | 3.3 | 5.9 | 5.5 | 4.7 | –3.9 | –7.5 | –5.6 | . . . | . . . | . . . |
| Israel[7] | 2.6 | 2.8 | 3.0 | –0.6 | –0.1 | 0.9 | 4.1 | 4.0 | 3.5 | 5.3 | 5.3 | 5.3 |
| Maghreb[8] | 2.7 | 2.5 | 4.1 | 4.2 | 3.9 | 3.7 | –13.8 | –14.1 | –13.2 | . . . | . . . | . . . |
| Mashreq[9] | 3.9 | 3.1 | 4.1 | 9.1 | 8.2 | 8.4 | –6.7 | –7.3 | –7.1 | . . . | . . . | . . . |

Note: Data for some countries are based on fiscal years. Please refer to Table F in the Statistical Appendix for a list of economies with exceptional reporting periods.
[1]Movements in consumer prices are shown as annual averages. Year-end to year-end changes can be found in Tables A6 and A7 in the Statistical Appendix.
[2]Percent of GDP.
[3]Percent. National definitions of unemployment may differ.
[4]Includes Bahrain, Libya, Oman, and Yemen.
[5]For Iran, data and forecasts are based on GDP at market prices. Corresponding data used by the IMF staff for GDP growth at factor prices are 0.0 percent for 2015/16, 4.0 percent for 2016/17, and 3.7 percent for 2017/18.
[6]Includes Afghanistan, Djibouti, and Mauritania. Syria is excluded because of the uncertain political situation.
[7]Israel, which is not a member of the economic region, is included for reasons of geography. Note that Israel is not included in the regional aggregates.
[8]The Maghreb comprises Algeria, Libya, Mauritania, Morocco, and Tunisia.
[9]The Mashreq comprises Egypt, Jordan, and Lebanon. Syria is excluded because of the uncertain political situation.

## Annex Table 1.1.6. Sub-Saharan African Economies: Real GDP, Consumer Prices, Current Account Balance, and Unemployment

*(Annual percent change, unless noted otherwise)*

| | Real GDP | | | Consumer Prices[1] | | | Current Account Balance[2] | | | Unemployment[3] | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Projections | | | Projections | | | Projections | | | Projections | |
| | 2015 | 2016 | 2017 | 2015 | 2016 | 2017 | 2015 | 2016 | 2017 | 2015 | 2016 | 2017 |
| **Sub-Saharan Africa** | **3.4** | **3.0** | **4.0** | **7.0** | **9.0** | **8.3** | **–5.9** | **–6.2** | **–5.5** | **. . .** | **. . .** | **. . .** |
| **Oil Exporters[4]** | **2.4** | **2.0** | **3.4** | **9.2** | **12.5** | **12.1** | **–3.9** | **–4.5** | **–2.9** | **. . .** | **. . .** | **. . .** |
| Nigeria | 2.7 | 2.3 | 3.5 | 9.0 | 10.4 | 12.4 | –2.4 | –2.8 | –1.8 | 9.9 | . . . | . . . |
| Angola | 3.0 | 2.5 | 2.7 | 10.3 | 19.1 | 15.2 | –8.5 | –11.6 | –8.8 | . . . | . . . | . . . |
| Gabon | 4.0 | 3.2 | 4.5 | 0.1 | 2.5 | 2.5 | –2.8 | –7.2 | –5.8 | . . . | . . . | . . . |
| Chad | 1.8 | –0.4 | 1.6 | 3.6 | 3.2 | 3.1 | –12.8 | –13.0 | –8.8 | . . . | . . . | . . . |
| Republic of Congo | 2.5 | 4.4 | 4.3 | 2.0 | 2.3 | 2.4 | –14.2 | –23.1 | –10.8 | . . . | . . . | . . . |
| **Middle-Income Countries[5]** | **2.6** | **2.4** | **3.2** | **5.4** | **7.1** | **5.8** | **–4.4** | **–4.7** | **–4.6** | **. . .** | **. . .** | **. . .** |
| South Africa | 1.3 | 0.6 | 1.2 | 4.6 | 6.5 | 6.3 | –4.4 | –4.4 | –4.9 | 25.4 | 26.1 | 26.7 |
| Ghana | 3.5 | 4.5 | 7.7 | 17.2 | 15.7 | 8.9 | –8.3 | –7.2 | –5.4 | . . . | . . . | . . . |
| Côte d'Ivoire | 8.6 | 8.5 | 8.0 | 1.2 | 2.1 | 2.0 | –1.7 | –1.8 | –2.7 | . . . | . . . | . . . |
| Cameroon | 5.9 | 4.9 | 4.6 | 2.7 | 2.2 | 2.2 | –5.8 | –5.7 | –5.5 | . . . | . . . | . . . |
| Zambia | 3.6 | 3.4 | 4.8 | 10.1 | 22.5 | 9.9 | –3.5 | –3.8 | –1.7 | . . . | . . . | . . . |
| Senegal | 6.5 | 6.6 | 6.8 | 0.1 | 1.2 | 1.2 | –7.6 | –6.0 | –5.8 | . . . | . . . | . . . |
| **Low-Income Countries[6]** | **5.9** | **5.2** | **5.9** | **5.7** | **6.2** | **6.1** | **–11.8** | **–11.0** | **–11.3** | **. . .** | **. . .** | **. . .** |
| Ethiopia | 10.2 | 4.5 | 7.0 | 10.1 | 10.6 | 11.6 | –12.8 | –10.7 | –9.7 | . . . | . . . | . . . |
| Kenya | 5.6 | 6.0 | 6.1 | 6.6 | 6.3 | 6.0 | –8.2 | –8.3 | –6.9 | . . . | . . . | . . . |
| Tanzania | 7.0 | 6.9 | 6.8 | 5.6 | 6.1 | 5.1 | –8.7 | –7.7 | –7.4 | . . . | . . . | . . . |
| Uganda | 5.0 | 5.3 | 5.7 | 5.8 | 6.7 | 5.9 | –8.9 | –8.4 | –8.5 | . . . | . . . | . . . |
| Madagascar | 3.0 | 4.1 | 4.5 | 7.4 | 7.2 | 7.0 | –2.2 | –3.0 | –4.4 | . . . | . . . | . . . |
| Democratic Republic of the Congo | 7.7 | 4.9 | 5.1 | 1.0 | 1.7 | 2.5 | –12.2 | –14.2 | –12.3 | . . . | . . . | . . . |
| *Memorandum* | | | | | | | | | | | | |
| Sub-Saharan Africa Excluding South Sudan | 3.4 | 3.1 | 4.0 | 6.7 | 8.3 | 8.2 | –5.9 | –6.2 | –5.5 | . . . | . . . | . . . |

Note: Data for some countries are based on fiscal years. Please refer to Table F in the Statistical Appendix for a list of economies with exceptional reporting periods.
[1]Movements in consumer prices are shown as annual averages. Year-end to year-end changes can be found in Table A7 in the Statistical Appendix.
[2]Percent of GDP.
[3]Percent. National definitions of unemployment may differ.
[4]Includes Equatorial Guinea and South Sudan.
[5]Includes Botswana, Cabo Verde, Lesotho, Mauritius, Namibia, Seychelles, and Swaziland.
[6]Includes Benin, Burkina Faso, Burundi, the Central African Republic, Comoros, Eritrea, The Gambia, Guinea, Guinea-Bissau, Liberia, Malawi, Mali, Mozambique, Niger, Rwanda, São Tomé and Príncipe, Sierra Leone, Togo, and Zimbabwe.

# Special Feature: Commodity Market Developments and Forecasts, with a Focus on the Energy Transition in an Era of Low Fossil Fuel Prices

*Commodity prices have declined since the release of the October 2015* World Economic Outlook *(WEO). Diminishing growth prospects for emerging market economies, especially China, combined with abundant supply are putting downward pressure on the prices of most commodities, although the relative importance of each force differs across commodities. Oil prices have declined mostly on account of news about strong supply magnified by risk-off behavior in financial markets. Metal prices have fallen owing to slower demand growth from China. Food prices have also declined as the result of a record-high harvest, although prices of selected food items have rebounded from unfavorable weather triggered by El Niño. This special feature includes an in-depth analysis of the energy transition in an era of low fossil fuel prices.*

The IMF's Primary Commodities Price Index has declined 19 percent since August 2015, the reference period for the October WEO (Figure 1.SF.1, panel 1). Oil prices have decreased further, by 32 percent, on account of strong supply from members of the Organization of the Petroleum Exporting Countries (OPEC) and risk-off behavior in financial markets, with investors moving away from what they perceive to be riskier assets, including commodities and stocks. The further collapse in oil prices has proceeded in spite of geopolitical tensions in the Middle East, suggesting that market expectations are firmly anchored in "low for long" oil prices. Natural gas and coal prices have also declined, as the former are linked to oil prices, including through oil-indexed contract prices, albeit with a lag. Nonfuel commodity prices have weakened as well, with metal and agricultural commodities prices declining by 9 percent and 4 percent, respectively, over the period.

Excess oil supply has pushed inventory levels in the Organisation for Economic Co-operation and Development (OECD) to record-high levels in spite of strong oil demand. Global oil demand growth in 2015 is estimated to have been about 1.6 million barrels a day (mbd), the largest increase in five years, and significantly higher than earlier forecast by the International Energy Agency (IEA). Oil supply has been quite resilient in spite of low prices, mostly on account of strong OPEC and Russian production, as well as the Islamic Republic of Iran's return to world oil markets. However, there have been signs of a slowdown in shale oil production in the United States recently, driven by record low oil prices since 2003. This suggests an inflection point in the relative resilience of shale oil production owing to the dramatic operational efficiency gains that have prevailed during the past year. Turmoil in financial markets, as well as a strong U.S. dollar, have also been putting downward pressure on oil prices (Figure 1.SF.1, panel 2).

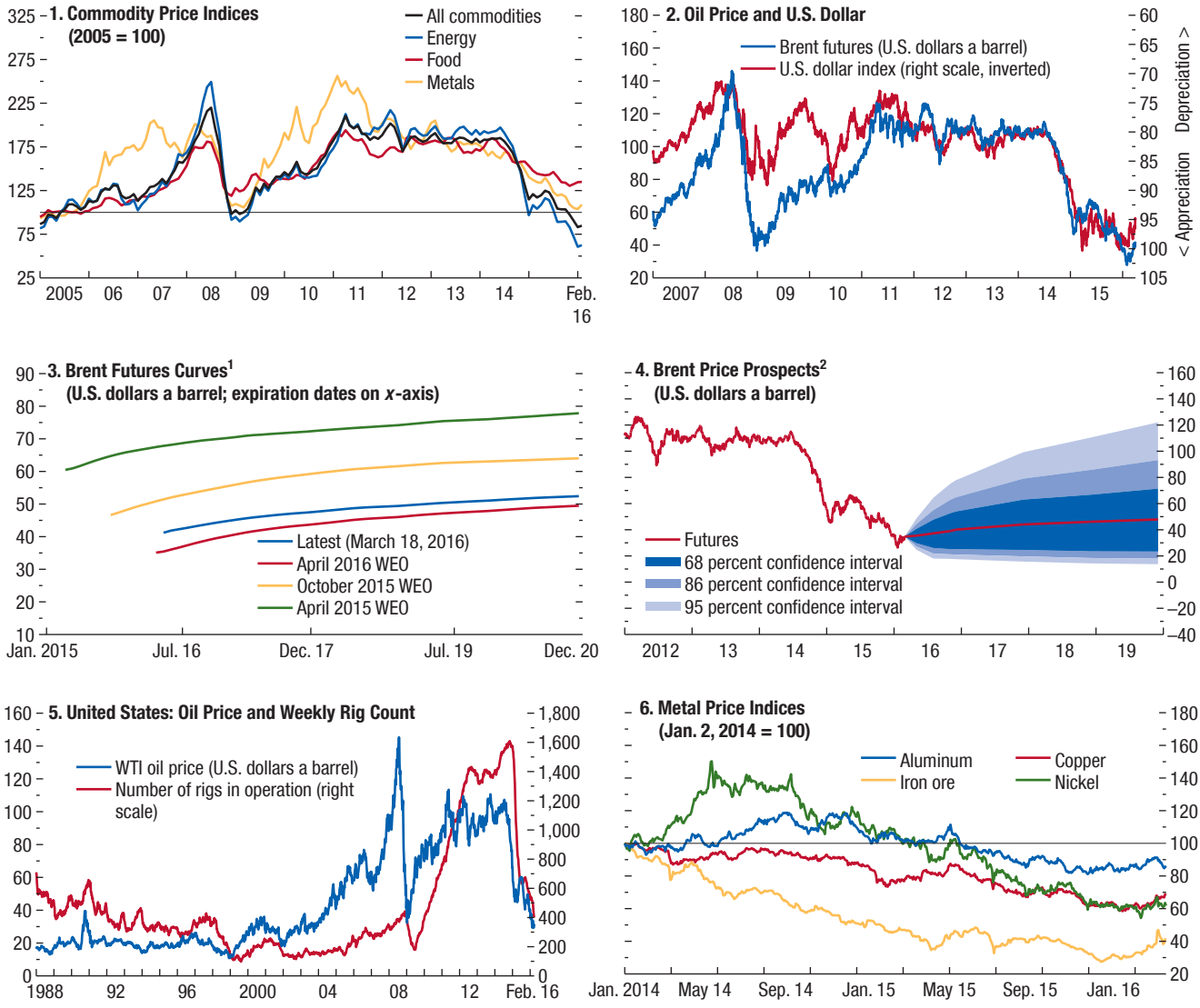
For the next year, world oil demand is expected to grow at the much slower pace of 1.2 mbd, according to the IEA, although the global economy is expected to grow slightly faster than in 2015. The expected slower pace is partly because the decline in oil prices has temporarily stimulated consumption of oil over the past year. Non-OPEC supply is expected to shrink for the first time in eight years, although only by a small margin. OPEC maintained its supply target at its last meeting in December 2015. In practice, however, OPEC members have been producing well above their target levels. Some OPEC countries have a strong incentive to increase production, considering the dire state of their public finances. The Islamic Republic of Iran is eager to increase production to regain market share lost during the sanctions era. At a meeting in Doha on February 16, 2016, oil ministers from Qatar, Russia, Saudi Arabia, and Venezuela agreed to freeze output, and the Islamic Republic of Iran and Iraq subsequently welcomed the initiative, but without any commitment to stop or slow their scheduled production increases. A credible agreement that would significantly reduce the OPEC production target to support higher oil prices appears unlikely.

Natural gas prices are also declining, with one leading natural gas price index (the average of prices in Europe, Japan, and the United States) down by 22 percent since August 2015. Falling oil prices and a relatively warm winter as a result of El Niño have contributed to this decline. An important coal price index (the average of Australian and South African prices) has also declined 12 percent since August 2015, in tandem with oil prices.

Oil futures contracts point to rising prices (Figure 1.SF.1, panel 3). Baseline assumptions for the IMF's average petroleum spot prices, which are based on futures prices, suggest average annual prices of $34.75 a barrel in 2016—a decline of 32 percent from 2015—and $40.99 a barrel in 2017 (Figure 1.SF.1, panel 4). There remains substantial uncertainty around the baseline assumptions for oil prices. While geopolitical tensions in the Middle East could potentially cause oil market disruptions, high

The authors of this feature are Rabah Arezki (team leader), Christian Bogmans, and Akito Matsumoto, with research assistance from Rachel Yuting Fan and Vanessa Diaz Montelongo.

## Figure 1.SF.1. Commodity Market Developments




Sources: Baker Hughes Inc.; Bloomberg, L.P.; IMF, Primary Commodity Price System; Thomson Reuters Datastream; and IMF staff estimates.
Note: WTI = West Texas Intermediate.
[1]*World Economic Outlook* (WEO) futures prices are baseline assumptions for each WEO report and derived from futures prices. April 2016 WEO prices are based on February 26, 2016, closing.
[2]Derived from prices of futures options on February 26, 2016.

inventory levels and a rapid response from U.S. shale producers should limit the scope for a sharp price adjustment in the near future. That said, sustained oil prices of about $30 a barrel might lead to significant price recovery farther down the road, as many relatively high-cost producers could end up halting production in response to the prolonged lower prices, and declining oil prices have already dramatically reduced investment in extraction activities (Figure 1.SF.1, panel 5).

Metal prices have declined 9 percent since August 2015 (Figure 1.SF.1, panel 6). Prices have been gradually declining because of a slowdown and a shift away from commodity-intensive investment in China, which consumes roughly half of global metals. Metal prices are projected to decline by 14 percent in 2016 and 1 percent in 2017. Futures prices point to continued low prices, but with rising uncertainty on account of both demand (especially from China) and stronger supply. Iron ore prices have declined

17 percent since August in spite of a major mine accident in Samarco, Brazil.[1]

Prices of agricultural commodities have declined by 4 percent overall relative to August 2015. Food prices have decreased by 4 percent, with declines in most food items, except sugar and a few oilseeds. Sugar and palm oil prices have increased because of a drought in India and Malaysia, likely caused by El Niño. El Niño has also taken a toll on East Africa. International prices do not fully reflect the adverse weather shock, however, because of high prior inventory levels. For example, Ethiopia is suffering from its worst drought in 30 years. Unusually dry weather in North Africa is also likely to reduce harvests significantly, including those for cereals. The beverage price index has stagnated as a cocoa price increase has offset a decline in coffee prices.

Annual food prices are projected to languish over the next two years owing to ample supply—supported by high levels of stocks—and slower demand. Food prices are projected to decline by 6 percent in 2016 from the previous year; current price levels are already 5 percent below 2015 levels. However, over the next two years, prices for major food products, such as wheat, corn, and soybeans, are expected to increase slightly from current levels. Risks to food prices are associated with weather variability, particularly concerns over El Niño conditions, which are expected to strengthen throughout the Northern Hemisphere and persist beyond the first quarter of 2016.

## The Energy Transition in an Era of Low Fossil Fuel Prices

*The human influence on the climate system is clear and is evident from the increasing greenhouse gas concentrations in the atmosphere, positive radiative forcing, observed warming, and understanding of the climate system.*

—Intergovernmental Panel on Climate Change, *Fifth Assessment Report*

The United Nations' 2015 Climate Change Conference (COP21) was by all accounts a success. Nearly all countries around the globe have now firmly committed to reducing their greenhouse gas emissions through the Intended Nationally Determined Contributions (INDCs). The post-COP21 agenda now focuses on the implementation of these INDCs. At the heart of that implementation is the so-called energy transition, which consists of moving away from using fossil fuels (petroleum products, natural gas, and coal) and toward clean energies to power the global economy. While the energy transition is arguably at an early stage, with important differences across countries, it is at a critical juncture. Indeed, to avoid the irreversible consequences of climate change induced by greenhouse gas emissions, the energy transition must firmly take root at a time when fossil fuel prices are likely to stay low for long. It involves significant opportunities and risks, which energy policies will need to tackle.

This section provides answers to four key questions about the energy transition:

- Where do we stand on fossil fuels?
- What is the status of clean energy?
- What opportunities and risks are associated with the energy transition?
- What is the way forward?

### *Where Do We Stand on Fossil Fuels?*

Oil prices have dropped by more than 70 percent since June 2014 and are expected to remain low for a long time owing to a variety of factors (see Arezki and Obstfeld 2015). On the supply side, the advent and relative resilience of shale oil production and increased oil production by OPEC members play an important role. On the demand side, lower GDP growth in emerging markets has tended to reduce oil demand growth, especially in light of the secular increase in global oil efficiency (Figure 1.SF.2), and is expected to continue to do so. That said, the expansion of the middle class in emerging giants is expected to increase dramatically the demand for transport services and the level of car ownership and, in turn, to support oil demand growth (Figure 1.SF.3). The balance among these forces will determine the strength of demand growth.

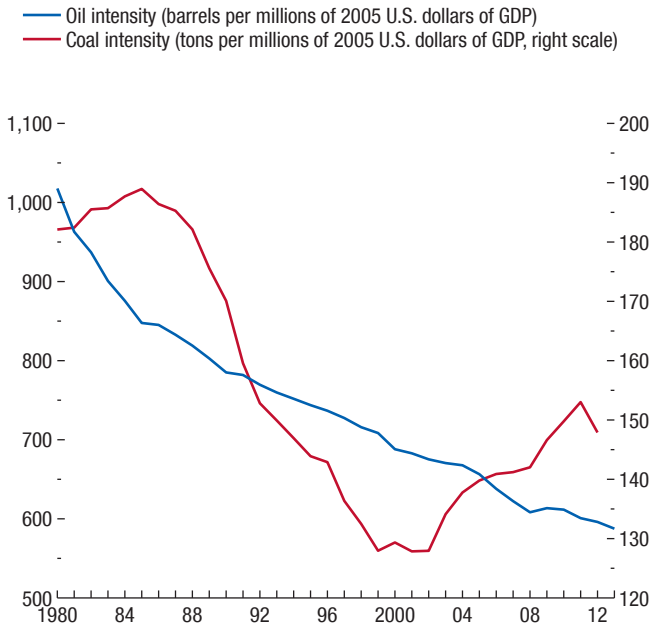
Natural gas and coal have similarly seen price declines that look to be long lived. The North American shale gas boom has resulted in record-low prices there. Recent discoveries of vast gas fields in developing countries add to the pool of available reserves.[2] The resumption of nuclear-powered electricity generation in Japan is a permanent factor contributing to lower natural gas prices in Asia. Coal prices also are low, owing to oversupply and the scaling down of demand because of environmental concerns and slower economic activity, especially from China, which burns half of the world's coal.

The share of oil in global primary energy consumption has declined rapidly, from 50 percent in 1970 to about 30 percent today (Figure 1.SF.4). The share of coal, now

[1]Samarco accounts for between 8 percent and 10 percent of iron ore production in Brazil.

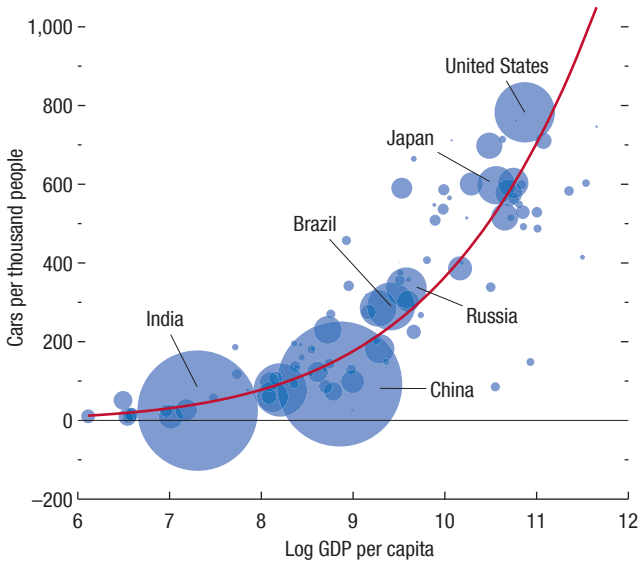
[2]The recent discovery of the giant Zohr gas field off the Egyptian coast and, more recently, the discovery of natural gas off the coast of Senegal will eventually have repercussions for pricing in Europe, the Mediterranean region, and western Africa. In addition, many other locales, especially in developing countries, that are opening up for resource exploration offer significant potential (see Arezki, Toscani, and van der Ploeg, forthcoming).

### Figure 1.SF.2. World Energy Intensity




Sources: U.S. Energy Information Administration; World Bank, *World Development Indicators*; and IMF staff calculations.

### Figure 1.SF.3. Car Ownership and GDP per Capita, 2013



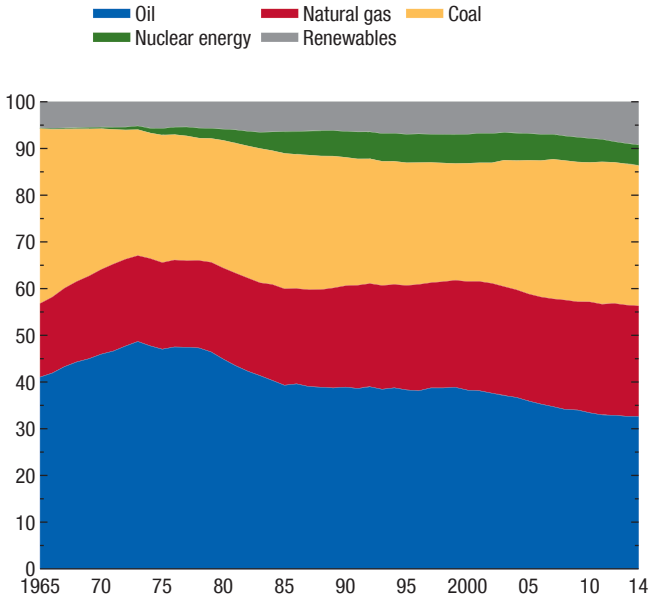

Sources: International Road Federation, *World Road Statistics*; and IMF staff calculations.
Note: Size of bubble represents population in 2013. Cars per thousand people for India is from 2012.

reaching 30 percent of global energy consumption, has been increasing since the early 2000s, mostly on account of rising demand from China, and recently also from India. In contrast with the case of oil, more coal per unit of global GDP is now burned relative to the early 2000s (Figure 1.SF.2). Natural gas consumption has increased steadily since the 1970s, now accounting for nearly 25 percent of global primary energy consumption. Global demand for natural gas is projected to increase strongly over the medium term (IEA 2015), with emerging market and developing economies accounting for the bulk of the growth. The outlook for oil and coal demand growth falls short of that for total energy demand, partly because advanced economies are expected to drastically reduce their demand for coal and oil, in contrast with emerging markets. According to the IEA, the shares of oil and coal are expected to drop from 36 percent and 19 percent, respectively, in 2013 to 26 percent and 12 percent, respectively, in 2040.

Oil is used mostly to fuel transportation, whereas coal and natural gas are used mainly as inputs into the power sector, consisting of electricity and heat generation, which accounts for more than one-third of total primary energy consumption (Table 1.SF.1). For electricity generation alone, the biggest source of energy is coal, but renewables, including hydropower, are second, followed by natural gas.[3]

[3]The share of natural gas in total primary energy demand is expected to rise, but it faces competition from substitutes for gas in

### Figure 1.SF.4. World Energy Consumption Share by Fuel Type
*(Percent)*



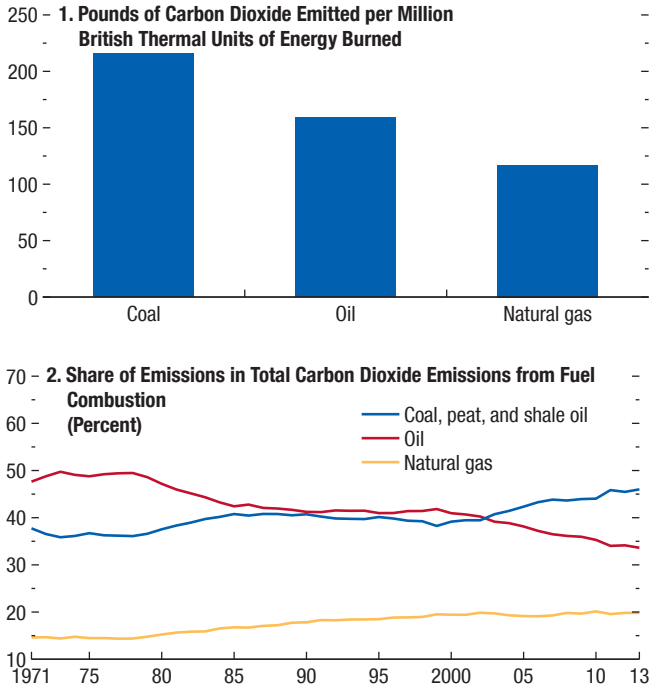

Source: BP, *Statistical Review of World Energy 2015.*
Note: Consumption of renewables is based on gross primary hydroelectric generation and gross generation from other renewable sources, including wind, geothermal, solar, biomass, and waste.

**Table 1.SF.1. World Energy Usage, 2013**
*(Millions of tons of oil equivalent)*

| Energy Source | Power Generation (electricity and heat) | Final Consumption | | | Total Primary Energy Demand |
|---|---|---|---|---|---|
| | | Industry | Transportation | Buildings | |
| Coal | 2,404 | 768 | 3 | 128 | 3,929 |
| Oil | 284 | 302 | 2,357 | 317 | 4,219 |
| Gas | 1,172 | 557 | 96 | 627 | 2,901 |
| Nuclear | 646 | – | – | – | 646 |
| Hydro | 326 | – | – | – | 326 |
| Bioenergy/Biofuels | 155 | 194 | 65 | 861 | 1,376 |
| Other Renewables | 127 | 1 | – | 32 | 161 |
| Electricity and Heat | – | 842 | 26 | 1,040 | . . . |
| Total | 5,115 | 2,664 | 2,547 | 3,004 | 13,559 |

Sources: International Energy Agency, *World Energy Outlook* and *World Energy Balance*; and IMF staff calculations.
Note: Because of statistical discrepancies, individual data in each row do not sum exactly to total primary energy demand. – = negligible.

**Figure 1.SF.5. Carbon Emissions for Various Fuels**




Sources: International Energy Agency; and IMF staff calculations.

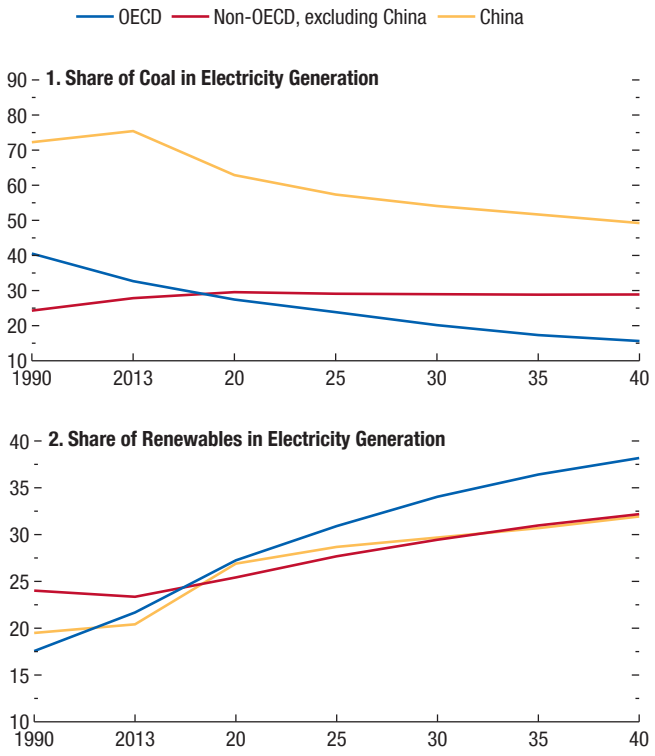
many sectors, especially from renewables and coal in power generation—in part because of subsidies and gas-pricing regimes. Natural gas is expected to make further inroads into the transportation sector in particular, in which its use is still very limited. This development, along with the eventual use of liquefied natural gas as shipping fuel, will contribute to the displacement of oil.

Roughly equal, and substantial, amounts of energy are also consumed in the industry, transport, and building construction sectors. The transport sector accounts for roughly two-thirds of oil use in the world. The industry, transport, and building construction sectors also consume electricity and heat that are generated by primary energy.

Natural gas is the cleanest energy source among fossil fuels in terms of carbon dioxide emissions. Oil is second to natural gas in this respect, and coal is the dirtiest source, especially when used by older, low-efficiency plants (Figure 1.SF.5, panel 1). Besides carbon dioxide, old plants tend to emit more air pollutants such as nitrogen oxides and sulfur oxides. While China, the world's largest coal consumer, is shifting toward renewable energy resources, demand from other developing countries, especially India, is expected to increase, especially if coal prices stay low (Figure 1.SF.6). In fact, global carbon intensity per unit of energy has increased since the beginning of the 1990s owing to the rising consumption of coal, especially in Asia (see Steckel, Edenhofer, and Jakob 2015). In spite of the increased use of renewables and the decreased use of oil as fuel, total greenhouse gas emissions have increased because of the increase in demand for coal (Figure 1.SF.5, panel 2). This increase has resulted from higher growth in emerging market economies, where coal intensity has risen.

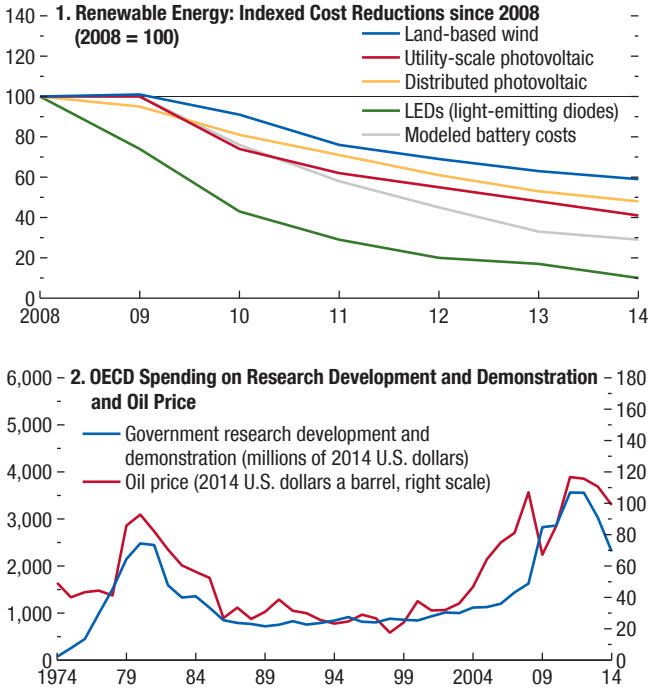
If the energy intensity of economic activity does not fall or if countries in the developing world do not adopt state-of-the-art technology for coal-powered plants to lower the carbon intensity of their electricity generation,

**Figure 1.SF.6. Electricity Generation**
*(Percent)*




Sources: International Energy Agency; and IMF staff calculations.
Note: These shares relate to electricity generation only and exclude the heating sector. OECD = Organisation for Economic Co-operation and Development.

**Figure 1.SF.7. Cost of Renewables and Research and Development Efforts**




Sources: International Energy Agency, *Energy Technology Research Development and Demonstration 2015*; and U.S. Department of Energy.
Note: OECD = Organisation for Economic Co-operation and Development.

economic development in most regions of the world will continue to drive global emissions upward. Emissions will reach dramatic levels and, in turn, accelerate global warming. Poorly designed regulations for the use of coal in developing countries could also discourage technological change in the electricity sector. As a result, the world might not benefit, in terms of lower global emissions, from the downward trend in coal use in developed countries.

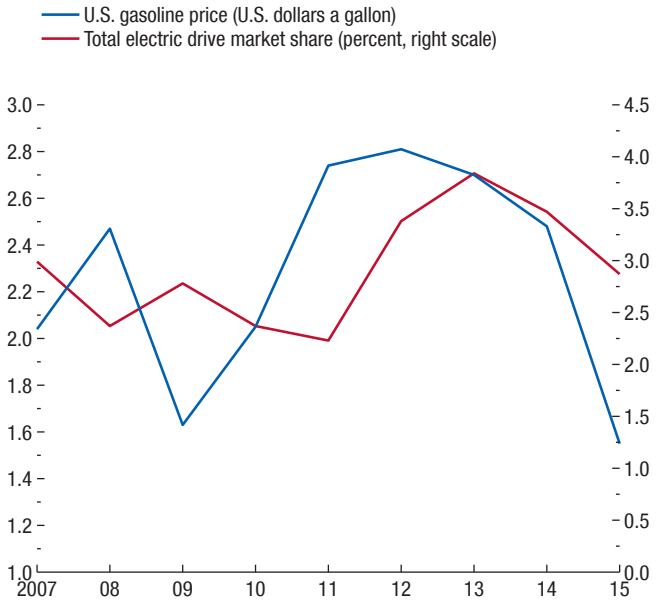
Considering its relative cleanliness and abundance, natural gas can play a key role as a bridge in the transition from coal to renewables. Growth in shale gas production in the United States is expected to make natural gas the energy of choice there. There is also potential for growth in the use of shale gas and conventional natural gas in China and many other locales around the globe (see Chakravorty, Fischer, and Hubert 2015).

### *What Is the Status of Clean Energy?*

One of the most notable trends in energy consumption is the increase in the use of renewable energy resources (Figure 1.SF.4), which has been supported by a formidable reduction in the costs of various renewables, including solar and wind (Figure 1.SF.7, panel 1). These cost reductions are the result of research and development (R&D) efforts to promote clean energy and energy efficiency ("grey" technology) (Figure 1.SF.7, panel 2). Early R&D investment dates to the 1970s, an era of record-high fossil fuel prices, and was mostly government financed. This is no surprise, as the private sector typically does not internalize the positive externalities associated with an increase in R&D. Public R&D spending early on, however, paved the way for corporate R&D spending during the 2000s, another period of high fossil fuel prices. The result has been a flow of technological innovations across sectors, including the development of electric cars, although they (notably plug-in hybrid vehicles) still have a low penetration rate, accounting for less than 1 percent of car sales in the United States. Unsurprisingly, electric car sales have decreased with the recent drop in gasoline prices (Figure 1.SF.8).

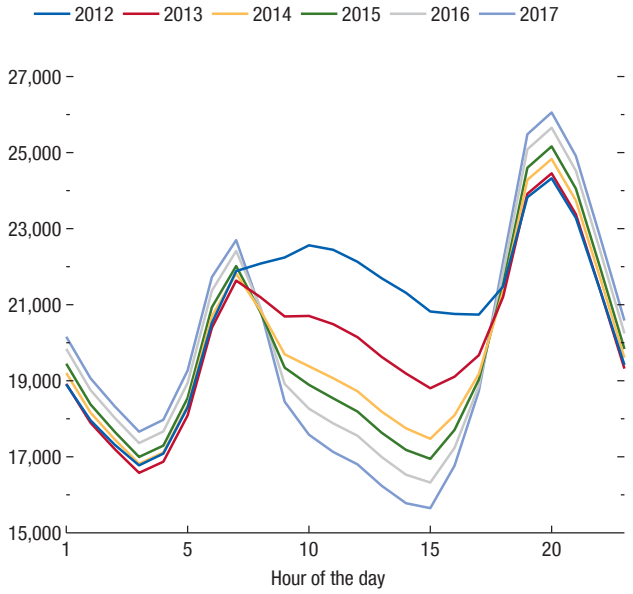
Among primary energy sources, renewables (including hydropower) are the least carbon intensive. The IEA fore-

**Figure 1.SF.8. U.S. Sales of Electric Vehicles and Gasoline Price**




Sources: Electric Drive Transportation Association; and IMF, Primary Commodity Price System.
Note: Total electric drive market share includes hybrid vehicles.

**Figure 1.SF.9. Duck Curve: Illustrative Change in Projections of Net Load Curve**
*(Megawatts)*




Source: California Energy Commission staff, Energy Assessments Division.
Note: Projections are based on load shapes and production profiles from actual data of California Independent System Operator on March 22, 2013.

casts that the share of renewables in global total primary energy consumption will increase from 14 percent in 2013 to 19 percent in 2040 in light of expected energy policy changes. The electricity sector, in which the share of renewables is projected to increase from 22 percent to 34 percent over the same period, will be one of the sectors to change most dramatically.

One potential difficulty with depending on renewable energy in the power sector is intermittency, and hence reliability. Unstable supply patterns of wind, sun, and rainfall can trigger supply-demand mismatches. The increasing reliance on renewables, including solar and wind, as sources of power generation will require much steeper ramping up of supply during daily peaks to achieve load balancing.[4] In other words, the intermittencies associated with the increased usage of renewables trigger spikes in demand for "controllable" power, for example, from natural gas (Figure 1.SF.9). For renewables to overcome this problem, the power sector needs to develop economical battery backup technology and foster electricity exchange. Battery technology has shown steady progress, suggesting that eventually electricity storage technology will facilitate a more widespread reliance on renewables.

Bioenergy has long been employed for power generation in the electricity sector. Biosolids are relatively cheap sources of energy, as they are residuals from other processes or simply waste. Power plants fired by biomass also have the flexibility to compensate for generation lapses associated with other renewables, as they can operate at any time of the day. Both advanced economies and developing countries are expected to develop more bioenergy-based facilities. In the transportation sector, biofuels are usually blended with conventional gasoline or diesel, sometimes following government regulation. As a result, the share of biofuels in transportation fuels has doubled over the past decade. While biofuels can reduce carbon emissions, some types also put pressure on food markets and have been blamed for food price increases (see Chakravorty and others 2015).

Nuclear energy makes up only a small share of global energy consumption. Carbon emissions associated with nuclear energy generation are limited, but in the aftermath of the March 2011 Fukushima disaster, several countries have imposed moratoriums on nuclear energy use on account of environmental liabilities and safety

[4]The net load curve represents the variable portion of the load that integrated system operators must meet in real time. The net load is calculated by taking the forecast load and subtracting the forecast of electricity generation from variable generation resources, wind, and solar (see California ISO 2013).

**Table 1.SF.2. Summary of Severe Accidents in the Energy Sector, 1970–2008**

| | OECD | | Non-OECD | |
|---|---|---|---|---|
| Energy Chain | Accidents | Immediate Fatalities | Accidents | Immediate Fatalities |
| Coal | 87 | 2,259 | 2,394 | 38,672 |
| Oil | 187 | 3,495 | 358 | 19,516 |
| Natural gas | 109 | 1,258 | 78 | 1,556 |
| Liquefied petroleum gas | 58 | 1,856 | 70 | 2,789 |
| Hydro | 1 | 14 | 9 | 30,069 |
| Nuclear | – | – | 1 | 31 |
| Biofuel | – | – | – | – |
| Biogas | – | – | 2 | 18 |
| Geothermal | – | – | 1 | 21 |

Source: Burgherr and Hirschberg 2014.
Note: Accidents with more than five fatalities are considered severe. Accidents in Organisation for Economic Co-operation and Development (OECD) countries from hydro power refer to the U.S. Teton Dam failure in 1976. For nuclear accidents, only immediate fatalities of the Chernobyl accident are shown. – = negligible.

concerns. In addition to human health risks, the overall impact on the environment is hard to judge, as waste management of used nuclear fuel is still at an early stage. There are also concerns about the diversion of materials involved in nuclear power generation to military use. There are, however, important benefits of nuclear energy. For example, and in contrast with renewable energy, nuclear power is not plagued by the problem of intermittency. Also, immediate fatalities associated with nuclear power plant accidents—as opposed to long-term health consequences related to radiation and pollution exposure—are historically much lower than for any other type of power plant, including coal-fired plants (Table 1.SF.2). The potential for using nuclear energy as a source of clean energy is relatively high. Some countries, such as China and the United States, are using more nuclear energy to curb their greenhouse gas emissions. While there are serious issues that need to be solved in terms of safety and waste management, many scientists argue that it will be hard to achieve INDC targets without greater use of nuclear energy.

### *What Opportunities and Risks Are Associated with the Energy Transition?*

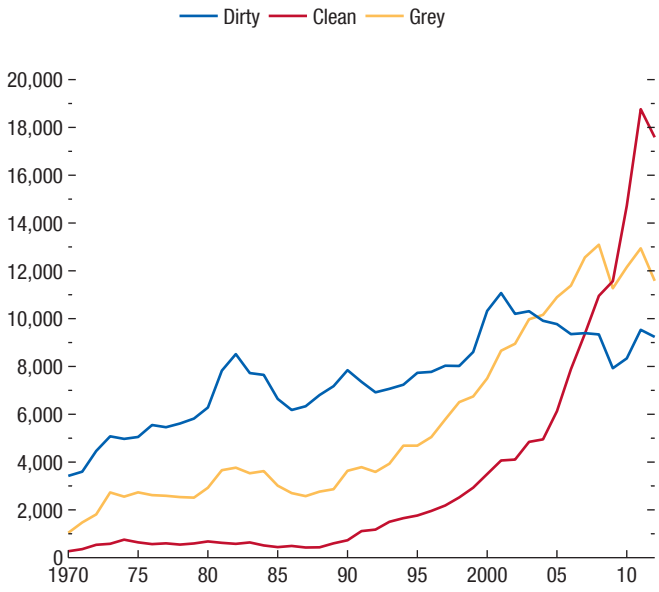
The current low fossil fuel price environment will certainly delay the energy transition. Indeed, progress in the development of renewables could prove fragile if fossil fuel prices remain low for long (see Arezki and Obstfeld 2015).[5] While renewables account for only a small share of global primary energy consumption, renewable energy will need to displace fossil fuels to a much greater extent to forestall further significant climate risks. The current low prices for oil, gas, and coal may provide scant economic incentive for research to find even cheaper substitutes for those fuels. Lower prices have already raised demand in some countries, such as Germany, boosting the use of coal (the dirtiest fossil fuel) at the expense of natural gas (the cleanest).[6] Evidence indicates that higher fossil fuel prices strongly encourage both innovation and adoption of cleaner technology (see Aghion and others 2012 and Busse, Knittel, and Zettelmeyer 2013). For example, lower gasoline prices reduce the incentive to purchase fuel-efficient or electric cars (Figure 1.SF.8). Similarly, the number of clean- or grey-energy patents correlates positively with the price of fossil fuels (Figure 1.SF.10). Finally, low prices for energy in general may hamper the decoupling of economic growth and overall energy consumption if consumers substitute energy for other commodities.

A few countries have committed to reducing coal-powered generation. Because coal is currently relatively cheap, however, it is tempting for a country to use coal for power generation, especially if it cannot afford cleaner alternatives, which are typically more expensive. As mentioned earlier, even advanced economies in Europe increased their use of coal when the shale revolution in

[5]Low oil prices may in part reflect, in addition to the factors discussed earlier in the chapter, an independent process of structural transformation that is taking place in China and is diminishing (or slowing down the growth of) the oil intensity of GDP (see Stefanski 2014).

[6]As the relative price of coal to natural gas in Europe declined in recent years, the share of coal in electricity generation increased in Germany, from 43.1 percent in 2010 to 46.3 percent in 2013. Over the same time period, the share of natural gas fell from 14.3 percent to 10.9 percent.

**Figure 1.SF.10. World Patents**
*(Number of patents)*




Source: Aghion and others 2012.
Note: Calculations are based on the European Patent Office's World Patent Statistical Database. Dirty = auto technology affecting internal combustion engines; Clean = auto technology in electric and hybrid vehicles and fuel cells for hydrogen vehicles, among others; Grey = innovations in fuel efficiency.

the United States displaced coal there and international coal prices dropped.[7] In addition to these short-term effects of low coal prices, low prices may boost capacity investment in coal power plants but reduce efforts to develop more efficient technology.

Efficiency and pollution intensity differ significantly across coal power plants. With the prospects of lower demand for coal plants over environmental concerns, power plant manufacturers that have up to this point improved plant efficiency and reduced emissions might now moderate their development efforts. This could leave emerging market economies with less efficient and more pollution-intensive coal power plants. Another key technology that can potentially salvage the coal industry in regard to its poor emissions profile is carbon capture and storage, which will be useful not only for power plants but also in other carbon-emitting industries, such as steel production. At this point, carbon capture and storage and clean coal technologies are not considered to be main global-warming mitigation tools, but it may still be important for coal and oil producers to pursue these technologies to some degree.

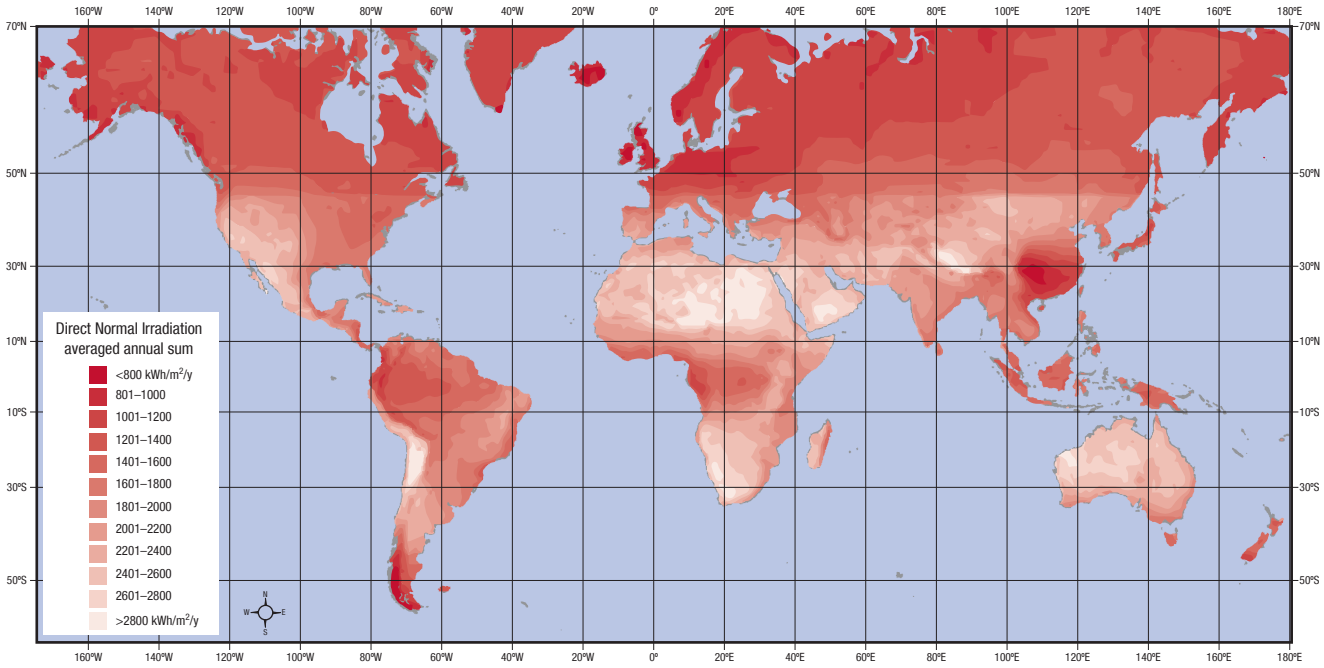
In the long term, if and when the energy transition is successful, fossil fuels could become "stranded assets" (that is, assets that either lose value unexpectedly or prematurely or become liabilities) without proper carbon capture and storage. In the case of fossil fuel industries, stranded assets might involve "stranded reserves," that is, fossil fuel reserves that are no longer recoverable, and "stranded or underutilized capital," that is, sunk capital investments that would become obsolete (for example, an oil platform that will never be used). Because it remains to be seen how rapidly the energy transition might take place, however, there is significant uncertainty regarding the time horizon over which fossil fuel assets would become stranded. One important lesson from earlier energy transitions—which include the transition from wood and biomass to coal in the eighteenth and nineteenth centuries and the transition from coal to oil in the nineteenth and twentieth centuries—is that these transitions take time to complete. History may not repeat itself in that regard, however, in that the technological forces unleashed by the anticipated public and private response to climate change seem much more potent than the factors driving earlier energy transitions and may lead to a relatively swifter transition this time, notwithstanding the potential delay implied by the current low-for-long fossil fuel price environment. Considering the industry's carbon emissions intensity, coal-related assets are more exposed to the risk of becoming stranded than are oil and natural gas assets.

The consequences of stranded assets would be dramatic for coal and oil companies and exporting countries that rely heavily on fossil fuel exports, which would face heavy losses. Many major oil companies have long diversified across fossil fuels by investing more heavily in the production of natural gas and have also started to invest in so-called breakthrough renewable technologies in an effort to adapt to emerging realities. Oil-exporting countries have also attempted to diversify their economies away from oil, but this has proven challenging. Nevertheless, opportunities exist. For example, the United Arab Emirates has endorsed an ambitious target to draw 24 percent of its primary energy consumption from renewable sources by 2021.

Solar power concentration is highest in the Middle East and Africa and parts of Asia and the United States, according to the U.S. National Aeronautics and Space Administration (Figure 1.SF.11). Interestingly, Morocco, the host of the next United Nations Conference on Climate Change (COP22), has recently unveiled the first

[7]The share of coal as an input in power plants among European OECD members increased from 23.7 percent in 2010 to 26.0 percent in 2012 (with the increase in coal use largely arising from displacement of natural gas use), although the share of renewable energy increased as well. Japan increased its share of natural gas and coal significantly after it stopped nuclear power plant operations following the Fukushima accident.

**Figure 1.SF.11. Direct Normal Irradiation**




Source: U.S. National Aeronautics and Space Administration.

phase of a massive solar power plant in the Sahara Desert that is expected to have a combined capacity of two gigawatts by 2020, making it the single largest solar power production facility in the world.

### *What Is the Way Forward?*

Large economies tend to be the biggest emitters of greenhouse gases. Indeed, the 10 largest emitters are responsible for more than 60 percent of global greenhouse gas emissions (Table 1.SF.3). Any effort to address global warming should therefore encompass all of the largest economies (see Arezki and Matsumoto 2015). While high-income countries are big greenhouse gas emitters in per capita terms, energy efficiency has been gaining ground rapidly in these countries. Many high-income countries are reducing greenhouse gas emissions already and are committed to continue doing so. Consumption of fossil fuels by advanced economies can therefore be expected to continue to decrease. Though large economies account for the bulk of current emissions, emerging markets will continue to drive the growth of future emissions. In contrast to the falling emissions intensity of the advanced economies, emerging market and developing economies remain heavily reliant on coal, and their consumption of fossil fuels will continue to rise.

There are important variations across countries in efforts to shift their energy mixes at least partly toward renewables and away from fossil fuels, especially coal and oil. Today, the European Union and Sweden, respectively, get 13 percent and more than 38 percent of their energy from renewables. Sweden in 1991 was the first country to adopt a carbon tax. Pressured by very high pollution levels, China has adopted an ambitious plan to derive a significant fraction of its future energy needs from renewables.

As noted earlier, the COP21 was by all accounts a success, with nearly all countries around the globe having firmly committed to reducing their greenhouse gas emissions through the INDCs (Table 1.SF.4). Well before Paris, in 1997, the Kyoto Protocol aimed to achieve internationally coordinated reductions in carbon dioxide emissions, but a few major countries, such as China, India, and the United States, did not agree to legally binding targets. The 2009 Copenhagen climate change conference did not yield any agreement, and real progress had to await the 2015 Paris conference. As mentioned previously, the challenge following the COP21 is, however, one of implementation. As such, setting the right incentives for achieving the INDCs is essential.

The IEA (2015) and most scientists also note that the INDCs, in their current form, are not sufficient,

**Table 1.SF.3. Global Share of Greenhouse Gas Emissions by Country**
*($CO_2$ emissions from fuel combustion, 2013)*

| Country | Share (of global) | $CO_2$/Population (tons of $CO_2$ per capita) | $CO_2$/GDP PPP (kilograms of $CO_2$ per current international dollar) | GDP per capita (current PPP) |
|---|---|---|---|---|
| China | 28.0 | 6.65 | 0.55 | 12,196 |
| United States | 15.9 | 16.18 | 0.31 | 52,980 |
| India | 5.8 | 1.49 | 0.28 | 5,418 |
| Russia | 4.8 | 10.75 | 0.43 | 25,033 |
| Japan | 3.8 | 9.70 | 0.27 | 36,223 |
| Germany | 2.4 | 9.42 | 0.21 | 43,887 |
| Korea | 1.8 | 11.39 | 0.34 | 33,089 |
| Canada | 1.7 | 15.25 | 0.35 | 43,033 |
| Iran | 1.6 | 6.79 | 0.42 | 16,067 |
| Saudi Arabia | 1.5 | 16.39 | 0.31 | 52,993 |
| Total share (top 10 countries) | 67.3 | | | |

Sources: International Energy Agency; World Bank, *World Development Indicators*; and IMF staff calculations.
Note: $CO_2$ = carbon dioxide; PPP = purchasing power parity.

**Table 1.SF.4. Greenhouse Gas Emissions Target Reductions, Paris Agreement, December 2015**

| Country | Target Reductions |
|---|---|
| United States[1] | Between 26 percent and 28 percent below 2005 levels by 2025 |
| European Union[1] | 40 percent below 1990 levels by 2030 |
| Japan[1] | 26 percent below 2013 levels by 2030 |
| Canada[1] | 30 percent below 2005 levels by 2030 |
| China[1] | 60 percent to 65 percent below 2005 levels by 2030 ($CO_2$ emissions intensity) |
| India[2] | 33 percent to 35 percent below 2005 levels by 2030 ($CO_2$ emissions intensity) |
| Russia[1] | 25 percent to 30 percent below 1990 levels by 2030 |
| Brazil[1] | 37 percent below national baseline scenario by 2025 |
| South Africa[2] | Between 398 and 614 million tons of $CO_2$ emissions by 2025 and 2030 |

Source: Admiraal and others 2015.
Note: By November 29, 2015, 184 parties (including the European Union) had submitted their Intended Nationally Determined Contributions (INDCs) in preparation for the adoption of the Paris Agreement in December 2015.
[1] Unconditional INDC.
[2] Conditional INDC.

and more is needed to avoid the worst effects of climate change. In addition to implementing mitigation efforts, countries will need to adapt to global warming, which calls for adjusting to the new reality of a warmer planet. This implies population displacements from exposed areas, or new infrastructure and housing better suited to withstand new climate risks. But adaption alone is neither fully acceptable nor sufficient, considering that global warming can cause irreversible damage. For instance, some ecosystems will be unable to adapt to rising temperatures and thus will experience substantially reduced biodiversity.

Short of pervasive and economically viable carbon capture and storage technologies, the planet will be exposed to potentially catastrophic climate risks (see Meehl and others 2007) unless renewables become cheap enough to guarantee that substantial fossil fuel deposits are left underground for a very long time, if not forever. The price of fossil fuels should reflect the negative externality that the consumption of the latter inflicts. The price of carbon should equal the social cost of carbon, which is the present discounted value of marginal global warming damages from burning one ton of carbon today.[8] In this regard, a global carbon tax would be the most efficient way to reduce emissions.

[8]See D'Autume, Schubert, and Withagen 2011, Golosov and others 2014, and Rezai and van der Ploeg 2014 for useful references on the design of carbon taxes.

Politically, low fossil fuel prices may provide an opportune moment to eliminate energy subsidies and introduce carbon prices that could gradually rise over time toward efficient levels. However, it is probably unrealistic to aim for implementation of the full optimal price all at once. Global carbon pricing will have important redistributive implications, both across and within countries, and these call for gradual implementation, complemented by mitigating and adaptive measures that shield the most vulnerable.[9] The hope is that the success of the Paris conference opens the door to future international agreement on carbon prices. Agreement on an international carbon price floor would be a good starting point in that process. Failure to address comprehensively the problem of greenhouse gas emissions, however, exposes this generation and future generations to incalculable risks (see Stern 2015).[10]

For developing countries in particular, aid may be necessary to facilitate the clean technology imports necessary to ensure that these countries participate in the energy transition.[11] This aid would help offset the countries' transitional costs associated with removing carbon subsidies and levying positive carbon taxes. In this vein, the Green Climate Fund—a fund within the framework of the United Nations—was founded as a mechanism to assist developing countries in putting in place adaptation and mitigation practices. It is intended to be the centerpiece of efforts to raise climate finance to $100 billion a year by 2020. The IMF is also supporting its members in dealing with the macroeconomic challenges of climate change.[12]

As noted previously, shifting away from fossil fuels to clean, renewable energy resources or nuclear energy can help reduce greenhouse gas emissions. In addition, shifting from coal to gas in electricity generation can help significantly in this regard. Development of the renewable energy sector will require an overhaul of the existing energy infrastructure and involve the need to train and retool the labor force. These transformations will be a source of jobs and cleaner, more sustainable growth. Indeed, the investment needs associated with the energy transition come at an opportune time, when interest rates are at historic lows and the world economy needs infrastructure spending both to support demand and to spur future potential growth.

[9]Farid and others (2016) discuss macro and financial policies to address climate change.

[10]Li, Narajabad, and Temzelides (2014) show that, even when some degree of uncertainty is accounted for, taking into account the damage from climate change can cause a significant drop in optimal energy extraction.

[11]Collier and Venables (2012) discuss Africa's needs to achieve its potential in hydro and solar power.

[12]See "The Managing Director's Statement on the Role of the Fund in Addressing Climate Change" (IMF 2015b).

## Box 1.1. Dissecting the Global Trade Slowdown

*Since the rebound from the great trade collapse of 2008–09, when world trade fell by much more than GDP, global trade growth has slowed notably, both in absolute terms and relative to world GDP growth. This slowdown has been more pronounced in emerging market and developing economies, where it intensified in 2015. This box lays out some facts about the distribution of the slowdown across countries and types of products.*[1]

In the two decades leading up to the global financial crisis, international trade expanded rapidly, at a pace roughly double that of world GDP. World trade volume growth, however, has moderated notably in recent years, both in its level and relative to GDP growth. As a result, the increase in trade as a share of global GDP has decelerated (Figure 1.1.1).

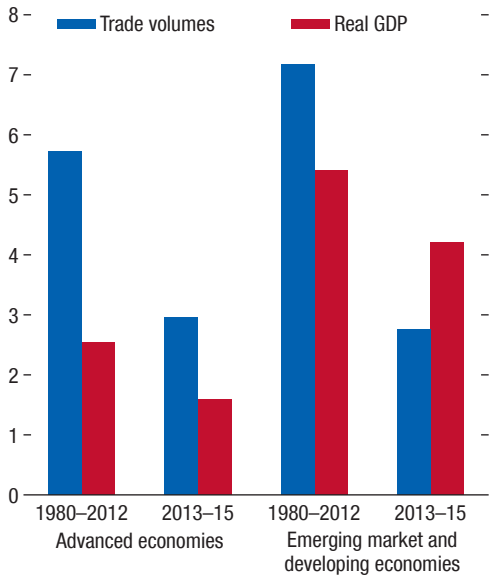
The slowdown in trade has been remarkably widespread. An analysis of recent trade patterns of 174 individual countries reveals that trade growth has weakened in an overwhelming majority of countries. This holds true even after the weak growth in income and the decline in trade prices are taken into account. As depicted in Figure 1.1.2, most countries have been importing less, relative to their incomes during 2012–15, than in the years leading up to the global financial crisis. For 65 percent of the countries, accounting for 74 percent of global imports, the ratio of average import volume growth to GDP growth (a simple measure of the income elasticity of import demand) observed during 2012–15 was below that during 2003–06.

The observed slowdown in import income elasticity has been more pronounced in emerging market and developing economies than in advanced economies.

The authors of this box are Emine Boz, Eugenio Cerutti, and Sung Eun Jung.

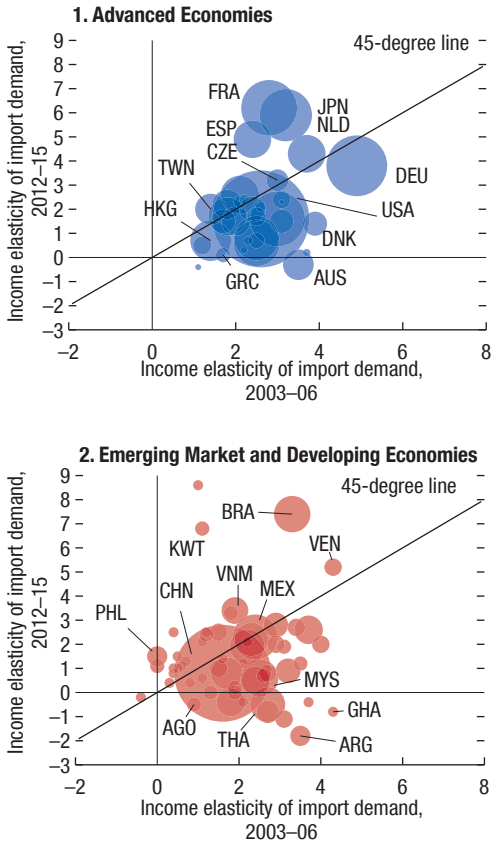
[1]See Hoekman 2015 for a compilation of studies analyzing the drivers behind the recent trade slowdown.

**Figure 1.1.1. Trade and Output Growth**
*(Year-over-year percent change)*




Source: IMF staff calculations.

**Figure 1.1.2. Import Elasticity**




Source: IMF staff calculations.
Note: Data labels in the figure use International Organization for Standardization (ISO) country codes.

## Box 1.1 *(continued)*

Most emerging market and developing economies are tightly clustered below the 45-degree line in Figure 1.1.2, while advanced economies' experience has been more varied. A comparison of import income elasticities computed using aggregated GDP and trade data across advanced and emerging market and developing economies supports this finding. For the advanced economy aggregate, the elasticity of imports with respect to GDP fell from 2.77 during 2003–06 to 2.09 during 2012–15, while for emerging market and developing economies, import income elasticity fell more sharply—from 1.9 to 0.7—over the same period.

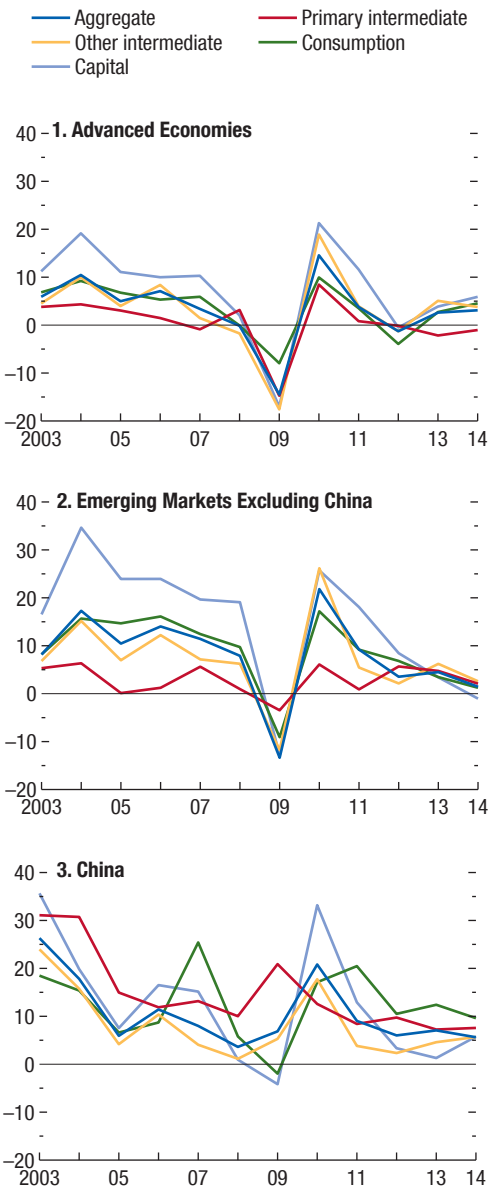
Trade weakness was particularly noticeable in emerging and developing Asia, including China. For the region as a whole, export volumes declined slightly in 2015—a striking development in light of the region's high income growth and historically strong trade performance relative to other regions.

### *Which Types of Goods Are Traded Less?*

Documenting differences in trade volume trends across various types of goods helps explain potential drivers of the trade slowdown. For instance, particularly weak growth in capital goods imports may signal weak investment and an associated shift in the composition of domestic absorption as a driver of the trade slowdown. Similarly, the dynamics of intermediate goods imports may shed light on the behavior of global value chains. Consistent analysis of the global trade slowdown through the lens of disaggregated trade flows across a large number of countries has, however, been difficult because of limited comparable data on trade volumes and price indices by product type. This limitation is especially relevant for recent years, given the sharp relative price shifts as a result of commodity price declines.

Using highly disaggregated trade data on import volume and values through 2014, Boz and Cerutti (2016) construct import volume indices for four different types of goods by end use: consumer, capital, primary intermediate, and other intermediate goods. Figures 1.1.3 and 1.1.4 plot the growth rates of these indices for selected advanced and emerging market economies.[2]

**Figure 1.1.3. Import Volume Index by End Use**
*(Year-over-year percent change)*

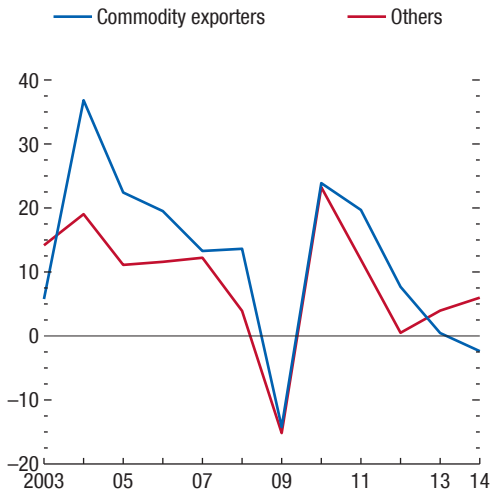



Sources: United Nations Comtrade database; World Bank, World Integration Trade Solution database; and IMF staff estimates.

[2]2015 data are available only for a small subset of countries. Chained Fisher price indices are constructed using Harmonized System six-digit product-level data (for both quantity and value) from the UN Comtrade and World Bank World Integrated Trade

## Box 1.1 *(continued)*

**Figure 1.1.4. Capital Goods Import Volume Index**
*(Year-over-year percent change)*




Sources: United Nations Comtrade database; World Bank World Integration Trade Solution database; and IMF staff calculations.

- In advanced economies, the drop in imports of primary intermediate goods stood out in recent years. As a result, the share of primary intermediate goods imports in advanced economies' total imports dropped from 16 percent in 2012 to 13.6 percent in 2014. This was partly driven by the increase in domestic production of oil in the United States, leading to a decline in its oil imports.
- Consistent with its rebalancing process, China's imports of consumer goods held up relatively strongly. Consumer goods, however, constituted only about 5 percent of China's total imports as of 2014. Other intermediate goods (including parts and accessories), at 76 percent of total imports, accounted for the lion's share. The slowdowns in nonprimary intermediate and capital goods imports were the most prominent and may have been a reflection of declines in China's manufacturing production and investment.
- Emerging markets, excluding China, varied less in regard to the behavior of imports across end-use categories. Still, imports of capital goods shrank in 2014, faring worse than the remaining categories, which continued to grow at low, but positive, rates.

The weakness in emerging markets' capital goods imports may have been partially driven by commodity exporters in this country group. A split of the sample based on whether a country was classified as a commodity exporter in Chapter 2 of the October 2015 *World Economic Outlook* supports this conjecture.[3] More specifically, as Figure 1.1.4 shows, after a protracted period of robust growth in imports of capital goods before the global financial crisis, commodity exporters faced a marked decline in their capital goods imports in 2014, reflecting retrenchment in their energy sector and mining investment. These countries' capital goods imports constituted a nonnegligible share of the world's capital goods imports—about 15 percent in 2014.

Solution (WITS) databases. End-use categorization is based on UN Broad Economic Categories. Motor spirits and passenger cars, along with other unclassified Broad Economic Categories groupings, are excluded. Countries included in the sample are 28 advanced economies (Australia, Austria, Belgium, Canada, Czech Republic, Denmark, Finland, France, Germany, Greece, Hong Kong Special Administrative Region, Ireland, Israel, Italy, Japan, Korea, Luxembourg, Netherlands, Norway, Portugal, Singapore, Slovak Republic, Spain, Sweden, Switzerland, Taiwan Province of China, United Kingdom, United States) and 21 emerging market economies (Algeria, Argentina, Brazil, Chile, China, Colombia, Hungary, India, Indonesia, Kazakhstan, Malaysia, Mexico, Philippines, Poland, Romania, Russia, South Africa, Thailand, Turkey, Ukraine, Vietnam).

[3]This classification is based on countries' gross and net exports of commodities. Out of 12 commodity-exporting countries in the sample (Algeria, Argentina, Australia, Brazil, Canada, Chile, Colombia, Indonesia, Kazakhstan, Malaysia, Russia, Norway), 9 are emerging market economies.

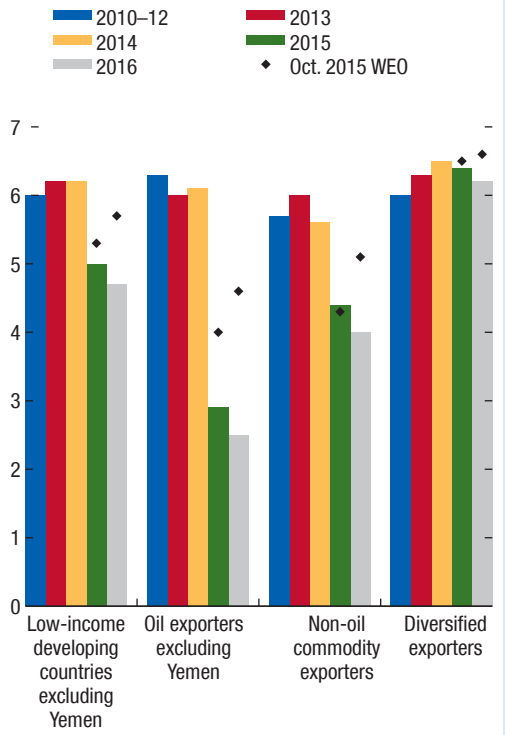
## Box 1.2. Macroeconomic Developments and Outlook in Low-Income Developing Countries: The Role of External Factors

After more than a decade of growth averaging more than 6 percent, low-income developing countries saw their economic activity slow sharply in 2015. The slowdown reflects, in part, a less favorable external environment: sharply lower commodity prices, lower growth in trading partners, and tighter financing conditions. Domestic factors and the policy environment also played a role.[1]

Oil-exporting low-income developing countries were hit hardest, followed by other commodity-dependent countries (Figure 1.2.1). Growth in oil exporters—which account for one-third of low-income developing countries' aggregate output in purchasing-power-parity terms (Figure 1.2.2) and 1¼ percent of global output—fell by half, from over 6 percent in 2014 to less than 3 percent in 2015. Growth in non-oil commodity exporters, which account for about one-fifth of low-income developing country output, declined from 5½ percent in 2014 to 4½ percent in 2015. Countries that depend relatively less on commodity exports (*diversified exporters,* for simplicity), which account for slightly more than half of low-income developing country output, fared better, with growth still above 6 percent, although some were affected by conflicts and natural disasters (for example, Haiti, Liberia, and Nepal). Growth in 2016 is projected to be weaker than in 2015 for all three groups, although with significant differences in prospects and risks within each group.

A measure of the income gains and losses from the sharp fall in international commodity prices confirms that the impact on low-income developing countries' economic prospects varied (see Gruss 2014 and IMF 2015a). Income in oil exporters fell by about 7–8 percent of GDP in 2015 (Figure 1.2.3). In contrast, low-income developing countries that are less dependent on commodity exports saw a slight gain, in part because these countries import oil. As shown in model simulations later in this box, the decline in commodity prices in 2016 is likely to play a role in further constraining growth in oil exporters, where income losses have typically been larger.

**Figure 1.2.1. Low-Income Developing Countries: Real GDP Growth**
*(Percent; averages weighted by GDP at purchasing power parity)*




Source: IMF staff calculations.
Note: The figure excludes Yemen (where activity collapsed by 28 percent in 2015 and is projected to increase by 1 percent in 2016) as an outlier.

Low-income developing countries were also affected by lower growth in their trading partners. During 2015, trading partners' growth declined more sharply for non-oil commodity-dependent low-income developing countries than for other low-income developing countries—reflecting weaker growth in emerging markets (Figure 1.2.4, panel 1). In 2016, the drag from slower growth in trading partners is expected to continue for most low-income developing countries (Figure 1.2.4, panel 2).

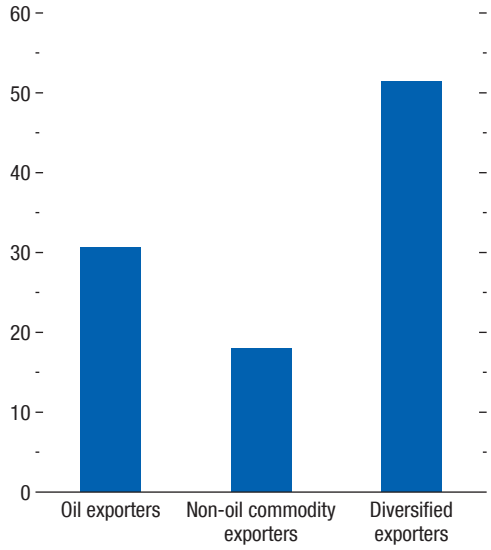
Tighter external financial conditions will also dampen low-income developing country growth. Since mid-

The authors of this box are Giovanni Melina, Futoshi Narita, Andrea Presbitero, and Felipe Zanna.

[1]See the October 2015 *Regional Economic Outlook: Sub-Saharan Africa* and IMF 2015a. Also see the April 2016 *Fiscal Monitor* for discussions of other key drivers of the growth slowdown in low-income developing countries and Chapter 2 of the April 2016 *Regional Economic Outlook: Sub-Saharan Africa* for discussions of the role of exchange rate flexibility in terms-of-trade shocks for sub-Saharan African countries.

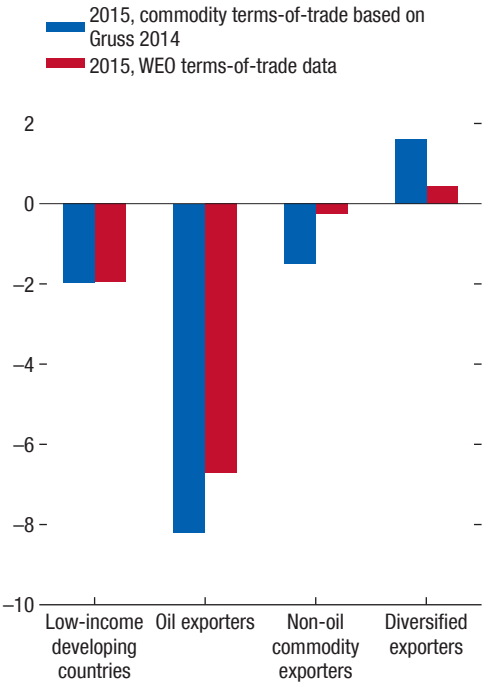
## Box 1.2 *(continued)*

**Figure 1.2.2. Low-Income Developing Countries: Purchasing-Power-Parity GDP Shares**
*(Percent of total)*




Source: IMF staff calculations.
Note: The definition of low-income developing country subgroups follows IMF 2015a, except that Cameroon and Ghana are classified only as oil exporters and excluded from diversified exporters to make the subgroups mutually exclusive.

**Figure 1.2.3. Terms-of-Trade Windfall Gains and Losses**
*(Percent of GDP; averages weighted by GDP at purchasing power parity)*




Sources: Gruss 2014; and IMF staff calculations.

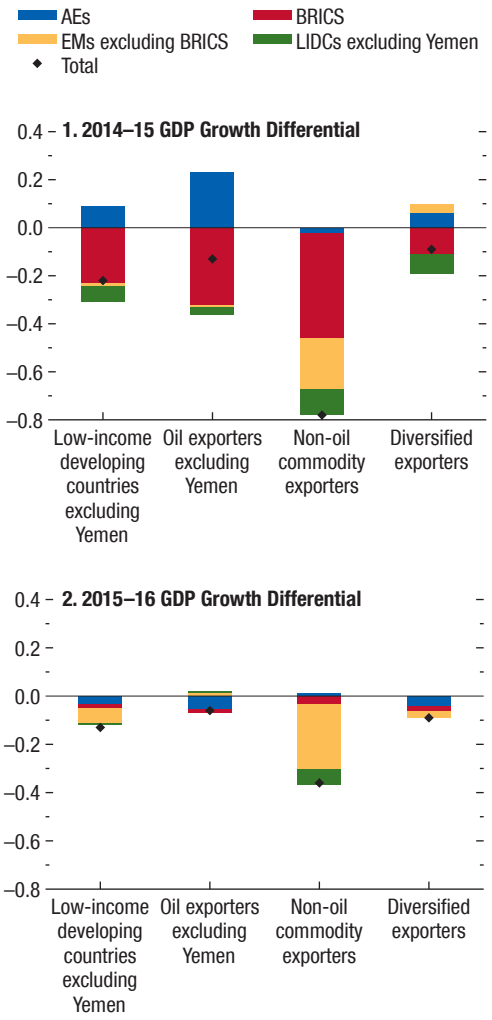
2015, sovereign bond spreads in frontier low-income developing countries have increased more sharply than those in emerging markets (Figure 1.2.5). In 2015, the number of sovereign bond issuances was almost halved compared to 2014; in 2016 that number is likely to be even lower. Some of the increase in sovereign bond spreads may reflect a weaker growth outlook, but higher spreads may mean that these countries will be less able or willing to access markets. There could be some rollover risk as well, reflecting the sizable share of nonconcessional debt in public external debt in many low-income developing countries (for example, more than one-third in Côte d'Ivoire and Ghana). Historically, higher interest rates have tended to be associated with a lower ratio of public investment to GDP in low-income developing countries.

Against this backdrop, oil-exporting low-income developing countries face considerable downside risks to their near-term growth and fiscal prospects. Model simulations reveal that unlike diversified low-income developing countries, oil exporters could, absent mitigating policies, experience growth rates lower than current baseline projections, along with rapid surges in total public debt (Figure 1.2.6, panels 1 and 2).[2] For an average oil-exporting low-income developing coun-

[2]This box uses the Debt, Investment, Growth and Natural Resources (DIGNAR) model developed by Melina, Yang, and Zanna (2016) and calibrated to capture aspects pertinent to oil-exporting and diversified low-income developing countries. The model is a neoclassical growth model that captures several of the transmission channels from lower commodity prices to growth, as well as the implications for fiscal adjustment and public debt. These include mechanisms related to resource allocation, private investment and returns, private and public saving, fiscal reaction functions, and debt accumulation. The oil price changes growth temporarily, in line with the empirical evidence. The simulations assume no tax or spending adjustments and that the only shock affecting low-income developing countries is the

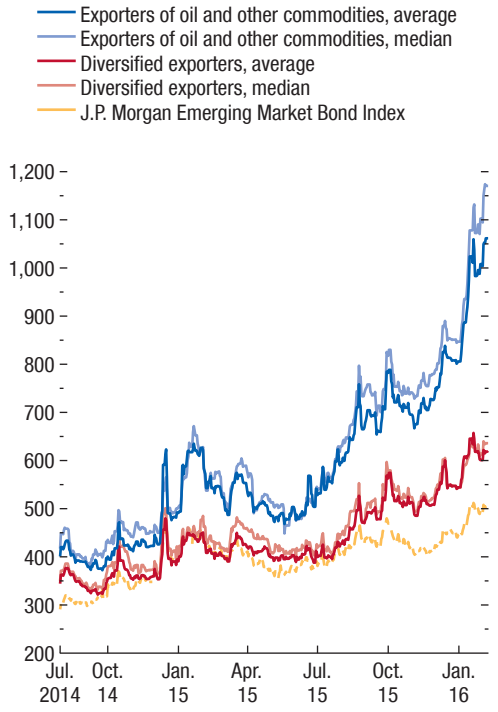
## Box 1.2 *(continued)*

### Figure 1.2.4. Trading Partners' GDP Growth Changes
*(Percentage points)*




Source: IMF staff estimates.
Note: The figure excludes Yemen (where activity collapsed by 28 percent in 2015 and is projected to increase by 1 percent in 2016) as an outlier. Trading partners' growth rates are constructed as the average of real GDP growth rates of all trading partners for each low-income developing country (LIDC) weighted by LIDCs' average exports in total exports (of goods) to trading partners during 2012–14. The growth rates are then averaged across LIDC-subgroup countries using purchasing-power-parity GDP weights. AEs = advanced economies; BRICS = Brazil, Russia, India, China, South Africa; EMs = emerging markets.

### Figure 1.2.5. Sovereign Bond Spreads in Low-Income Developing Countries
*(Basis points)*



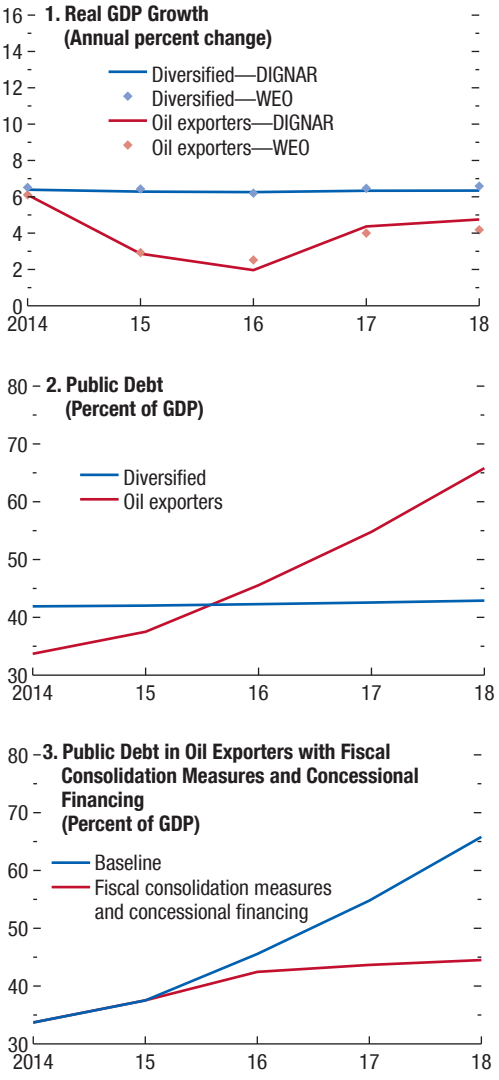

Source: Bloomberg, L.P.
Note: The sample of low-income developing countries comprises Bolivia, Ghana, Mongolia, Mozambique, Nigeria, and Zambia (oil and other commodity exporters), Côte d'Ivoire, Honduras, Kenya, Rwanda, Senegal, Tanzania, and Vietnam (diversified exporters).

try, the decline in growth—from about 3 percent in 2015 to about 2 percent in 2016—is driven mainly by the impact of lower oil revenues on output and their spillovers on aggregate demand. The increase in total public debt, from an average of 37 percent of GDP in 2015 to about 55 percent in 2017, reflects declines both in oil-related government revenues and in other non-oil tax revenues as a result of a diminished non-oil tax base. Moreover, in the simulations, the speed of debt buildup is intensified by depreciation of the real exchange rate, a higher sovereign risk premium, and

sharp fall in oil prices. On the importance of diversification to mitigate external shocks, see Callen and others 2014.

## Box 1.2 *(continued)*

### Figure 1.2.6. Simulated Effects of Lower Oil Prices on Growth and Public Debt in Low-Income Developing Countries




Sources: Simulations using the DIGNAR (Debt, Investment, Growth, and Natural Resources) model (Melina, Yang, and Zanna 2016); and IMF staff estimates.
Note: Oil exporters exclude Yemen (where activity collapsed by 28 percent in 2015 and is projected to increase by 1 percent in 2016) as an outlier.

pervasive inefficient non-oil tax revenue mobilization (IMF 2011).

Growth-friendly fiscal consolidation measures and additional concessional financing can help contain the debt buildup. Improved revenue mobilization, through better tax administration and a broader tax base, as well as measures such as prioritizing current expenditures and reducing subsidies on fuel products, could mitigate the effect of reduced oil-related government revenues on fiscal balances. That said, historical evidence suggests that achieving sizable improvements in fiscal positions over a short period is challenging. Concessional financing could help address the remaining fiscal gap and contain increases in sovereign risk premiums. This would lighten the debt interest burden, although securing such financing in an environment of low global growth could be very difficult. An illustrative scenario for a typical oil-exporting low-income developing country combines an increase in tax collection efficiency, which raises non-oil tax revenue by 2 percent of GDP; a decline in government current expenditures of 2.5 percent of GDP; and a cumulative increase in concessional financing of about 4 percent of GDP over the simulation horizon. This policy package slows the accumulation of public debt and stabilizes debt-to-GDP ratios over the medium term at below 45 percent (Figure 1.2.6, panel 3).

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