CHAPTER 1

RECENT DEVELOPMENTS, PROSPECTS, AND POLICY PRIORITIES

Despite setbacks, an uneven global recovery continues. In advanced economies, the legacies of the precrisis boom and the subsequent crisis, including high private and public debt, still cast a shadow on the recovery. Emerging markets are adjusting to rates of economic growth lower than those reached in the precrisis boom and the postcrisis recovery. Overall, the pace of recovery is becoming more country specific.

Other elements are also affecting the outlook. Financial markets have been optimistic, with higher equity prices, compressed spreads, and very low volatility. However, this has not translated into a pickup in investment, which—particularly in advanced economies—has remained subdued. And there are concerns that markets are underpricing risk, not fully internalizing the uncertainties surrounding the macroeconomic outlook and their implications for the pace of withdrawal of monetary stimulus in some major advanced economies. Geopolitical tensions have risen. So far their macroeconomic effects appear mostly confined to the regions involved, but there are tangible risks of more widespread disruptions. Some medium-term problems that predate the crisis, such as the impact of an aging population on the labor force and weak growth in total factor productivity, are coming back to the fore and need to be tackled. These problems show up in low potential growth in advanced economies—which may be affecting the pace of recovery today—and a decline in potential growth in emerging markets.

With world growth in the first half of 2014 slower than expected, global growth for 2014 is projected at 3.3 percent, 0.4 percentage point lower relative to the April 2014 World Economic Outlook *(WEO). The growth projection for 2015 is also slightly lower at 3.8 percent. These projections are predicated on the assumption that key drivers supporting the recovery in advanced economies—including moderating fiscal consolidation (Japan being one exception) and highly accommodative monetary policy—remain in place. Projections also assume a decline in geopolitical tensions, supporting some recovery in stressed economies. Growth prospects across both advanced economies and emerging markets exhibit sizable heterogeneity. Among advanced economies, growth is projected to pick up, but is slower in the euro area and Japan and generally faster in the United States and elsewhere. Among major emerging markets, growth is projected to remain high in emerging Asia, with a modest slowdown in China and a pickup in India, but to stay subdued in Brazil and Russia.*

The pace of the global recovery has disappointed in recent years. With weaker-than-expected global growth for the first half of 2014 and increased downside risks, the projected pickup in growth may again fail to materialize or fall short of expectations. This further underscores that in most economies, raising actual and potential growth must remain a priority. In advanced economies, this will require continued support from monetary policy and fiscal adjustment attuned in pace and composition to supporting both the recovery and long-term growth. In a number of economies, an increase in public infrastructure investment can support demand in the short term and help boost potential output in the medium term. In emerging markets, the scope for macroeconomic policies to support growth, if needed, varies across countries and regions, but space is limited in countries with external vulnerabilities. And in advanced economies as well as in emerging market and developing economies, there is a general, urgent need for structural reforms to strengthen growth potential or make growth more sustainable.

Recent Developments and Prospects

The Starting Point: The Global Economy in the First Half of 2014

Growth in the first half of 2014 was less than the levels projected in the April 2014 WEO (Figure 1.1), reflecting a number of negative surprises.

- Weaker U.S. growth (0.8 percent at an annualized rate), with a surprising decline in activity during the first quarter of 2014. This weaker growth reflects factors that appear mostly temporary, including a harsh winter and an inventory correction, as well as a large decline in exports after rapid growth in the fourth quarter of 2013. Growth rebounded in the second quarter of this year, and labor market conditions continued to improve, with robust employ-

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

(Percent change unless noted otherwise)

	Year over Year						Q4 over Q4		
			Projections		Difference from July 2014 WEO Update			Projections	
	2012	2013	2014	2015	2014	2015	2013	2014	2015
World Output[1]	**3.4**	**3.3**	**3.3**	**3.8**	**–0.1**	**–0.2**	**3.7**	**3.1**	**3.8**
Advanced Economies	**1.2**	**1.4**	**1.8**	**2.3**	**0.0**	**–0.1**	**2.2**	**1.7**	**2.4**
United States	2.3	2.2	2.2	3.1	0.5	0.0	3.1	2.1	3.0
Euro Area	–0.7	–0.4	0.8	1.3	–0.3	–0.2	0.5	0.8	1.6
Germany	0.9	0.5	1.4	1.5	–0.5	–0.2	1.4	1.1	1.9
France	0.3	0.3	0.4	1.0	–0.4	–0.5	0.8	0.3	1.3
Italy	–2.4	–1.9	–0.2	0.8	–0.5	–0.3	–0.9	–0.1	1.3
Spain	–1.6	–1.2	1.3	1.7	0.1	0.1	–0.2	2.0	1.5
Japan	1.5	1.5	0.9	0.8	–0.7	–0.2	2.4	0.6	0.5
United Kingdom	0.3	1.7	3.2	2.7	0.0	0.0	2.7	3.5	2.2
Canada	1.7	2.0	2.3	2.4	0.1	0.1	2.7	2.2	2.4
Other Advanced Economies[2]	2.0	2.3	2.9	3.1	0.0	–0.1	2.8	2.6	4.0
Emerging Market and Developing Economies[3]	**5.1**	**4.7**	**4.4**	**5.0**	**–0.1**	**–0.2**	**5.1**	**4.5**	**5.0**
Commonwealth of Independent States	3.4	2.2	0.8	1.6	–0.1	–0.5	2.1	–1.5	1.5
Russia	3.4	1.3	0.2	0.5	0.0	–0.5	1.9	–0.8	0.9
Excluding Russia	3.6	4.2	2.0	4.0	–0.4	–0.4	. . .	. . .	. . .
Emerging and Developing Asia	6.7	6.6	6.5	6.6	0.1	0.0	6.7	6.6	6.3
China	7.7	7.7	7.4	7.1	0.0	0.0	7.7	7.5	6.8
India[4]	4.7	5.0	5.6	6.4	0.2	0.0	6.1	5.8	6.5
ASEAN-5[5]	6.2	5.2	4.7	5.4	0.1	–0.2	4.7	5.1	5.0
Emerging and Developing Europe	1.4	2.8	2.7	2.9	0.0	0.0	3.6	2.8	4.4
Latin America and the Caribbean	2.9	2.7	1.3	2.2	–0.7	–0.4	2.1	0.8	2.2
Brazil	1.0	2.5	0.3	1.4	–1.0	–0.6	2.2	0.0	1.8
Mexico	4.0	1.1	2.4	3.5	0.0	0.1	0.6	3.5	3.3
Middle East, North Africa, Afghanistan, and Pakistan	4.8	2.5	2.7	3.9	–0.4	–0.9	. . .	. . .	. . .
Sub-Saharan Africa	4.4	5.1	5.1	5.8	–0.4	0.0	. . .	. . .	. . .
South Africa	2.5	1.9	1.4	2.3	–0.3	–0.4	2.1	1.2	2.3
Memorandum									
European Union	–0.3	0.2	1.4	1.8	–0.2	–0.1	1.1	1.4	2.0
Low-Income Developing Countries	5.2	6.0	6.1	6.5	–0.2	0.0	. . .	. . .	. . .
Middle East and North Africa	4.8	2.3	2.6	3.8	–0.5	–1.0	. . .	. . .	. . .
World Growth Based on Market Exchange Rates	2.4	2.5	2.6	3.2	–0.1	–0.1	3.0	2.4	3.1
World Trade Volume (goods and services)	**2.9**	**3.0**	**3.8**	**5.0**	**–0.1**	**–0.3**	**. . .**	**. . .**	**. . .**
Imports									
Advanced Economies	1.2	1.4	3.7	4.3	0.2	–0.3	. . .	. . .	. . .
Emerging Market and Developing Economies	6.0	5.3	4.4	6.1	–0.3	–0.3	. . .	. . .	. . .
Exports									
Advanced Economies	2.0	2.4	3.6	4.5	–0.1	–0.3	. . .	. . .	. . .
Emerging Market and Developing Economies	4.6	4.4	3.9	5.8	–0.5	–0.3	. . .	. . .	. . .
Commodity Prices (U.S. dollars)									
Oil[6]	1.0	–0.9	–1.3	–3.3	–1.3	1.0	2.6	–5.0	–0.7
Nonfuel (average based on world commodity export weights)	–10.0	–1.2	–3.0	–4.1	–1.4	–0.6	–2.9	–4.3	–1.2
Consumer Prices									
Advanced Economies	2.0	1.4	1.6	1.8	0.0	0.0	1.2	1.7	1.9
Emerging Market and Developing Economies[3]	6.1	5.9	5.5	5.6	0.1	0.3	5.5	5.5	5.1
London Interbank Offered Rate (percent)									
On U.S. Dollar Deposits (six month)	0.7	0.4	0.4	0.7	0.0	–0.1	. . .	. . .	. . .
On Euro Deposits (three month)	0.6	0.2	0.2	0.1	0.0	–0.1	. . .	. . .	. . .
On Japanese Yen Deposits (six month)	0.3	0.2	0.2	0.2	0.0	0.0	. . .	. . .	. . .

Note: Real effective exchange rates are assumed to remain constant at the levels prevailing during July 30–August 27, 2014. When economies are not listed alphabetically, they are ordered on the basis of economic size. The aggregated quarterly data are seasonally adjusted.

[1]The quarterly estimates and projections account for 90 percent of the world purchasing-power-parity weights.

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

[3]The quarterly estimates and projections account for approximately 80 percent of the emerging market and developing economies.

[4]For India, data and forecasts are presented on a fiscal year basis and output growth is based on GDP at market prices. Corresponding growth rates for GDP at factor cost are 4.5, 4.7, 5.6, and 6.4 percent for 2012/13, 2013/14, 2014/15, and 2015/16, respectively.

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

[6]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 $104.07 in 2013; the assumed price based on futures markets is $102.76 in 2014 and $99.36 in 2015.

ment growth. Despite the slowdown, U.S. imports were stronger than expected during the first half of the year, suggesting that spillovers from weaker U.S. activity through trade channels were limited.

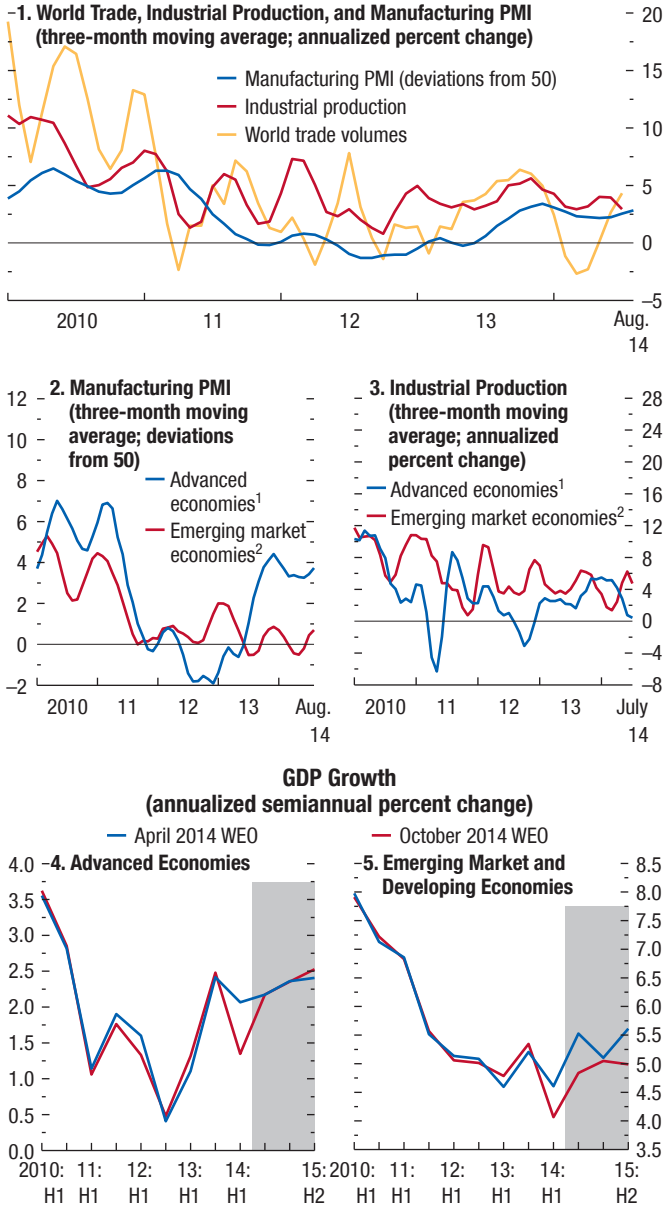
- Weaker activity in Russia and the Commonwealth of Independent States (CIS). For the former, this reflects a sizable decline in investment and large capital outflows following the intensification of tensions with Ukraine. For the latter, it reflects weakness in Ukraine and spillovers from the Russian slowdown.
- Slower growth in Latin America—particularly in Brazil, where investment remains weak and GDP contracted in the first and second quarter.
- Stagnant euro area growth, with an output contraction in Italy, no growth in France, and unexpected weakness in Germany in the second quarter.
- Weaker-than-forecast GDP expansion in Japan.
- Weaker activity in China in the first quarter. In response, the Chinese authorities have implemented measures to buttress activity, which have supported faster growth in the second quarter.

Inflation generally remains below central bank policy targets in advanced economies, an indication that many of these economies have substantial output gaps. In the euro area, inflation has remained below expectations and declined further to 0.4 percent (year over year) in August (Figure 1.2). In several economies with unemployment greater than the area-wide average, mild deflation in consumer prices continues. Inflation in the United States has risen modestly during the past several months but still remains below the Federal Reserve's longer-term objective of 2 percent. In Japan, headline and core inflation (excluding food and energy) have risen, to about 1.3 and 0.6 percent in July (year over year), respectively, excluding the effects of the consumption tax increase. In emerging market economies, inflation has remained broadly stable since the spring.

Monetary policy conditions have remained very accommodative in advanced economies and broadly unchanged in emerging markets since the spring (Figure 1.3). In the euro area, the European Central Bank (ECB) has announced a range of actions to tackle low inflation and address fragmentation, including a reduction in policy rates, targeted credit easing, and other measures to boost liquidity. In the United States, although the monetary stance remains expansionary, the reduction in the monthly volume of asset purchases by the Federal Reserve has continued, and purchases are expected to be wound down by the fall of this year.

Figure 1.1. Global Activity Indicators

Global activity and trade in the first half of 2014 were weaker than expected, reflecting a number of negative surprises, including a harsh winter and a sharper inventory correction in the first quarter in the United States, the fallout in Russia and neighboring countries from conflict in Ukraine, and slower growth in Latin America.

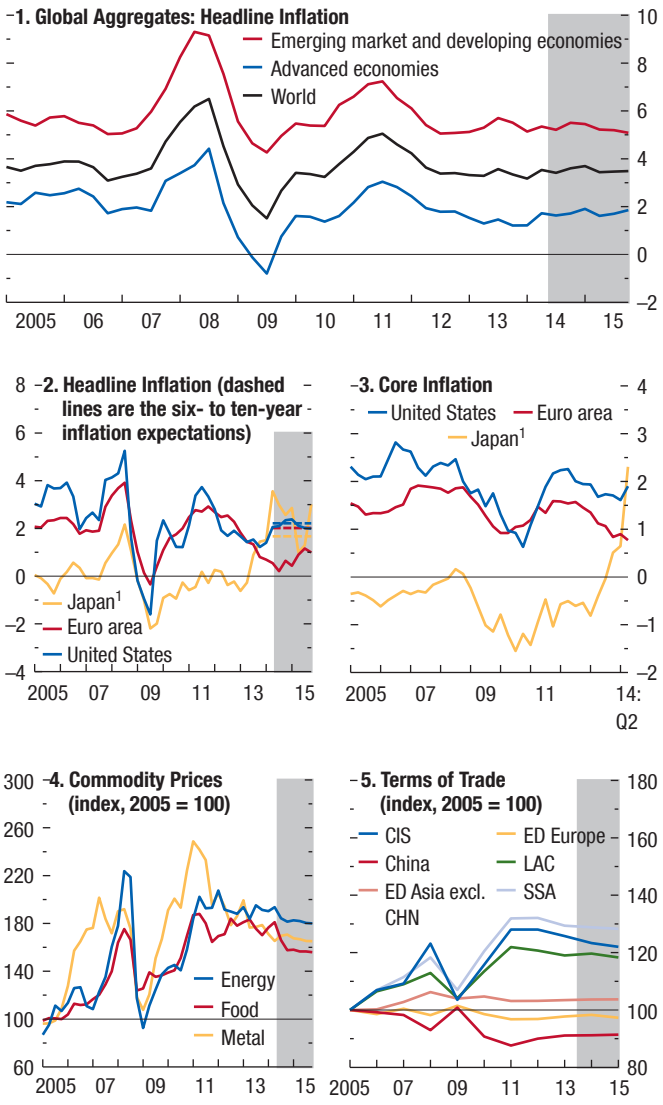


Sources: CPB Netherlands Bureau for Economic Policy Analysis; Haver Analytics; Markit Economics; and IMF staff estimates.
Note: IP = industrial production; PMI = purchasing managers' index.
[1]Australia, Canada, Czech Republic, Denmark, euro area, Hong Kong SAR (IP only), Israel, Japan, Korea, New Zealand, 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).

Figure 1.2. Global Inflation

(Year-over-year percent change, unless indicated otherwise)

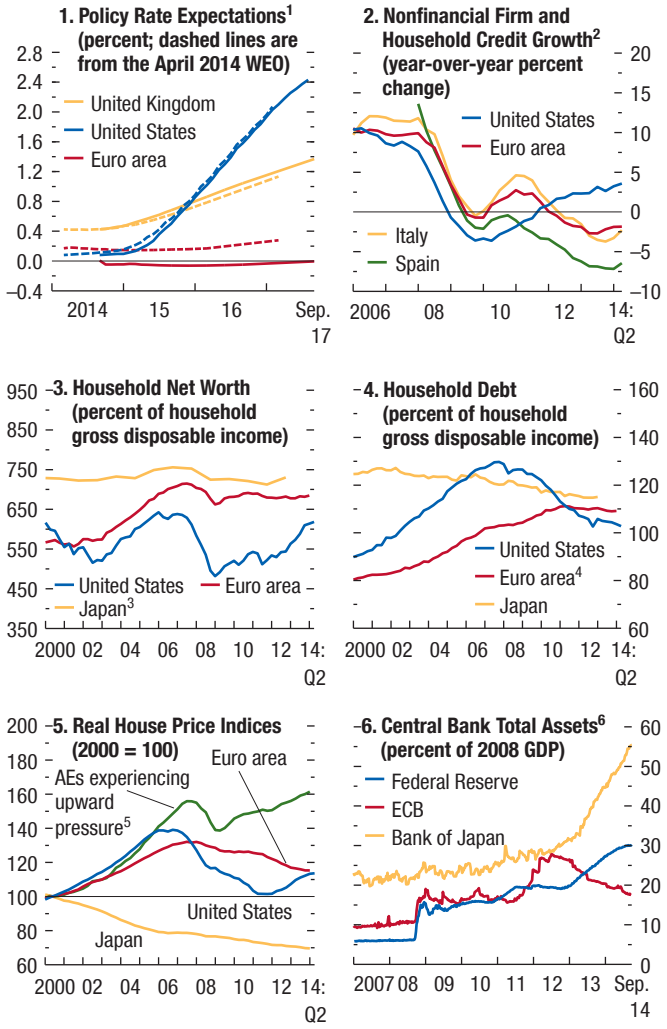
Inflation has generally remained below central bank targets in advanced economies, an indication of continued substantial economic slack. In Japan, headline inflation has risen above 3 percent while core inflation has risen above 2 percent. But excluding the effects on the price level of the increase in the consumption tax rate from 5 to 8 percent in the second quarter of 2014, headline inflation is running at about 1¼ percent, below the Bank of Japan's inflation target. In emerging market and developing economies, inflation has remained broadly stable.



Sources: Consensus Economics; IMF, Primary Commodity Price System; and IMF staff estimates.
Note: CIS = Commonwealth of Independent States; ED Asia excl. China = emerging and developing Asia excluding China; ED Europe = emerging and developing Europe; LAC = Latin America and the Caribbean; SSA = sub-Saharan Africa.
[1]In Japan, the increase in inflation in 2014 reflects, to a large extent, the increase in the consumption tax.

Figure 1.3. Monetary Conditions in Advanced Economies

Monetary conditions have remained very accommodative in advanced economies. In the United States, the reduction in monthly asset purchases by the Federal Reserve has continued, with purchases expected to be wound down about the time this *World Economic Outlook* is released, but policy rates remain close to zero. The European Central Bank recently took a range of measures to tackle low inflation and address financial fragmentation, including targeted credit easing and other measures to boost liquidity.



Sources: Bank of Spain; Bloomberg, L.P.; European Central Bank (ECB); Haver Analytics; Organisation for Economic Co-operation and Development; and IMF staff calculations.
[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 September 22, 2014.
[2]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.
[3]Interpolated from annual net worth as a percentage of disposable income.
[4]Euro area includes subsector employers (including self-employed workers).
[5]Upward-pressure countries are those with a residential real estate vulnerability index above the median for advanced economies (AEs): Australia, Austria, Belgium, Canada, Estonia, France, Hong Kong SAR, Israel, New Zealand, Norway, Portugal, Sweden, United Kingdom.
[6]Data are through September 19, 2014, except in the case of ECB (September 12, 2014). ECB calculations are based on the Eurosystem's weekly financial statement.

In emerging markets, policy rates have been reduced in Chile, Mexico, and Peru following disappointing growth, and in Turkey, where part of the sharp tightening earlier in the year has been unwound. Policy rates were raised in the first half of the year in Brazil and Colombia; in Russia, which is facing pressure on the ruble; and in South Africa.

Geopolitical tensions have increased since the spring, with a worsening of the Russia-Ukraine situation and continued strife in some countries in the Middle East. So far the impact of these tensions on economic activity appears to have been mostly limited to the countries involved and their closest trading partners: financial market reaction has been muted, and commodity prices have actually eased. However, it is difficult to assess the implications of the worsening of such tensions since early July.

Financial conditions have eased since the release of the April 2014 WEO. In particular, long-term interest rates have declined in advanced economies, also reflecting expectations of a lower neutral policy rate in the United States over the medium term (Figure 1.4). Equity prices have generally risen and risk premiums have generally declined in advanced economies and emerging markets. Volatility is very low across a wide range of asset classes, and market concerns about risks to stressed advanced economies and emerging markets—as reflected, for example, in interest rate spreads—have generally decreased (Figure 1.5). As noted in the October 2014 *Global Financial Stability Report* (GFSR), market and liquidity risks have risen, and valuations in some asset classes (such as high-yield corporate bonds) appear stretched. The easing of financial conditions has been broad based. Capital flows to emerging market economies have remained robust despite generally weaker activity, and exchange rates have stabilized or strengthened in some of these economies.

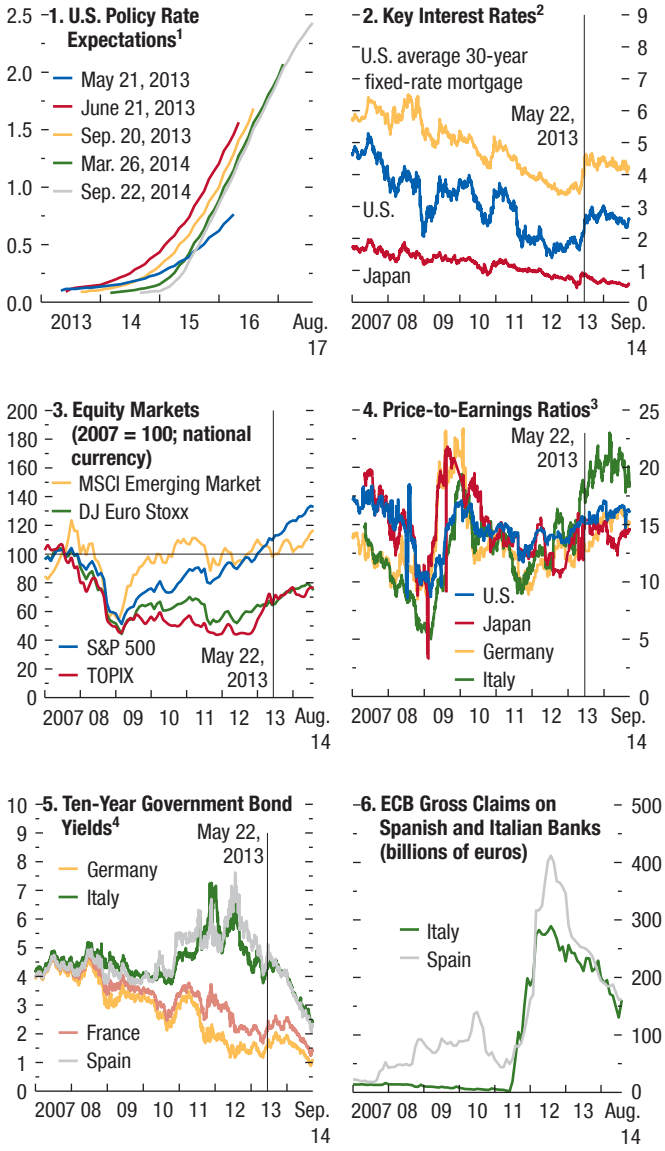
The Forecast

Policy assumptions

Fiscal consolidation is projected to moderate in advanced economies (Figure 1.6), a notable exception being Japan. In emerging markets, the fiscal policy stance is projected to remain broadly unchanged—albeit with marked differences across countries and regions, as discussed in the October 2014 *Fiscal Monitor*. On the monetary policy front, the end of asset purchases

Figure 1.4. Financial Market Conditions in Advanced Economies
(Percent, unless indicated otherwise)

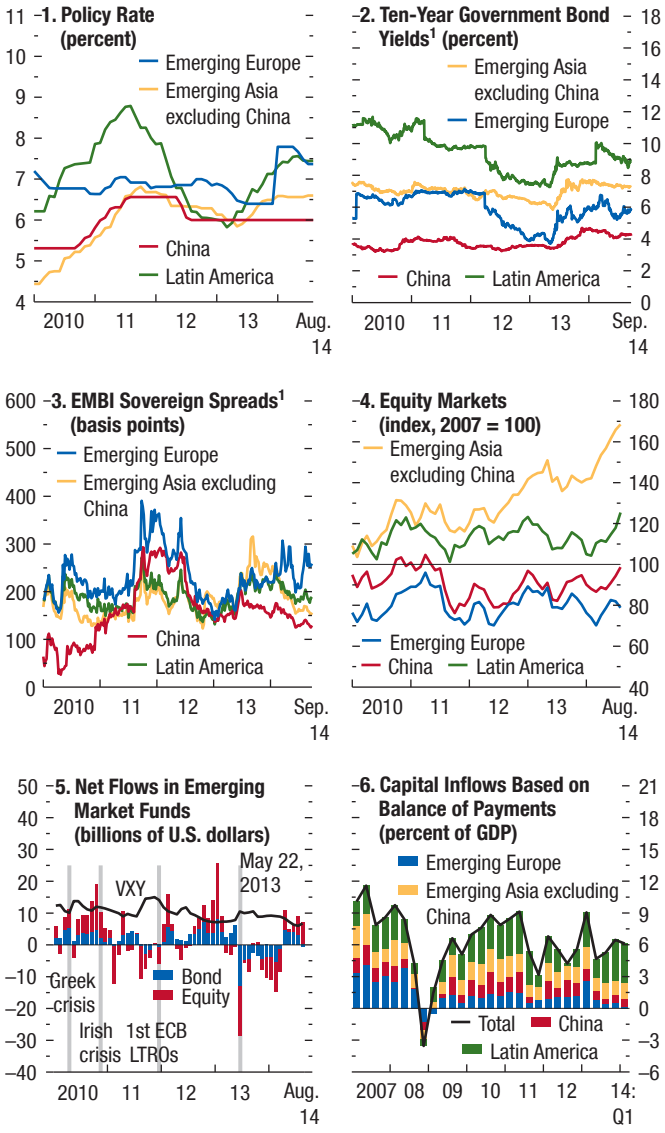
Markets expect the Federal Reserve to start increasing the federal funds rate by mid-2015, with the pace of the increase broadly unchanged compared with the April 2014 WEO. But longer-term interest rates in advanced economies have decreased further, likely reflecting in part expectations of lower neutral policy rates. The latter could explain part of the recent increase in equity prices.



Sources: Bank of Spain; Bloomberg, L.P.; *Financial Times;* 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.
[2]Interest rates are 10-year government bond yields, unless noted otherwise. Data are through September 19, 2014.
[3]Data are through September 18, 2014. Some observations for Japan are interpolated because of missing data.
[4]Data are through September 19, 2014.

Figure 1.5. Financial Market Conditions and Capital Flows in Emerging Market Economies

Mirroring developments in advanced economies, financial conditions have also eased in emerging market economies since April 2014. Equity prices have declined, longer-term interest rate increases seen in the first quarter of 2014 have typically been more than fully reversed, and risk spreads have broadly declined. Gross capital inflows to emerging markets have also picked up again.

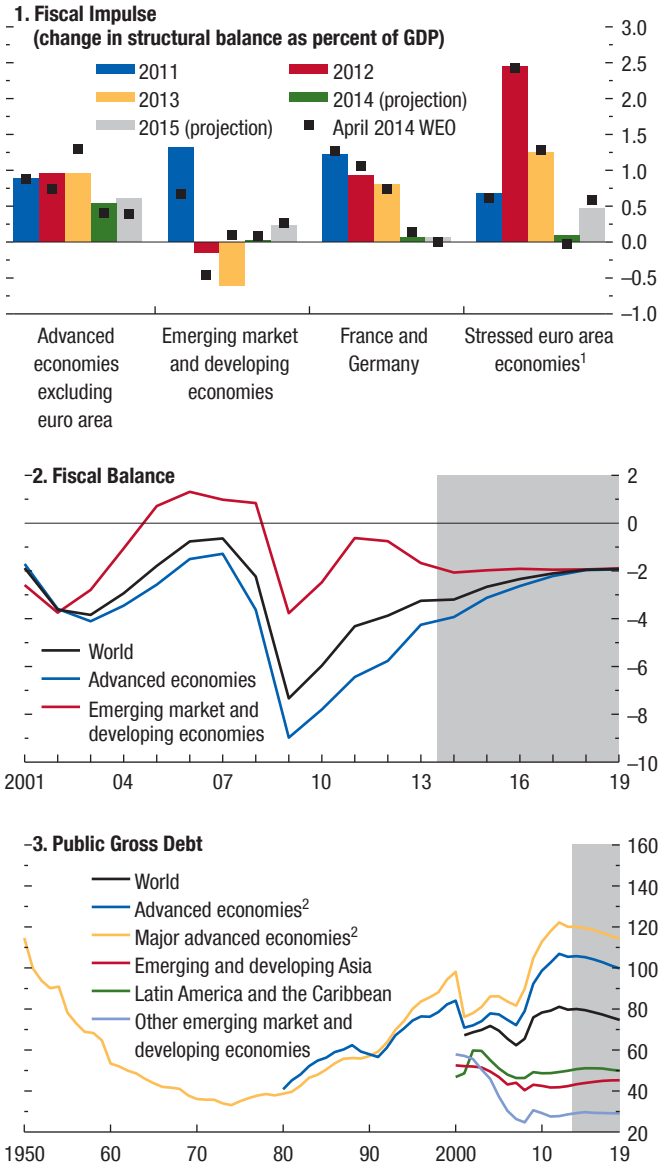


Sources: Bloomberg, L.P.; EPFR Global; Haver Analytics; IMF, International Financial Statistics database; and IMF staff calculations.
Note: ECB = European Central Bank; EMBI = J.P. Morgan Emerging Markets Bond Index; LTROs = longer-term refinancing operations; VXY = J.P. Morgan Emerging Market Volatility Index; emerging Asia excluding China includes India, Indonesia, Malaysia, the Philippines, and Thailand; emerging Europe comprises Poland, Romania (capital inflows only), Russia, and Turkey; Latin America includes Brazil, Chile, Colombia, Mexico, and Peru.
[1]Data are through September 19, 2014.

Figure 1.6. Fiscal Policies

(Percent of GDP, unless indicated otherwise)

Fiscal consolidation is expected to moderate in advanced economies in 2014–15, an exception being Japan, where the consumption tax was increased and fiscal stimulus will be unwound. In emerging market economies, fiscal policy is expected to remain broadly unchanged.



Source: IMF staff estimates.
Note: Major advanced economies = Canada, France, Germany, Italy, Japan, United Kingdom, United States.
[1]Greece, Ireland, Italy, Portugal, Spain.
[2]Data up to 2000 exclude the United States.

in the United States is projected to occur in the fourth quarter of 2014, with policy rates expected to increase beginning in the second half of 2015 (see Figure 1.3). Monetary policy normalization in the United Kingdom is projected to begin in the first half of 2015. In the euro area and Japan, very accommodative policy stances are expected to remain in place. In emerging markets, policy rates are generally expected to be on hold until rate increases start in the United States (Figure 1.7).

Other assumptions

Global financial conditions are assumed to remain accommodative, with some gradual tightening, reflected in, among other things, rising 10-year yields on U.S. Treasury bonds as the expected date for liftoff from the zero bound in the United States approaches. The process of normalizing monetary policy in the United States and the United Kingdom is assumed to proceed smoothly, without large and protracted increases in financial market volatility and sharp movements in long-term interest rates. Commodity prices are projected to ease moderately amid a still-hesitant recovery and new supply coming on stream (for example, light tight oil in the United States). Geopolitical tensions and domestic strife are assumed to ease gradually over 2015–16, allowing for a gradual recovery in the most severely affected economies.

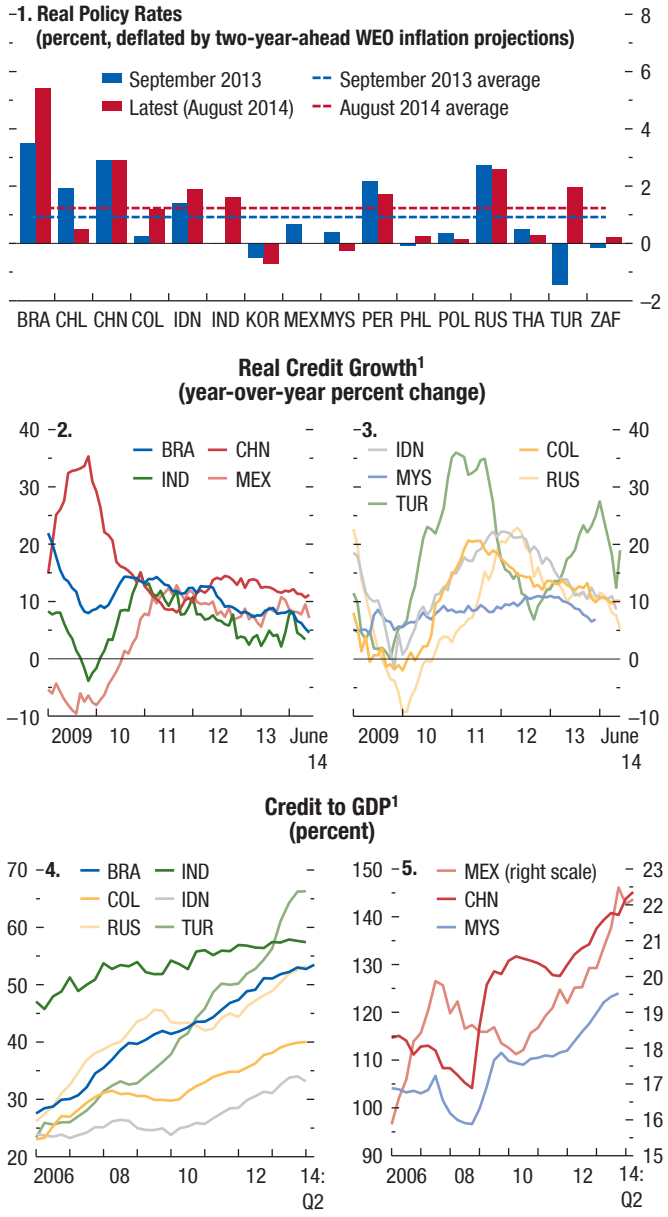
Global outlook

Global growth, computed using the new 2011 purchasing power parities of the International Comparison Program,[1] is projected to rebound to an annual rate of about 3.7 percent in the second half of 2014 and slightly higher in 2015, around 1 percentage point faster than in the first half of 2014. The increase in growth will be driven by a rebound in both advanced economies, with the United States playing the most important role, and emerging markets. Growth in most emerging market and developing economies is projected to be supported by the waning of temporary setbacks to domestic demand and production (including from geopolitical tensions and domestic strife), policy support to demand, and the gradual lifting of

[1]Starting with the July 2014 *WEO Update*, the IMF's global and regional growth figures are computed using the revised International Comparison Program purchasing-power-parity weights and therefore are not comparable to those in the April 2014 WEO. For purposes of comparison with the current WEO, global and regional growth rates reported in the April 2014 WEO have therefore been recalculated using the revised purchasing-power-parity weights.

Figure 1.7. Monetary Policies and Credit in Emerging Market Economies

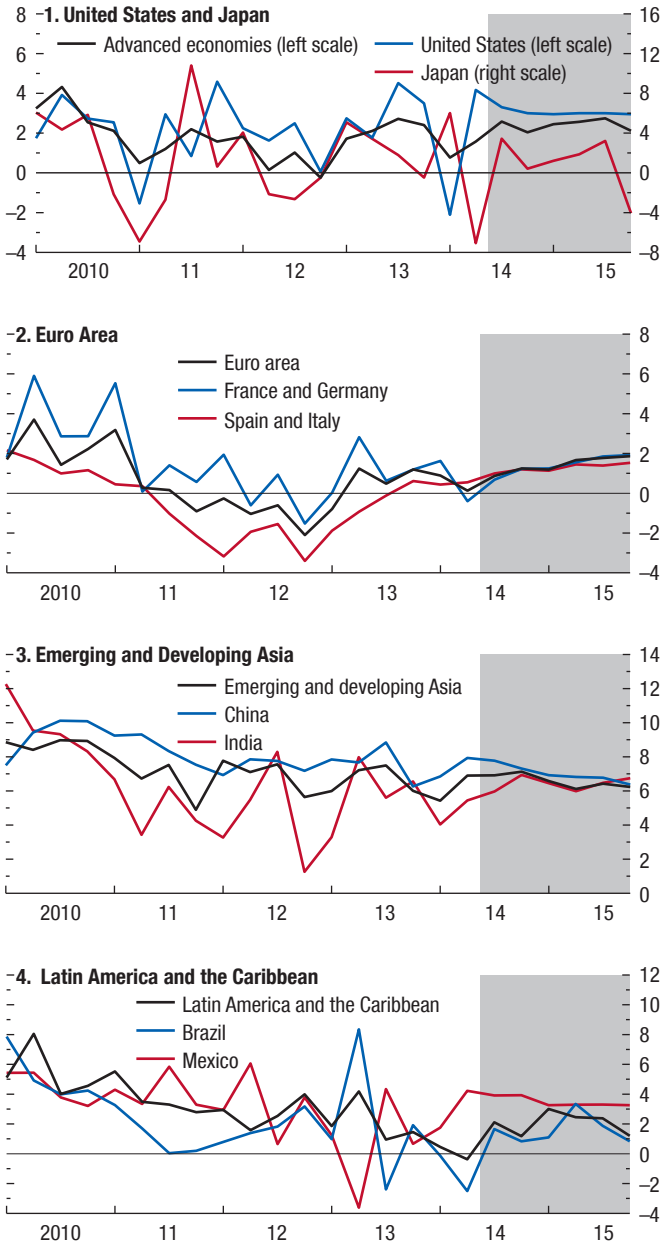
Monetary conditions have tightened in many emerging market economies, as central banks have responded with policy rate increases to the tighter external financial conditions faced by these economies since the taper talks of May 2013. Nevertheless, real policy rates remain negative or well below precrisis averages in many emerging market economies. Bank credit growth has continued to slow in emerging market economies, although it remains at double-digit rates in some. Economy-wide leverage, as measured by the ratio of bank credit to GDP, has therefore continued to increase.



Sources: Haver Analytics; IMF, International Financial Statistics (IFS) database; and IMF staff calculations.
Note: Data labels in the figure use International Organization for Standardization 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 from the Monetary Policy and Financial System Credit Operations published by Banco Central do Brasil is used.

Figure 1.8. GDP Growth Forecasts
(Annualized quarterly percent change)

Global growth is projected to rebound to an annual rate of about 3.7 percent in the second half of 2014 and into 2015. The strongest rebound in growth is expected in the United States, whereas the crisis legacy brakes will ease only slowly in the euro area, and growth in Japan will remain modest. Growth in most emerging market and developing economies is projected to be supported by the waning of temporary setbacks to domestic demand and production (including from geopolitical tensions); policy support to demand; the gradual lifting of structural impediments to growth; and strengthening external demand from advanced economies.



Source: IMF staff estimates.

structural impediments to growth, as well as strengthening external demand from advanced economies.

Revisions to growth projections

The outlook for 2014 is marginally weaker than in the July 2014 *WEO Update*, with an upward revision for growth in the United States (Table 1.1, Figure 1.8) offset by some downward revisions for emerging markets, particularly in Latin America and the Middle East, as well as for the euro area and Japan. Relative to the April 2014 WEO, global growth for 2014 has been revised downward by some 0.4 percentage point, primarily on account of a weaker-than-expected first half of 2014, and is slightly lower for 2015. Growth forecast comparisons in the remainder of this WEO report are made with respect to those in the April 2014 WEO, adjusted to reflect the new purchasing-power-parity weights where needed.

Outlook for advanced economies

Growth is expected to strengthen in 2014–15 across most advanced economies, but the pace of recovery remains different across regions. The strongest rebound in growth is expected in the United States, whereas the crisis legacy brakes will ease only slowly in the euro area, and growth in Japan will remain modest. Growth elsewhere, including in other Asian advanced economies, Canada, and the United Kingdom, is projected to be solid.

- In the *United States*, conditions remain in place for a stronger pickup in the recovery: an accommodative monetary policy stance and favorable financial conditions, much-reduced fiscal drag (with a cumulative change in the primary structural balance of some 1¼ percent in 2014–15, compared with 1½ percent in 2013), strengthened household balance sheets, and a healthier housing market. As a result, growth is projected to average about 3 percent in the second half of 2014 into 2015. Asset purchases by the Federal Reserve are projected to end in October 2014, with a liftoff from the zero bound in mid-2015. Employment growth is projected to be strong, but some recovery of the labor market participation rate will slow the decline in the unemployment rate. The legacy of the very weak first quarter of 2014 implies a downward revision of 0.6 percentage point to the 2014 growth forecast relative to the April 2014 WEO, whereas the forecast for 2015 is roughly unchanged.

- In the *euro area*, a weak recovery is projected to gradually take hold, supported by a reduction in fiscal drag, accommodative monetary policy, and improving lending conditions, with a sharp compression in spreads for stressed economies and record-low long-term interest rates in core countries. Growth is projected to average 0.8 percent in 2014 and 1.3 percent in 2015, weaker than the April 2014 WEO projections. Prospects are uneven across countries—not just between the economies most severely affected by the crisis and the rest, but also within those groups. Among the former, growth in Spain has resumed, supported by external demand as well as higher domestic demand reflecting improved financial conditions and rising confidence. Growth is now projected to average 1.3 and 1.7 percent in 2014 and 2015, respectively, revised upward from about 1 percent in the April 2014 WEO. The Italian economy, in contrast, contracted in the first half of 2014, and on an annual basis is not expected to return to positive growth until 2015. Among the core economies, growth projections for the German economy have been revised downward relative to the April 2014 WEO, primarily reflecting a weaker recovery in domestic demand. Growth in France stalled in the first half of 2014, and projections have been revised downward.
- In *Japan*, the pattern of growth in the first half of the year was affected by the April consumption tax hike, which boosted activity in the first quarter at the expense of the second. In light of the larger-than-expected contraction in the second quarter, GDP is now projected to increase 0.9 percent in 2014—0.5 percentage point less than the April 2014 WEO projections. With private investment expected to recover, growth is projected to remain broadly stable in 2015, notwithstanding the planned fiscal adjustment.
- In most other advanced economies, including Canada, Norway, Sweden, and the United Kingdom, growth is expected to be solid. In the *United Kingdom*, activity has rebounded and become more balanced, driven by both consumption and business investment, thanks to improving credit and financial market conditions and healthy corporate balance sheets. Growth is projected to average 3.2 percent in 2014 and 2.7 percent in 2015, about ¼ percentage point stronger than forecast in the April 2014 WEO. House prices are increasing at a strong pace, especially in London, and have also been buoyant in other advanced economies, including Canada, Norway, Sweden, and Switzerland (see Box 1.1).

Outlook for emerging market and developing economies

Growth in emerging market and developing economies is projected to increase modestly in the second half of 2014 and into 2015, supported by stronger domestic demand as well as a recovery in external demand associated with faster growth in advanced economies. As in past years, emerging market and developing economies will continue to account for the lion's share of global growth—even at market exchange rates. Still, the forecast is some 0.3 percentage point weaker in both 2014 and 2015 relative to the April 2014 WEO forecast, reflecting both a weaker first-half outturn for 2014 and an assessment that some of the setbacks appear related to structural factors and are hence likely to be more lasting. Indeed, the outlook for emerging markets has been marked down for the past several WEO reports, reflecting a changing assessment of the sustainability of the growth rates achieved before the crisis and during the 2010–11 rebound (Box 1.2).

- In *China*, growth projections have been marked down slightly for both 2014 and 2015 relative to those in the April 2014 WEO. After a weaker-than-expected first-quarter outturn, the authorities deployed policy measures to support activity, including tax relief for small and medium enterprises, accelerated fiscal and infrastructure spending, and targeted cuts in required reserve ratios. Growth gained traction in the second quarter on these measures, as well as on stronger exports, and is projected to average 7.4 percent in 2014, in line with the authorities' target. For 2015, growth is projected to moderate to 7.1 percent as the economy makes the transition to a more sustainable path and residential investment slows further.
- In *India*, growth is expected to increase in the rest of 2014 and 2015, as exports and investment continue to pick up and more than offset the effect of an unfavorable monsoon on agricultural growth earlier in the year. The outlook is slightly stronger for 2014 relative to that in the April 2014 WEO, and unchanged for 2015. Growth in the Association of Southeast Asian Nations–5 (ASEAN-5) is projected at 4.7 percent in 2014, rising to 5.4 percent in 2015. Relative to that in the April 2014 WEO,

the forecast is slightly weaker for 2014—driven by a sharp slowdown in Thailand amid political tensions earlier in the year—and unchanged for 2015. Elsewhere in *emerging and developing Asia*, growth is likely to remain strong, helped in part by favorable financial conditions and broadly accommodative policies.

- Growth for *Latin America and the Caribbean* is now projected to fall to 1.3 percent in 2014, with a rebound to some 2.2 percent in 2015. Projections have been marked down by more than 1 percentage point for 2014 and 0.8 percentage point for 2015, reflecting external factors, given weaker-than-expected export performance amid deteriorating terms of trade, as well as a variety of idiosyncratic domestic constraints. In *Brazil*, GDP contracted in the first half of the year, reflecting weak investment and a moderation in consumption, given tighter financial conditions and continued weakness in business and consumer confidence. These factors, along with weakness in competitiveness, are projected to keep growth subdued in much of 2014–15. In *Mexico*, weaker-than-expected growth in early 2014, on account of weak external demand and construction activity, lowered projections for this year relative to the April 2014 WEO forecast, but growth is projected to pick up in 2015 and beyond, as the effects of structural reforms begin to come into play and U.S. growth strengthens. Elsewhere in the region, downward growth revisions reflect weaker domestic demand (Chile and Peru); deepening macroeconomic and policy imbalances that are manifesting themselves as high inflation, negative growth, and a rising differential between the parallel and official exchange rates in *Argentina*; and severe policy distortions that have led to widespread shortages, a collapse in growth, and inflation now exceeding 60 percent in *Venezuela*.
- The forecast for the *Commonwealth of Independent States* has significantly weakened, reflecting a sharp deterioration in economic conditions in the first half of the year, which is expected to persist for some time. In *Russia*, investment remains weak amid subdued confidence, which is further affected by geopolitical tensions and sanctions. Activity is not projected to pick up before 2015. Continued declines in industrial production and exports will cause a sharp contraction in activity in Ukraine in 2014, with conditions improving slowly next year. Growth in the rest of the CIS has already slowed, with weaker trade and remittance flows from Russia, and is projected to be lower in 2014–15 relative to the April 2014 WEO projections.
- Growth in *emerging and developing Europe* is projected to remain close to 3 percent in 2014–15, with an upward revision in projections by 0.4 percentage point for 2014. This revision primarily reflects strengthening private consumption in Hungary and robust domestic demand in Poland.
- With increased strife in some countries in the region, the projected pickup in growth in 2014 in the *Middle East, North Africa, Afghanistan, and Pakistan* region is now projected to be weaker relative to the April 2014 WEO forecast. Growth is expected to increase in 2015, assuming that security improves, allowing for a recovery in oil production, particularly in Libya. Economic activity in the oil importers is projected to improve only gradually as they continue to deal with difficult sociopolitical transitions, subdued confidence, and setbacks from regional conflicts.
- In *sub-Saharan Africa*, growth is projected to remain strong, broadly in line with the April 2014 WEO projections over the 2014–15 period, although prospects vary across countries. In *South Africa*, 2014 growth is being dragged down by industrial tensions and delays in fixing infrastructure gaps, including electricity constraints. A muted recovery is expected in 2015. In contrast, in *Nigeria*, activity has been resilient despite poor security conditions and a decline in oil production earlier this year. In a few countries, including Ghana and, until recently, Zambia, large macroeconomic imbalances have resulted in pressures on the exchange rate and inflation. Beyond the human toll it is exacting, the Ebola outbreak is set to have an acute impact on the economies of Guinea, Liberia, and Sierra Leone, as discussed in Chapter 2. Should the outbreak continue to intensify and spread significantly to neighboring countries, it could have more far-reaching consequences.
- These projections imply a robust outlook for low-income developing countries, with growth projected to exceed 6 percent in both 2014 and 2015. Stronger growth in advanced economies will buoy low-income developing countries' net external demand, although the projected easing in nonfuel commodity prices will induce some deterioration in the terms of

trade for the net exporters of commodities. Domestic demand is expected to remain resilient as in recent years.

Inflation outlook

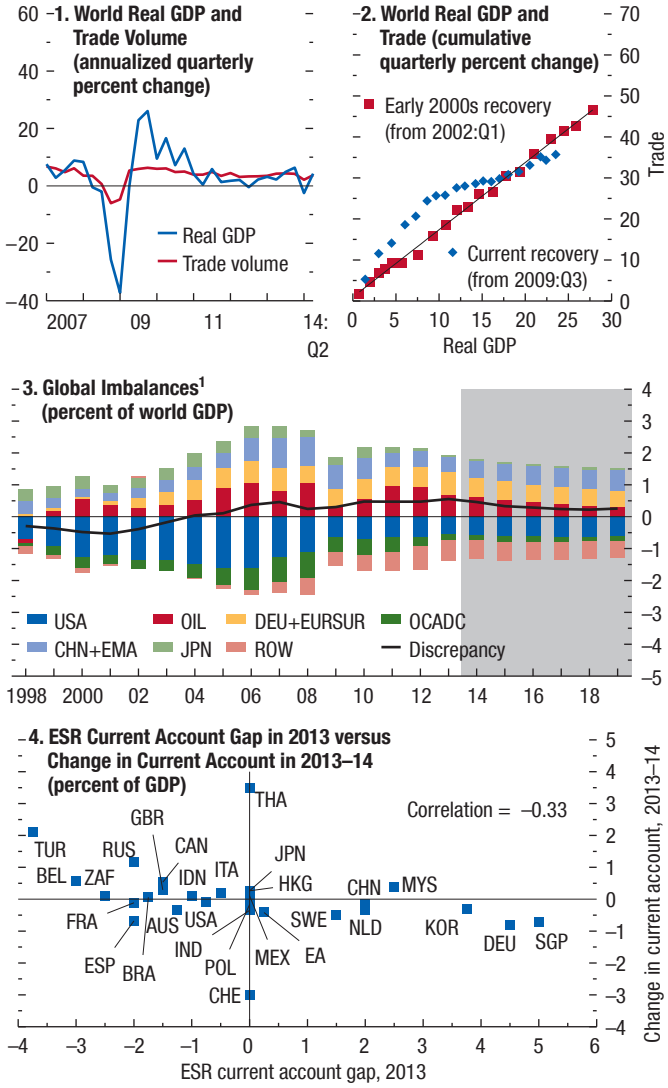
Inflation remains too low in advanced economies, an indication that many of these economies have substantial output gaps, and deflation continues to be a concern. In the United States, inflation measured with the personal consumption expenditure deflator is forecast to be 1.6 percent at the end of 2014 and to rise gradually toward the Federal Reserve's longer-term objective of 2 percent. In the euro area, inflation is projected to increase gradually as the recovery strengthens and output gaps slowly decrease, to 0.9 percent on an annual basis in 2015 and 1.2 percent in 2016. But price pressures are expected to remain very subdued under the current baseline projections, because persistent output gaps, weak credit conditions, and financial fragmentation—especially in stressed economies—will combine to contain prices. As a result, euro-area-wide inflation rates are expected to remain substantially below the ECB's price stability objective through at least 2019 with current policies, suggesting that the risk of inflation expectations becoming unanchored has increased. In Japan, headline inflation is projected to rise to an annual average rate of 2.7 percent in 2014. This rise reflects the consumption tax increase, but underlying inflation is rising as well, at 1.1 percent this year. Inflation is projected to increase gradually toward the 2 percent target in the medium term as the output gap closes and inflation expectations rise. In emerging market and developing economies, inflation is projected to decline in 2014, in line with the April 2014 WEO projections, and to remain broadly unchanged in 2015. The recent decline reflects to an important extent the softening of commodity prices—particularly those for food commodities, which have a high weight in the consumer price index baskets for these countries.

External sector and outlook for rebalancing

Global trade volume growth slowed markedly in the first half of 2014 compared with global activity (Figure 1.9, panel 1). Expectations that with a strengthening recovery, global trade would once again grow faster than GDP, based on developments in the second half of 2013, have not materialized (Figure 1.9, panel 2). Some of the slowdown in trade growth could

Figure 1.9. External Sector

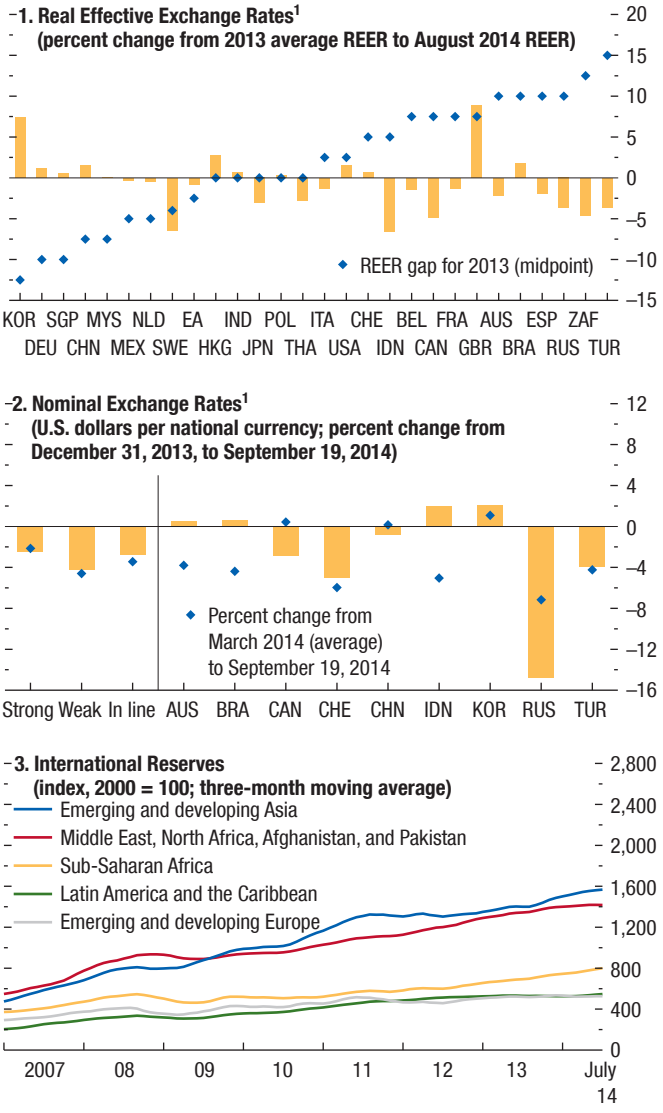
Global trade growth slowed again in the first half of 2014, consistent with weaker global growth during this period. But world trade has lacked its traditional strong momentum since the deceleration in global activity in 2011. Global current account imbalances have narrowed substantially since the global financial crisis in 2008 and are projected to narrow further. Among the larger economies, the projected change in current account balances in the near term is consistent with a further narrowing of excess surpluses and deficits (as measured by the current account gaps in 2013 identified in the IMF's *2014 Pilot External Sector Report*).



Sources: CPB Netherlands Bureau for Economic Policy Analysis; IMF, *2014 Pilot External Sector Report* (ESR); and IMF staff estimates.
Note: Data labels in the figure use International Organization for Standardization country codes.
[1]AE = advanced economies; 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); EA = euro area; OCADC = other European precrisis current account deficit countries (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.

Figure 1.10. Exchange Rates and Reserves

Currencies of major emerging market economies have depreciated against the U.S. dollar in 2014, reflecting financial market turmoil early in the year and relatively weaker medium-term prospects compared with advanced economies. More broadly, exchange rate movements during the past year have generally been consistent with further corrections in currency over- and undervaluation (as measured by the REER gaps identified in the IMF's *2014 Pilot External Sector Report*). The pace of reserve accumulation has slowed in Latin America and emerging and developing Europe, reflecting lower capital inflows and reserve losses from foreign exchange interventions. It has remained strong in the Middle East, reflecting still-high oil prices, and has accelerated recently in emerging and developing Asia.



Sources: Global Insight; IMF, *2014 Pilot External Sector Report;* IMF, International Financial Statistics database; and IMF staff calculations.
Note: Strong = relatively stronger economies; weak = relatively weaker economies; in line = broadly in-line economies; EA = euro area; REER = real effective exchange rate. Data labels in the figure use International Organization for Standardization country codes.
[1]REER gaps and classifications are based on the *2014 Pilot External Sector Report*.

reflect a more modest pace in the fragmentation of global production processes (value chains) after years of rapid change. Indeed, much of the recent slowing in trade growth relative to GDP is an emerging market phenomenon. And some of this slowdown could be cyclical, reflecting declining world growth since 2011. Indeed, in the early stages of the global recovery in 2009–10, global trade had picked up strongly, broadly in line with patterns in earlier periods of increasing global growth. Global trade is projected to pick up ahead of GDP as the global recovery strengthens, but the difference between trade and GDP growth is projected to remain below recent precrisis averages.

Global current account imbalances narrowed in 2013 and are projected to contract further, albeit modestly, in 2014 and beyond (Figure 1.9, panel 3). The contraction in 2014 is projected to come from a reduction in deficit and surplus positions within Europe, as well as from some contraction in surpluses in oil exporters. At the same time, as discussed in Chapter 4, legacy effects from the period of global imbalances and the global financial crisis persist, with countries that ran large current account deficits before the crisis still facing high gross and net external liabilities. Although many of these countries have achieved large current account corrections, weak or negative GDP growth and subdued inflation have prevented a systematic improvement in their net external positions. And the low projected growth rates for nominal and real GDP imply a very gradual improvement in debtor countries' net external positions going forward, even though current account balances in several cases are projected to remain in surplus.

The projected narrowing of global current account imbalances is generally consistent with a reduction in "excessive" imbalances, and exchange rate changes during the past year have been providing some support to the adjustment. As discussed in the *2014 Pilot External Sector Report* (IMF 2014a), external imbalances in 2013, although declining, remained almost twice as large as would be consistent with fundamentals and desirable policies. Figure 1.9 (panel 4) shows that projected changes in current account balances for 2014 relative to 2013 would go in the direction of narrowing the current account gaps for 2013 discussed in the *2014 Pilot External Sector Report*. These gaps measure deviations of current account balances from a level consistent with underlying fundamentals and desirable policies. And panel 1 of Figure 1.10 compares the 2013 currency assessments in the *2014 Pilot*

External Sector Report—which are based on average real effective exchange rates for that year—with subsequent changes in real effective exchange rates. Undervalued currencies (those with a negative real effective exchange rate gap in 2013) have generally appreciated and overvalued currencies depreciated, consistent with rebalancing.

Risks

Downside risks have increased compared with the spring. The main reason is the increase in *geopolitical risks*, including turmoil in the Middle East and international tensions surrounding the situation in Russia and Ukraine. Also, with the baseline now reflecting increased financial market optimism—risk spreads and major implied volatility indicators are close to precrisis expansion lows, equity prices have continued to rise, and longer-term yields have declined—downside risks from a *financial market correction* have increased.

As for the other risks discussed in the April 2014 WEO, those from unexpected bumps originating from *monetary policy normalization in the United States* remain. Inflation in the euro area has declined further, and inflation expectations have drifted downward, indicating that *risks of outright deflation or a protracted period of very low inflation* also remain. From a medium-term perspective, *low potential output growth* and *"secular stagnation"* are still important risks in advanced economies, given that robust demand growth has not yet emerged. In particular, despite continued very low interest rates and increased risk appetite in financial markets, a pickup in investment has not yet materialized, possibly reflecting concerns about low medium-term potential growth and subdued private consumption (in a context of weak growth in median incomes). For emerging markets, despite downward revisions to forecasts, the risk remains that the projected increase in growth next year will fail to materialize (at least in full) and that *potential growth is lower than currently projected*. And risks of a *hard landing in China* in the medium term owing to excess capacity and the credit overhang remain a concern, given that investment and credit continue to be the main drivers of growth.

Global GDP Forecast

The fan chart for the global real GDP forecast through 2015 suggests a broadly unchanged uncertainty band around the WEO projections relative to six months ago (Figure 1.11, panel 1). The probability of global growth falling below the 2 percent recession threshold in 2015 is less than 1 percent, which is appreciably lower for the next-year forecasts compared with values in October 2012 and October 2013. In regard to the components underlying uncertainty around the forecasts, downside risks to global growth due to oil prices have increased compared with the April 2014 WEO, and notably so for 2015. Downside risks related to an equity price correction in 2014 have also risen, consistent with the notion that some valuations could be frothy. In addition, prospects of rising U.S. term spreads in 2015 due to higher long-term rates are consistent with upside risks to global growth, based on the past predictive performance of term spreads.

Simulations using the IMF staff's Global Projection Model suggest an increase in recession risks (as measured by the probability of two consecutive quarters of negative growth in the four quarters ahead), particularly in the euro area and the Rest of the World group (Figure 1.12, panel 1). This increase partly reflects a lower starting point for growth compared to the April 2014 WEO. The results of these simulations underscore that a number of fragilities remain present in the global recovery.

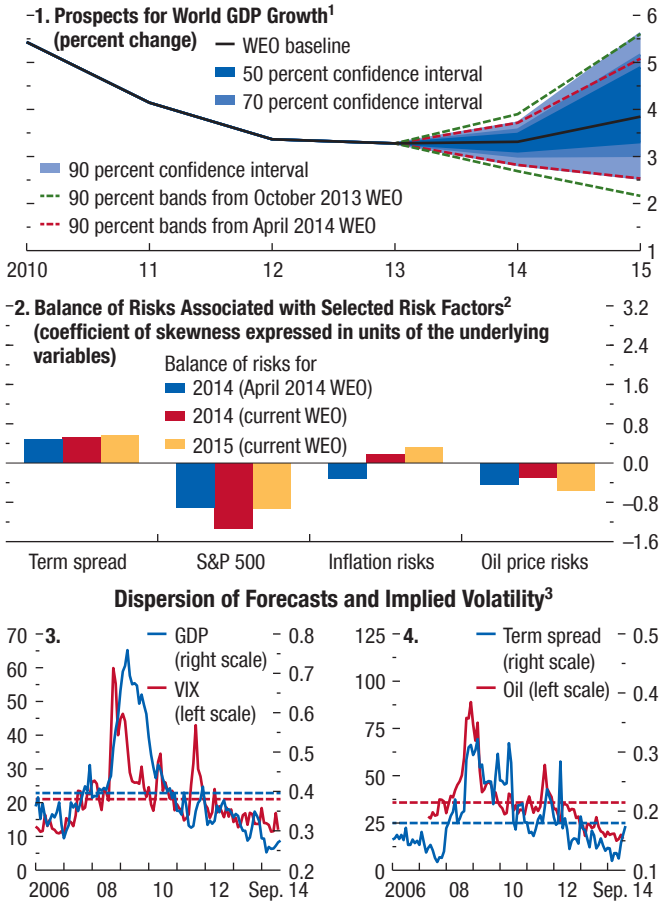
Immediate and Short-Term Risks

Risks to the fragile global recovery come from several sources: increased geopolitical tensions and their repercussions for commodity markets and real activity, shocks originating in financial markets, and macroeconomic disappointments in systemically important countries or regions. In all these cases, global trade and financial market interconnectedness can act to transmit and amplify shocks, with large cross-border spillovers.

With regard to *geopolitical risks,* the baseline incorporates a recession in Ukraine and stagnant output in Russia in 2014, with adverse spillovers to the CIS and, to a lesser extent, other trading partners. These effects are assumed to gradually wane in 2015 and thereafter. Larger global spillovers could result from further unrest triggering disruptions in the production or transportation of natural gas or crude oil, higher risk aversion in financial markets, a negative impact on confidence and business investment in trading partners caused by greater uncertainty, and disruption to trade and finance resulting from an escalation of sanctions and countersanctions. An additional important source of geopolitical

Figure 1.11. Risks to the Global Outlook

The fan chart, which indicates the degree of uncertainty about the global growth outlook, has remained broadly unchanged from that in the April 2014 WEO. Lower baseline uncertainty (given that there is more information about 2014 available now) should, in principle, have lowered the uncertainty band for 2014, all else equal; that it has not is suggestive of somewhat higher downside risks in the near term. Financial-market-based measures of volatility and measures of forecast dispersion suggest broadly unchanged uncertainty.



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

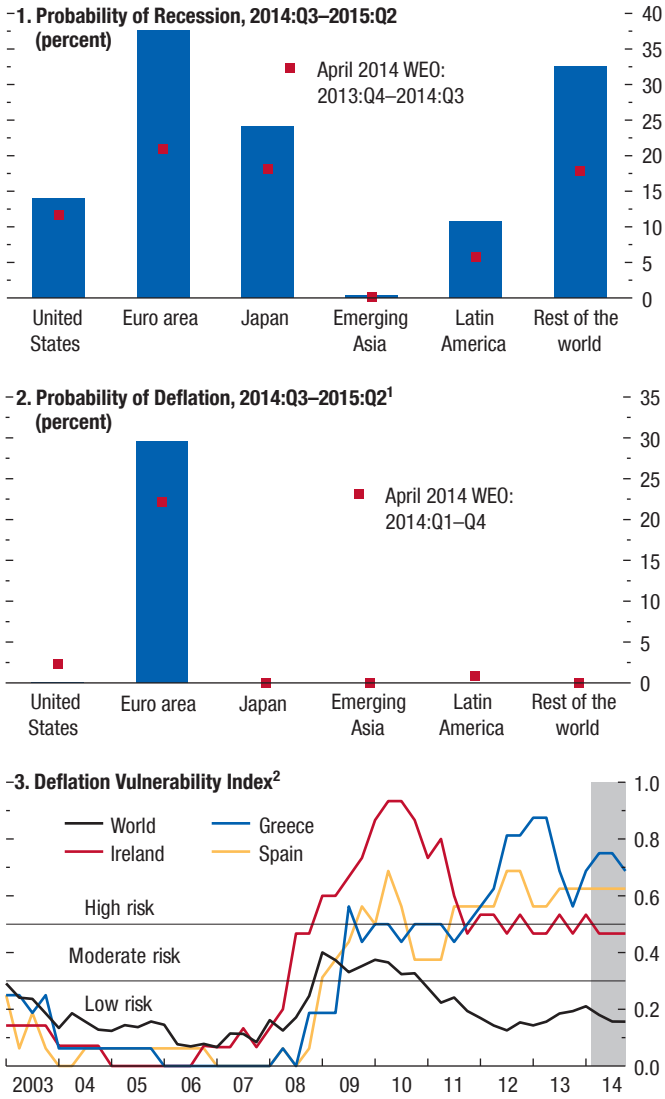
[1]The fan chart shows the uncertainty around the WEO central forecast with 50, 70, and 90 percent confidence intervals. As shown, the 70 percent confidence interval includes the 50 percent interval, and the 90 percent confidence interval includes the 50 and 70 percent intervals. See Appendix 1.2 of the April 2009 WEO for details. The 90 percent bands for the current-year and one-year-ahead forecasts from the October 2013 and April 2014 WEO reports are shown relative to the current baseline.

[2]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. Note that the risks associated with the Standard & Poor's (S&P) 500 for 2015 are based on options contracts for December 2015.

[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 S&P 500 Implied Volatility Index. Term spread measures the average dispersion of term spreads implicit in interest rate forecasts for Germany, Japan, the United Kingdom, and the United States. Oil is the CBOE crude oil volatility index. Forecasts are from Consensus Economics surveys. Dashed lines represent the average values from 2000 to the present.

Figure 1.12. Recession and Deflation Risks

The IMF staff's Global Projection Model suggests that one-year-ahead recession risks have increased compared with the April 2014 WEO in the euro area, Japan, Latin America, and the Rest of the World group. The increase is largely due to lower growth starting points, which imply that a smaller negative shock is more likely to trigger a recession, everything else equal. Deflation risks have increased for the euro area compared with the April 2014 WEO, again mostly on account of an even lower starting point for inflation given that euro area inflation declined to about ½ percent in the second quarter of 2014.



Source: IMF staff estimates.

Note: Emerging Asia = China, Hong Kong SAR, India, Indonesia, Korea, Malaysia, Philippines, Singapore, Taiwan Province of China, Thailand; Latin America = Brazil, Chile, Colombia, Mexico, Peru; Rest of the world = Argentina, Australia, Bulgaria, Canada, Czech Republic, Denmark, Estonia, Israel, New Zealand, Norway, Russia, South Africa, Sweden, Switzerland, Turkey, United Kingdom, Venezuela.

[1]Deflation is defined as two consecutive quarters of falling consumer prices within a four-quarter window.

[2]For details on the construction of this indicator, see Kumar 2003 and Decressin and Laxton 2009. The indicator is expanded to include house prices.

risks is related to developments in the Middle East. The baseline incorporates severe negative effects of current strife on economic activity in 2014 for some countries in the region, particularly Iraq and Libya, which are assumed to unwind in 2015 and thereafter. Increased strife in the region could trigger disruptions to oil production and a sharp rise in oil prices. The potential global implications of such a turn of events, and possible amplification mechanisms through financial markets, are explored in "Risk Scenarios: Oil Price Spike."

With low interest rates and increased risk appetite in financial markets, equity prices have increased, spreads have compressed, and volatility has declined to very low levels. There are valid reasons for some financial market optimism: tail risks have decreased during the past two years, balance sheet repair has progressed, and central bank communication has been effective, all in a context in which low long-term interest rates would naturally boost asset prices. However, the increased risk appetite in financial markets has not translated into a pickup in investment, which—particularly in advanced economies—has remained subdued. And as discussed further in this chapter and in the October 2014 GFSR, there is a concern that markets are underpricing risk, not fully internalizing the uncertainties surrounding the macroeconomic outlook and their implications for the pace of withdrawal of monetary stimulus in some major advanced economies.

More specifically, financial markets can amplify *risks associated with faster-than-expected increases in U.S. interest rates*. As discussed in the *2014 Spillover Report* (IMF 2014b), previous WEO reports, and the Spillover Feature in Chapter 2, the nature of these risks and those of global spillovers will depend on the factors triggering the increases. Faster U.S. growth would raise external demand for partner countries and also contribute to higher confidence in a global recovery; on balance this would be a positive for the rest of the world, despite the tightening of global financial conditions. But risks remain of an increase in U.S. interest rates triggered by other factors, which could have more disruptive spillover effects. These factors could include an increase in the term premium on long-term U.S. Treasury bonds resulting from a portfolio shift or expectations of more rapid monetary policy tightening caused by a downward reassessment of the amount of slack in the U.S. economy. The increase in the term premium could in turn cause an increase in risk premiums and volatility in global financial markets and trigger a reversal of capital flows, particularly from vulnerable emerging markets. As noted in the October 2014 GFSR, some U.S. markets, such as those for credit and high-yield bonds, appear particularly susceptible to negative effects from faster-than-expected monetary policy normalization.

Growth disappointments, geopolitical events, or other triggers can also set off a *sudden reversal of risk premiums and volatility compression in global financial markets*. An increase in global risk aversion can trigger safe haven flows and thus be associated with a decline in U.S. long-term interest rates (in contrast to the scenarios described in the previous paragraph) but still imply a significant tightening of financial conditions, capital flow reversals, and exchange rate pressures in emerging markets, as well as negative effects on equity prices. The October 2014 GFSR develops a scenario in which a rapid market adjustment causes term bond market and credit risk premiums to revert to historical norms. An adverse feedback loop between outflows and asset performance in the asset management sector could exacerbate the move from low to high volatility, with negative implications for many credit and emerging market assets. Such a shock could cause large losses in global bond portfolios, which could precipitate rapid portfolio adjustments and significant market turmoil, with potentially global implications for financial and macroeconomic stability.

In some advanced economies, *protracted low inflation or outright deflation poses risks to activity*—particularly where the legacies of the crisis include high public or private debt or both. Current inflation remains below target—and close to zero in some cases—in many advanced economies and is projected to increase only slowly. The risk is that a protracted "undershooting" of the inflation target would cause a decline in longer-term inflation expectations. With monetary policy rates in many cases close to or at the zero bound, the room to lower rates is limited. Higher real rates would hamper the recovery, including by exacerbating debt overhang problems.[2] In most economies, the risk of deflation by the end of 2014 is negligible, according to the Global Projection Model simulations, but the risk of inflation remaining persistently below central bank targets remains high. The risk of outright deflation remains a concern for the euro area, where inflation has declined further in recent months, and to a

[2]Box 1.1 of the October 2014 *Fiscal Monitor* discusses the implications of low inflation for public debt dynamics in the euro area.

Risk scenarios: Oil price spike

Geopolitical risks are again a key concern in regard to oil prices. In the case of Iraq, an escalation in the internal conflict could lead to disruptions in the country's (as well as global) oil production. This possibility could lead to adverse global spillovers to other economies through higher oil prices, lower risk appetite in global financial markets, and lower confidence more broadly. This analysis considers these two spillover mechanisms in two scenarios. In both, the oil price is assumed to spike by some 20 percent on average in the first year in response to unexpected global oil supply disruptions caused by temporarily lower production in Iraq (Figure 1.13). Oil prices return to baseline after three years.

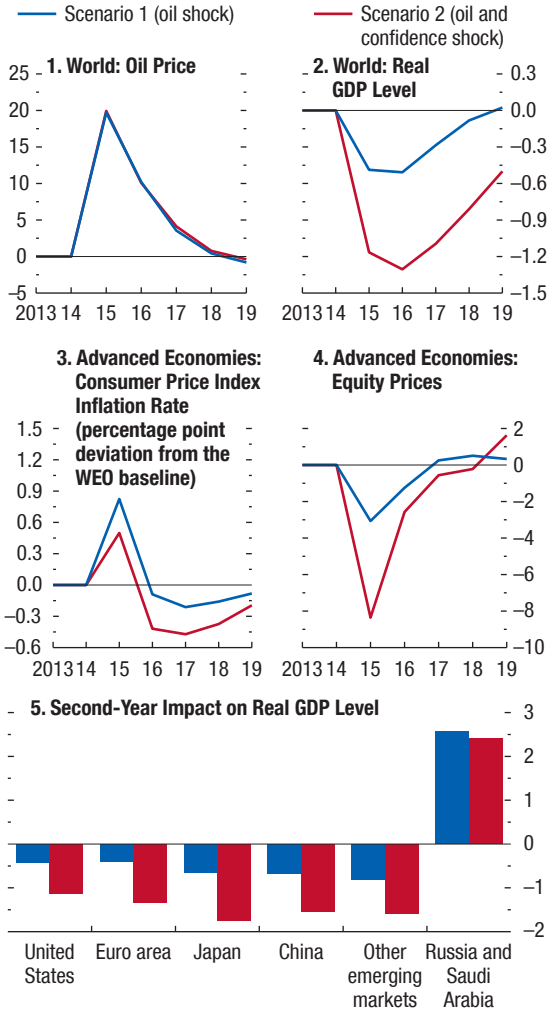
In the first scenario, only oil prices spike. As a result, real incomes decline because higher production costs lower profits in net oil importers, where domestic demand falls sharply. Domestic demand in oil exporters increases with the terms-of-trade gains, but not enough to offset the negative impact on oil importers. As a result, world GDP declines by about ½ percent in the year the shock materializes. The magnitudes of the output declines across regions depend on the share of oil imports in costs and household spending, as well as on constraints on monetary policy responses (blue bars in Figure 1.13, panel 5). Japan is most affected on both accounts—its economy is at the zero lower bound—and the effects on net oil importers among emerging markets are large because of their relatively higher oil dependency.

In the second scenario, the oil price spike is also assumed to lower confidence among consumers, firms, and investors. The assumption is that in the year the shock hits, equity prices decline in advanced economies by 3 percent, on average, and in emerging market economies by 7 percent. Subsequently, as in the first scenario, world equity prices fall further on lower profits and growth in net oil importers. As oil prices start falling, risk appetite and confidence begin normalizing. Still, the adverse effects on domestic demand and output in net oil importers are in almost all cases more than twice as high as under the first scenario (red bars in Figure 1.13, panel 5), reflecting additional negative wealth effects and higher costs of capital in these economies. World GDP declines by about 1½ percent.

Figure 1.13. Iraq Oil Shock

(Percent deviation from the WEO baseline, unless indicated otherwise)

The IMF's G20 Model (G20MOD) is used here to explore the macroeconomic impact of a potential significant global oil supply disruption due to conflict escalation in Iraq. In the first scenario (blue lines and bars), the rise in oil prices is the only drag on the global economy, whereas in the second (red lines and bars), the disruption also undermines confidence. Iraq's oil exports drop by 50 percent from the current level (roughly 1½ percent of current global oil consumption), with only half of the decline offset by higher oil production from current spare capacity. This leads to an oil price spike of 20 percent, partly on account of sharply higher precautionary demand for oil inventories. The oil price starts falling after the first year, but only gradually, largely because the supply disruption is assumed to take longer to unwind than expected initially.



Source: IMF, G20MOD simulations.

lesser extent for Japan (given that underlying inflation remains well below the 2 percent target). In the euro area, the risk of deflation—as measured by the probability of two consecutive quarters of negative inflation within a four-quarter forecast window—is estimated to be about 30 percent (Figure 1.12, panel 2). Similarly, broad indicators of deflation vulnerability, which measure the risk of more persistent price-level declines, remain above the high-risk threshold for some euro area economies, reflecting even lower-than-expected inflation in recent months (Figure 1.12, panel 3).

There are also *near-term growth risks in China.* These risks are mainly associated with the likelihood of a more severe real estate market correction than envisaged in the baseline. Real estate investment has been an important engine of growth in China, and it will be challenging to allow the imbalances in the market—including signs of overvaluation in large cities and oversupply in many smaller cities—to correct while preventing an excessively sharp slowdown. Financial sector links would amplify the impact of this correction, given the direct exposure of banks and shadow banks to real estate through credit to developers and household mortgages, and also indirectly, through the use of real estate as collateral for other loans. Furthermore, local government spending relies on the real estate sector directly, through land sales revenue, and indirectly, through the tax revenue generated by the sector. Although policy action—for example, through additional infrastructure investment—could help mitigate the immediate impact of the shock, such action would complicate the challenge of rebalancing demand away from investment toward consumption.

Medium-Term Risks

The pattern of downward revisions to growth forecasts documented in Box 1.2 and the repeated markdowns of estimates of medium-term potential growth highlight the uncertainties surrounding the resilience of the global economy in the medium term. Accordingly, this WEO report focuses on risks that demand and potential growth might fall short of expectations, a theme also developed in previous reports.[3]

Low potential growth in advanced economies: Increasing evidence suggests that potential growth in advanced economies had started to decline before the crisis, and total factor productivity has been increasing at modest rates across all major advanced economies.[4] And the impact of a more modest rate of growth in total factor productivity would be compounded by slower growth or an outright decline in labor input in light of population aging. In addition to these longer-term trends, a protracted period of weak growth and large negative output gaps could erode the growth potential of stagnating economies. The channels through which this erosion would operate include lower investment, including in research and development, affecting the capital stock and total factor productivity, as well as erosion of skills and lower labor supply as a result of hysteresis in unemployment. Low actual and potential growth would also further complicate the challenge of reducing high public and private debt.

Secular stagnation in advanced economies: In addition to the implications of weaker potential growth, the major advanced economies, especially the euro area and Japan, could face an extended period of low growth reflecting persistently weak private demand that could turn into stagnation. In such a situation, some affected economies would not be able to generate the demand needed to restore full employment through regular self-correcting forces. The equilibrium real interest rate on safe assets consistent with full employment might be too low to be achieved with the zero lower bound on nominal interest rates. As discussed in Chapter 3 of the April 2014 WEO, real interest rates on safe assets are likely to rise under the WEO baseline but remain below the average value of about 2 percent recorded in the mid-2000s before the crisis. However, the further declines in nominal and real interest rates on long-term "safe" government bonds during the past few months—despite expectations of a strengthening recovery—underscore the fact that stagnation risks cannot be taken lightly. The risk scenario discussed below illustrates how stagnation in advanced economies could itself amplify declines in potential growth, generating protracted negative effects on GDP for the world economy as a whole.

Lower potential growth in emerging market economies: As discussed in Box 1.2 and in Chapter 3 of the *2014 Spillover Report* (IMF 2014b), growth forecasts for emerging markets have been reduced

[3]Among other medium-term risks, the April 2013 WEO presents a scenario featuring rising concerns about fiscal sustainability in the euro area, Japan, and the United States.

[4]On the United States see, for example, Fernald 2014, Gordon 2014, and Hall 2014.

Risk scenario: Secular stagnation and low potential output in advanced economies

Secular stagnation in advanced economies remains a concern. Robust demand momentum has not yet emerged despite continued very low interest rates and easing of brakes to the recovery, including from fiscal consolidation or tight financial conditions. The following scenario explores the global economic implications of protracted demand weakness in advanced economies, reflecting a sequence of unexpected negative shocks to private investment and higher private saving in the major economies. These developments could be triggered by continued low confidence, limited appetite for real risks, and debt overhang after the crisis. In turn, the decline in growth resulting from weaker domestic demand is assumed to reduce advanced economies' potential output. Specifically, lower investment results in reduced productivity growth. Higher unemployment leads to skill depreciation in the labor force and a higher natural rate of unemployment. The size of the labor force also declines, because discouraged workers exit the labor market.

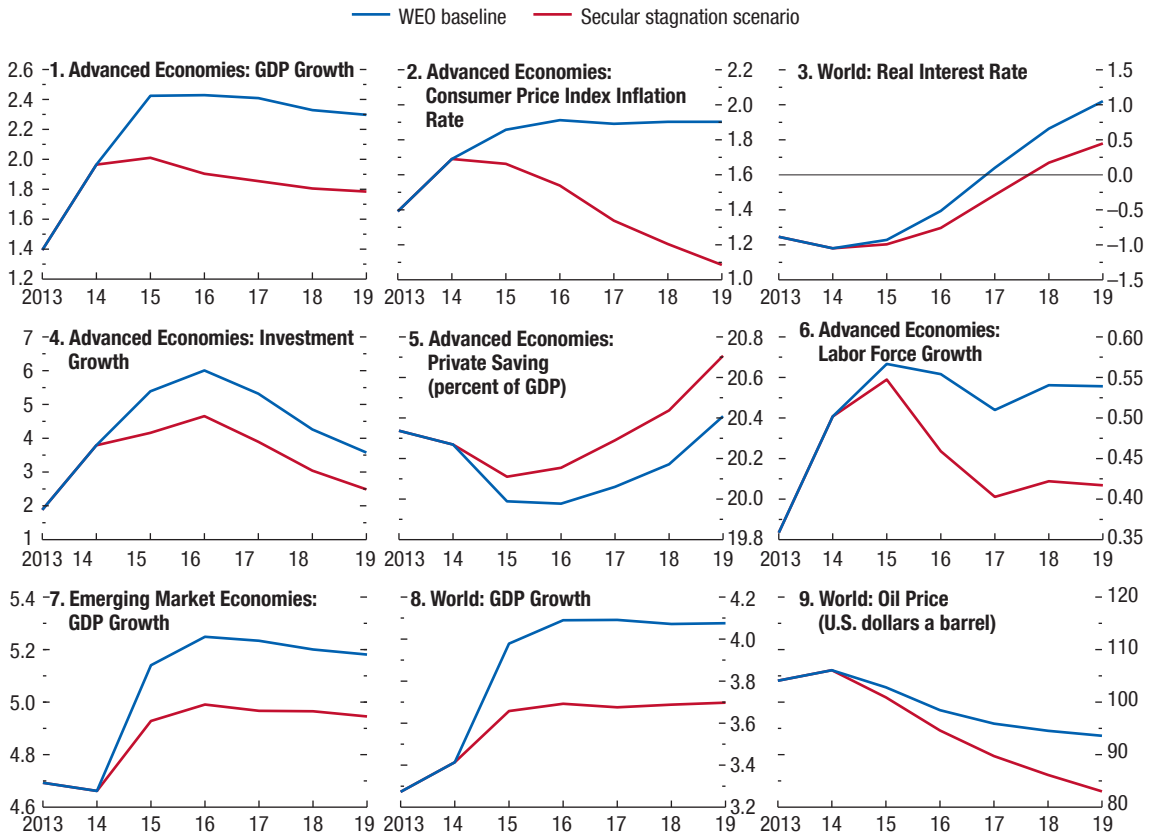
These (relatively small) demand shortfalls in advanced economies, together with the erosion of potential output, unemployment, and the labor force decreases as discouraged workers withdraw from the labor force. Overall, the labor supply decreases by roughly 0.1 percent a year in advanced economies.

As a result, growth in advanced economies is roughly 0.5 percentage point below the WEO baseline, while inflation is about 0.8 percentage point lower after five years. Slower advanced economy growth has significant spillovers to emerging market economies, both directly, through lower external demand, and indirectly, because equity markets in emerging market economies are assumed to reflect some of the weakness in advanced economy equity markets. Global growth is roughly 0.4 percentage point below the WEO baseline.

Figure 1.14. Secular Stagnation

(Percent, unless indicated otherwise)

The IMF's G20 Model (G20MOD) is used here to explore a plausible alternative baseline with secular stagnation in advanced economies. The sources of stagnation are lower-than-expected private investment and higher-than-expected private saving, which lead to weaker domestic demand in advanced economies. Investment growth slows by just under 0.5 percentage point a year in the euro area and Japan; it slows by more than 1 percentage point a year in the United States and other advanced economies. Private saving as a share of GDP rises by about 0.2 percentage point a year in advanced economies. Weaker demand conditions in turn have negative spillovers to these economies' potential output. Given capital-embodied technology, lower investment results in slowing productivity growth. In addition, higher unemployment results in skill erosion that raises the natural rate of



Sources: IMF, G20MOD simulations; and IMF staff estimates.

Risk scenario: Secular stagnation and low potential output in advanced economies *(continued)*

could lead to sustained global economic weakness over a five-year period (Figure 1.14). Specifically, in advanced economies, investment growth is between 0.8 and 1 percentage point lower than under the baseline, whereas private saving ratios are 0.5 percentage point higher. On average, growth in advanced economies is roughly 0.4 percentage point lower and inflation about 0.8 percentage point lower after five years. Despite the fall in potential output, output gaps still widen initially with lower growth. And subsequently, these gaps narrow only slowly. Because demand weakness is unexpected, monetary policy in advanced economies ends up being too tight in hindsight, with real interest rates not falling enough. Relative to the baseline, the normalization of advanced economy interest rates is more gradual, and the global real interest rate declines.

The lower growth in advanced economies has significant spillovers to emerging market economies, both directly, through lower external demand, and indirectly, through negative productivity spillovers. Equity markets in emerging market economies thus reflect some of the weakness in advanced economy equity markets. Relative to the WEO baseline, emerging market growth is about 0.2 percentage point lower on average and global growth roughly 0.3 percentage point lower, with oil prices falling by roughly 10 percent over five years.

repeatedly in WEO reports since 2010—including in this one. At the same time, current forecasts still envisage a meaningful and durable pickup in growth in emerging markets in 2015. There is a risk that such a rebound may fail to materialize, reflecting lack of action on structural constraints leading to lower potential growth, a tightening of global financial conditions, a slow pace of recovery in advanced economies, or any combination of these factors. Structural constraints, as well as the external factors mentioned previously, may also hamper the pace of growth in low-income countries, which so far have been performing very well.

Hard landing in China: In addition to the general risk of actual and potential growth falling short of current estimates, an additional risk to global growth comes from the possibility of a hard landing in China, as also discussed in previous WEO reports. Without a change in the pattern of growth that relies on credit and investment, vulnerabilities will continue to rise. Cross-country evidence suggests that credit booms of a similar size have often led to sharp corrections. However, in China's case, the government still has the capacity to absorb and respond to the types of shocks that triggered crises elsewhere: a run on deposits, a collapse of the real estate market, or capital flight. At the same time, the repeated use of credit-financed stimulus to investment in response to shortfalls in growth reduces the available policy space and risks amplifying underlying vulnerabilities. Absent a rebalancing of growth, the risk of a shock causing financial disruption or a sharp slowdown will rise further—with large potential cross-border repercussions, given the size and openness of the Chinese economy.

Policies

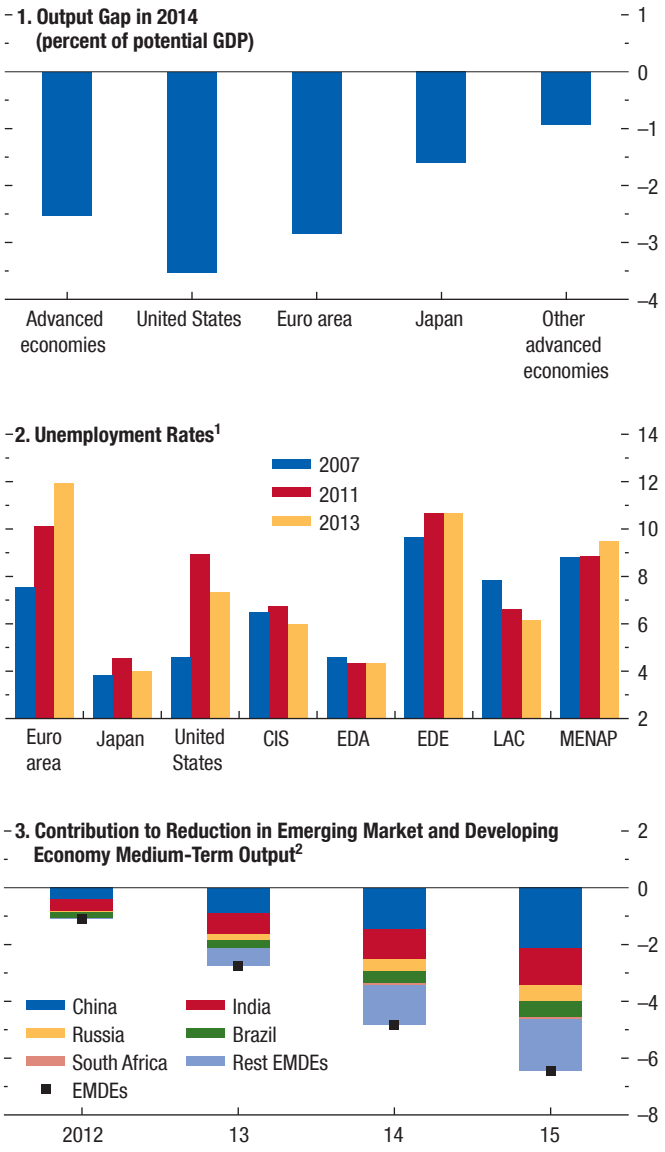
The global recovery remains fragile and uneven. The brakes placed on the recovery by high public and private debt in advanced economies are coming off, but at different rates across countries, and unemployment rates and output gaps are still high in some cases (Figure 1.15). Stagnation risks and low potential growth in these economies remain important medium-term concerns. These factors point to the need for action on two fronts: continued support to domestic demand and the adoption of policies and reforms that can boost supply. Emerging markets continue to underpin world growth but are slowing down from precrisis growth rates. They need to address underlying structural problems and take on structural reforms—policy challenges that are quite heterogeneous across countries. At the same time, they must deal with the implications of monetary policy normalization in the United States and possible shifts in financial market sentiment more generally. Implementation of these policies would underpin stronger and more balanced growth and help achieve a further narrowing of global external imbalances.

Fighting Low Inflation and Sustaining the Recovery in Advanced Economies

Across advanced economies, output gaps generally remain large and are projected to close only gradually, inflation is low, and dealing with high public debt requires fiscal consolidation to continue, as discussed in the October 2014 *Fiscal Monitor*. Thus, maintaining an accommodative monetary policy stance to support

Figure 1.15. Capacity, Unemployment, and Output Trends
(Percent, unless indicated otherwise)

The global recovery remains uneven. In advanced economies, the brakes placed on growth by high public and private debt are coming off, but at different rates across countries, and unemployment levels and output gaps are still high in some cases. Medium-term growth prospects have also been revised downward in many economies, particularly among major emerging markets, compared to the projections made in the fall 2011 WEO.



Source: IMF staff estimates.
Note: CIS = Commonwealth of Independent States; EDA = emerging and developing Asia; EDE = emerging and developing Europe; EMDEs = emerging market and developing economies; LAC = Latin America and the Caribbean; MENAP = Middle East, North Africa, Afghanistan, and Pakistan.
[1]Sub-Saharan Africa is omitted because of data limitations.
[2]Relative to the September 2011 WEO.

the recovery is essential. Within these broad contours, however, challenges increasingly differ across countries.

- The recovery in the euro area remains weak and uneven, unemployment rates far exceed their equilibrium value in most countries, and euro-area-wide inflation is too low, pointing to pervasive weakness in domestic demand. This requires policy actions to support activity. On the monetary policy front, recent measures taken by the ECB—lower policy rates, and the announcement of cheap term funding for banks and a program of private asset purchases—are welcome. But if the inflation outlook does not improve and inflation expectations continue to drift downward, the ECB should be willing to do more, including purchases of sovereign assets. Nevertheless, reducing fragmentation in stressed economies and ensuring that inflation rises back toward the price stability objective requires action beyond monetary policy. The review of banks' asset quality that is currently underway is critical to reestablishing confidence in banks and improving intermediation. And looking beyond the demand constraints, structural measures must be taken to increase very low potential growth rates—as discussed further in the next subsection. On the fiscal policy front, the pace of fiscal consolidation has slowed and the overall fiscal stance for 2014–15 is only slightly contractionary. This strikes a better balance between demand support and debt reduction. Germany, which has completed its fiscal consolidation, could afford to finance much-needed public investment in infrastructure (primarily for maintenance and modernization), without violating fiscal rules. Large negative growth surprises in euro area countries should not trigger additional consolidation efforts, which would be self-defeating. Moreover, if deflation risks materialize and monetary policy options are depleted, the escape clauses in the fiscal framework may need to be used to respond.
- In Japan, aggressive monetary policy easing—the first arrow of Abenomics—has helped lift inflation and inflation expectations, and actual and expected inflation are progressing toward the 2 percent target. Communication by the Bank of Japan has been effective, but more could be done to help anchor expectations, including clarifying the indicators used to assess whether inflation is on track. This effort would also help guide expectations when a need arises to adjust the asset purchase program and facilitate preparations for eventual exit. Should actual or expected inflation stall or growth disap-

point, further action by the Bank of Japan would be warranted—but it would be essential that such action be accompanied by complementary growth-enhancing reforms, partly because of potential risks to financial stability. On the fiscal front, given very high public debt, implementation of the second consumption tax increase is critical to establish a track record of fiscal discipline but is likely to take a toll on domestic demand, underscoring the importance of a pickup in confidence and investment.

- In the United States, with growth expected to increase above trend in the remainder of 2014 and 2015, the main policy issue is the appropriate speed of monetary policy normalization. Under the IMF staff's baseline projection, the current plans—namely, ending asset purchases later this year and gradually increasing the policy rate starting in mid-2015—are appropriate, given the still-sizable output gap and subdued inflation. But the timing of the increase in the policy rate may have to be adjusted based on developments on the inflation and unemployment fronts. Two factors complicate efforts to assess the amount of slack in the economy: it is difficult to determine how much of the decline in labor force participation is cyclical, and uncertainty exists about the equilibrium rate of unemployment. With the labor market strengthening more rapidly than forecast and inflation, although low, beginning to rise, risks of persistently low inflation have decreased, and the likelihood is arguably higher that policy interest rates could rise faster relative to the WEO baseline on account of reduced slack. In this context, an effective communications strategy is essential to prevent disruptive market responses and anchor market expectations. On the fiscal policy front, the priorities should be avoiding short-term fiscal accidents caused by political brinkmanship and adopting a more growth-friendly approach to fiscal consolidation, including through front-loaded infrastructure spending, while reaching political agreement on a credible and detailed medium-term fiscal consolidation path.
- The recovery in other advanced economies is becoming stronger, with buoyant house prices posing policy challenges in some of them (Box 1.1). In the United Kingdom, for example, macroprudential tools have been deployed to contain financial stability risks. Tighter monetary conditions could also be considered if macroprudential tools prove ineffective at addressing financial stability concerns, but careful consideration would need to be given to the trade-off between damage to the real economy and the ultimate costs of financial vulnerabilities.

The role of public investment

As discussed in Chapter 3, for economies with clearly identified infrastructure needs and efficient public investment processes, and where there is economic slack and monetary accommodation, there is a strong case for increasing public infrastructure investment. The increased public investment would provide a much-needed boost to demand in the short term and would also help raise potential output in the long term. Moreover, evidence from advanced economies suggests that an increase in public investment that is debt financed would have larger output effects than an increase that is budget neutral, with both options delivering similar declines in the debt-to-GDP ratio.

Financial stability and macroprudential policy

Although sizable output gaps in advanced economies remain, the possibility of a buildup in financial sector risks in a protracted low-interest-rate environment continues to make close monitoring necessary, as elaborated in the October 2014 GFSR. For instance, a number of smaller advanced economies are experiencing credit booms, and in certain segments of U.S. financial markets, risks appear to be underpriced. Authorities should remain vigilant, strengthen regulation and supervision of the shadow banking system, and be ready to deploy macroprudential tools as a first line of defense should such a threat become more salient. As discussed in the GFSR, strengthening macroprudential tools may require changes to the regulatory and legal structure.[5]

Boosting medium-term growth and reducing risks of stagnation

In the euro area, more growth-enhancing structural reforms are necessary to tackle high unemployment, increase competitiveness in stressed economies, and facilitate rebalancing. To reduce youth unemployment, country-specific measures such as cost-effective active labor market policies, measures to lower the opportunity cost of employment, and better-targeted training programs can also help. Higher infrastructure investment in creditor countries would help boost domestic

[5]The April 2014 *Regional Economic Outlook: Asia and Pacific* discusses roles and limitations of micro- and macroprudential tools in the Asian context.

demand in the short term, thereby helping reduce excessive surpluses and boosting potential output down the road. In debtor countries, competitiveness-enhancing reforms to product and labor markets would help boost export growth, sustaining external adjustment even as the recovery takes hold and import compression unwinds.[6] There should be continued efforts to implement the European Union Services Directive, make progress with free trade agreements, and more closely integrate energy platforms and policies.

In Japan, more forceful structural reforms (the third arrow of Abenomics) are needed to boost potential growth and move decisively away from deflation. In particular, increasing the labor supply is of the essence, given unfavorable demographic trends, but it is also important to reduce labor market duality, enhance risk capital provision to boost investment, and raise productivity through agricultural and services sector deregulation. The task of boosting growth is also critical in light of the challenges posed by high public debt and the need for sizable fiscal consolidation—for which a concrete medium-term plan beyond 2015 is urgently needed.

In the United States, potential growth is higher than in most other large advanced economies, thanks to a growing labor force. However, both labor supply and total factor productivity have been growing at rates well below historical trends, and investment in relation to GDP remains well below precrisis levels. Steps should be taken to raise productivity, encourage innovation, augment human and physical capital, and increase labor force participation. Such measures should involve investment in infrastructure as well as education. With a decline in labor force participation and still-elevated long-term unemployment, scope also remains for strengthening active labor market policies, which in the past have been much less prevalent in the United States than elsewhere in the advanced world.

Adapting to a Changing Environment in Emerging Market and Developing Economies

Emerging markets' efforts to rebalance growth toward domestic sources in recent years have supported world growth and facilitated a sizable unwinding of global current account imbalances. But in a number of countries this rebalancing, in a context in which growth has been below expectations for the past few years, has also increased some vulnerabilities and reduced policy space, with inflation above target, or weaker fiscal positions relative to the precrisis period, or both. Reducing these vulnerabilities has become more important in light of changes to the world environment. On the one hand, the recovery in advanced economies suggests that demand for emerging market exports will increase. On the other hand, the ensuing normalization of monetary policy—particularly in the United States—would indicate that some of the capital flows that went to emerging markets in search of higher returns may well reverse direction. Such a reversal, in turn, implies tighter financial conditions and a financial environment in which foreign investors are less forgiving and macroeconomic weaknesses are more costly. And financial bumps, such as those of May–June 2013, may well happen again—particularly after a renewed period of benign global financial conditions, with declining spreads and low volatility.

In this environment, to reduce vulnerabilities, the macroeconomic policy stance should be consistent with the extent of economic slack, within a credible macroeconomic framework. The April 2014 WEO discusses the management of capital flow risks in emerging market and developing economies. In general, these countries should continue to manage external financial shocks with exchange rate flexibility, complemented with other measures, such as foreign exchange intervention to limit excessive market volatility.

During the past year, some countries have successfully lowered their vulnerabilities to adverse shocks by adopting tighter macroeconomic policies to reduce inflation and narrow external current account deficits (India, Indonesia). Vulnerabilities in some countries relate to rapid domestic credit expansion. With the external environment becoming less supportive, greater attention to monitoring the financial sector as well as exposures of nonfinancial firms, particularly in foreign exchange, and to enforcing prudential regulation and supervision and macroprudential measures to alleviate these risks, is needed. In other economies, higher external borrowing has increased exposure to external funding risks, and raising domestic saving rates, including through stronger public finances, should be a priority (Brazil, Turkey).

In China, rebalancing toward domestic demand has been characterized by booming investment and credit, with credit intermediation occurring not only through banks, but also through local government platforms and the shadow banking sector, regulation and supervision of which are weaker. To address the attendant

[6]Structural labor reforms may entail nonnegligible fiscal costs, as discussed in Chapter 2 of the October 2014 *Fiscal Monitor*.

risks, policies need to be carefully calibrated to help the economy make the transition to more consumption-led growth—with slower investment and real estate activity—while buttressing financial sector stability. In this light, it is crucial to implement key elements of the authorities' structural reform that aim to strengthen the regulation and supervision of the financial sector, reduce implicit guarantees, liberalize the deposit rate, and use interest rates instead of quantitative targets for the implementation of monetary policy, thus encouraging market-based pricing of risks. Further expansion of the social safety net, by reducing the current high rate of social security contribution, and better health care benefits would help reduce household saving rates and raise domestic consumption. This domestic rebalancing strategy, together with further exchange rate flexibility, would also contribute to global rebalancing.

Several years of slowing growth prospects (Box 1.2) suggest that it is also time for major emerging market economies to turn to important structural reforms to raise growth more robustly. The agenda, naturally diverse across countries, includes removing infrastructure bottlenecks in the power sector (India, South Africa); easing limits on trade and investment and improving business conditions (Indonesia, Russia); and implementing reforms to education, labor, and product markets to raise competitiveness and productivity (Brazil, China, India, South Africa) and government services delivery (South Africa). The policies being implemented in Mexico—particularly in opening the energy and telecommunications sectors to competition, as well as labor market reforms—are welcome steps for attracting investment and raising employment and potential growth. The postelection recovery of confidence in India also provides an opportunity for that country to embark on its much-needed structural reforms.

Challenges for Low-Income Countries

Growth rates for many low-income countries have been high for a number of years, supported by better macroeconomic policies, more favorable business and investment regimes leveraging increased interest from foreign investors, and in a number of cases strong terms of trade. But vulnerabilities remain. Overall, low-income countries' progress in achieving the Millennium Development Goals has been uneven and slow. For a few of these countries, the recent widening of fiscal deficits and higher debt levels reflect a shift in public spending away from essential investment—social priorities and infrastructure—toward higher current spending. With increased access to nonofficial foreign finance, nonresidents are holding larger amounts of both foreign-currency and local-currency debt, making some countries—particularly those with domestic policy weaknesses—vulnerable to shifts in market sentiment and reversal of capital flows. The projected decline in many commodity prices would strain budget revenues and foreign exchange earnings in a number of countries, and more modest growth prospects in emerging markets, together with low growth in advanced economies, may challenge the ability of low-income countries to sustain strong growth.

In this context, and with growth still vigorous, strengthening policies and reducing vulnerability to external shocks is paramount. This would mean, for many of these countries, boosting fiscal positions with stronger revenues (including by increasing the revenue base), as well as limiting current public spending and rationalizing it toward more social and education spending. Structural policy challenges include strengthening fiscal frameworks to foster medium-term planning and preserve debt sustainability, as well as deepening structural transformation and diversification. Building greater monetary policy independence and strengthening the monetary policy framework and credibility would also allow exchange rates to become more flexible to adjust to external shocks and limit their potential adverse effects on the economy.

Special Feature: Commodity Market Developments and Forecasts, with a Focus on Natural Gas in the World Economy

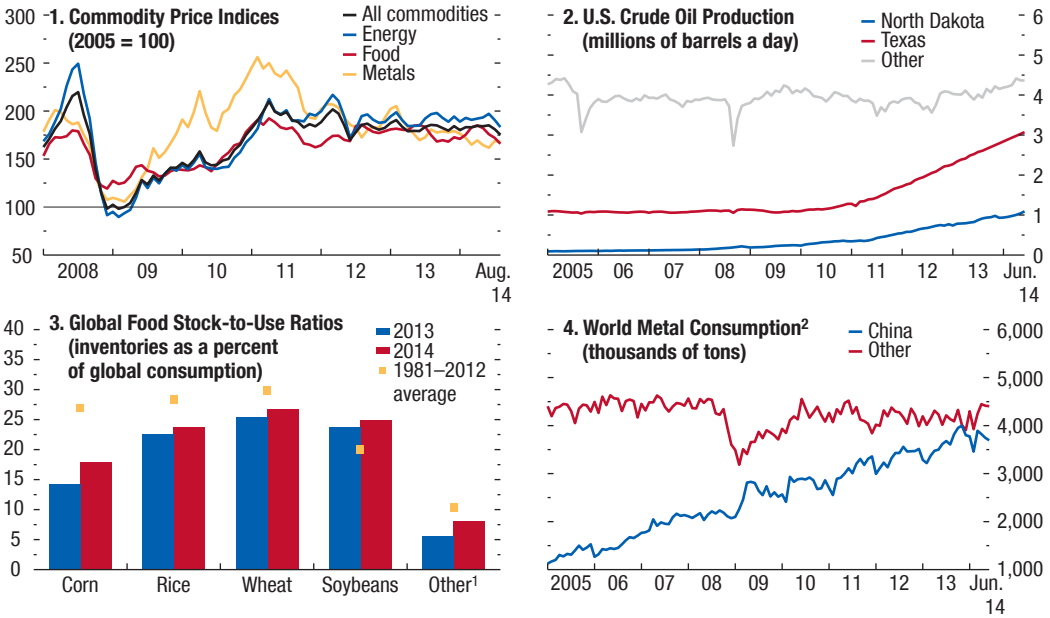
Commodity prices have edged lower since the release of the April 2014 World Economic Outlook *(WEO), led by a drop in food prices on improved supply prospects. Oil prices have recently fallen on weak demand and ample supply. Metal prices have ticked up on reduced inventories for some metals. With geopolitical tensions, risks to oil prices are on the upside. Weather-related risks to food supplies have moderated.*

Commodity prices have edged lower in recent months (Figure 1.SF.1, panel 1). The decline has been led by a 9 percent drop in food prices, owing mostly to improved supply prospects. Crude oil prices have recently declined, despite geopolitical supply concerns, and are well below the average price of about $104 a barrel prevailing since the beginning of 2011. Natural gas prices, on the other hand, have declined in all major markets because of weak demand and ample supply (see the section "Natural Gas in the World Economy"). Coal prices have also slumped on significant oversupply. Metal prices have unexpectedly risen 2 percent but are projected to decline.

Turning to oil markets, crude oil supply disruptions reached a total of more than 3 million barrels a day (mbd) during the past year, with the largest outages in Iraq, Libya, and Syria, in addition to the disruptions generated by sanctions against the Islamic Republic of Iran. Other disruptions have arisen from geopolitical (for example, South Sudan) and technical (for example, Canada and the North Sea) factors. Despite these disruptions, oil prices have edged lower, reflecting offsets from strong supply growth in countries outside the Organization of the Petroleum Exporting Countries (OPEC) (mainly from U.S. shale oil deposits), continued high production in some OPEC producers, and the potential backstop from relatively high OPEC spare capacity. Increases in non-OPEC supply are expected to exceed the moderate growth in world oil demand in 2014 and 2015. There are downside risks to prices should global growth disappoint, as discussed

The authors of this feature are Rabah Arezki (team leader), Prakash Loungani, Akito Matsumoto, Marina Rousset, and Shane Streifel, with contributions from Thiemo Fetzer (visiting scholar) and research assistance from Daniel Rivera Greenwood.

Figure 1.SF.1. Commodity Market Developments



Sources: IMF, Primary Commodity Price System; International Energy Agency; U.S. Department of Agriculture; World Bureau of Metal Statistics; and IMF staff calculations.
[1]Includes barley, millet, palm kernel, rapeseed, rye, sorghum, and sunflower seed.
[2]Metal consumption is the total of aluminum, copper, lead, nickel, tin, and zinc.

elsewhere in this WEO report. But there are also risks of further disruptions from geopolitical issues in a number of oil-producing regions.

Oil production increases in North America (Figure 1.SF.1, panel 2)—particularly in light tight oil from shale deposits—have affected global oil trade flows. With increased domestic production, U.S. net oil imports have dropped from 12.5 mbd in 2005 to 5.5 mbd to date in 2014. Light crude oil imports from west Africa and elsewhere have been most affected and have been redirected to other destinations. The United States has also increased oil product exports, taking advantage of low-priced domestic crude oil and further benefiting the country's net trade position.

Food prices have declined 9 percent since March 2014 on an improved global production outlook. However, prices of a few food commodities have moved higher. Meat prices have surged as a result of a porcine epidemic virus that has significantly increased piglet mortality in the United States, and prices of arabica coffee beans have soared because of a severe drought in Brazil. Weather conditions have been favorable so far in the current harvest year, and bumper harvests are expected for the main cereal and oilseed crops. Although global stocks are expected to increase (Figure 1.SF.1, panel 3), they will still remain below historical averages for most major crops, except soybeans. The likelihood of an El Niño event materializing in the fall of 2014 has been downgraded to 50 percent. El Niño weather conditions would likely have a negative impact on global production of corn, rice, and wheat, whereas soybean production could be higher. There are also risks associated with Russia imposing a ban on agricultural products from Australia, Canada, the European Union, Norway, and the United States. The ban could exert downward pressure on prices as a result of reduced demand and could increase domestic prices within Russia—although the country will be sourcing imports from other regions, such as Africa, Asia, and Latin America.

Metal prices have unexpectedly risen 2 percent since March 2014 on reduced inventories for some metals (aluminum, copper, zinc), following more than three years of decline. Metal consumption remains relatively strong, particularly in China (Figure 1.SF.1, panel 4). Nevertheless, overall, metal markets remain in net supply (flow) surplus, because of strong supply, suggesting that metal prices will likely decline in the near term, consistent with current futures price curves.

Price Outlook and Risks

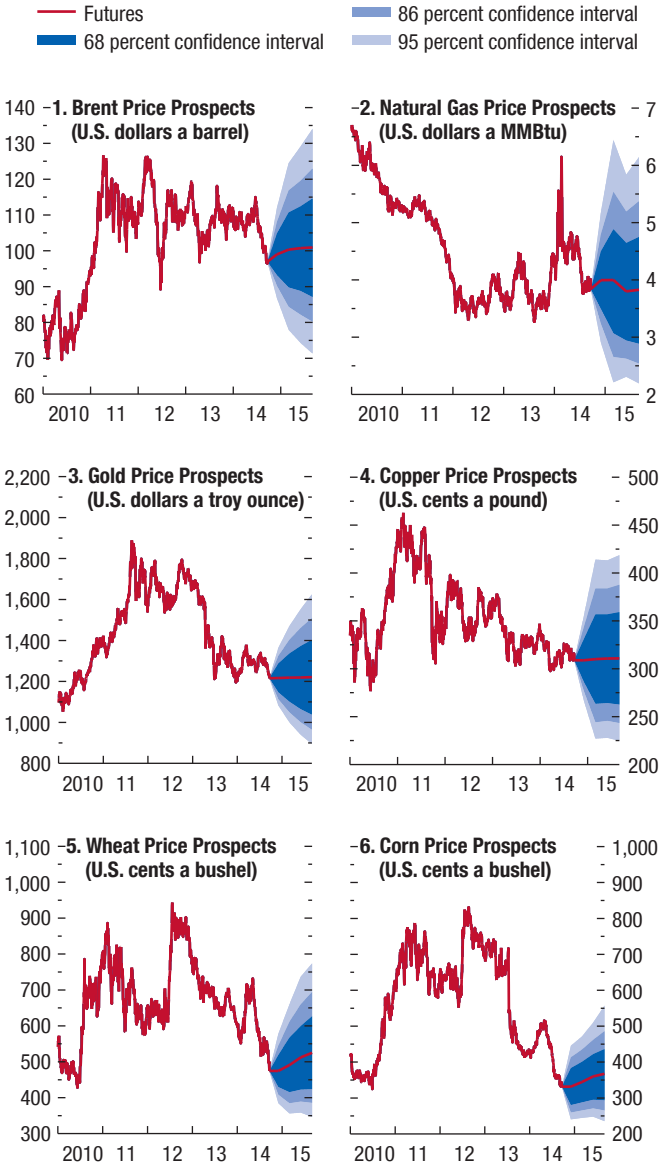
Commodity prices are expected to decline, in line with futures markets. Crude oil prices are projected to average $102.8 a barrel in 2014 (down 1.3 percent from 2013), falling to $99.4 in 2015 and to $97.3 in 2016. This pattern is consistent with strong increases in non-OPEC production. Food prices are projected to decline by 4.1 percent in 2014 and by 7.9 percent in 2015 and to remain broadly unchanged in 2016. This projection reflects favorable harvest conditions for the current year, as discussed earlier. Metal prices are projected to decline by 7.5 percent in 2014 and by 1.8 percent in 2015, before rising 0.6 percent in 2016. This price path reflects ongoing supply gains in the short term but also anticipates some tightening in market conditions in the medium term, as lower prices should start to have negative supply effects (for example, through lower investment).

Risks to oil prices are tilted toward the upside given the wide range of supply outages and ongoing geopolitical tensions (Figure 1.SF.2). The largest concerns are escalating violence within Iraq and the dispute between Russia and Ukraine. To the downside, reduced tensions and a recovery in output from affected areas, including the Islamic Republic of Iran, could weigh heavily on oil prices, as would slower demand. Food price risks are tilted upward, given the recent decline in prices for major cereal crops and routine variability with weather. Risks to metal prices are fairly balanced given current surpluses and adequate stocks, with supply pressures deferred to 2015 (nickel) and beyond (most metals).

Natural Gas in the World Economy

Natural gas markets are much less integrated than oil markets, given the cost and logistical difficulty of trading gas across borders. The limited integration of gas markets is evident from substantial price differences across regions despite increasing liquefied natural gas trade. Global natural gas production and consumption have increased steadily and are projected to do so even more rapidly in the medium term. Three major developments of the past few years have had particularly important implications for gas and energy markets: the shale gas revolution in the United States, the reduction in nuclear power supply following the Fukushima disaster in Japan, and the geopolitical tensions between Russia and Ukraine.

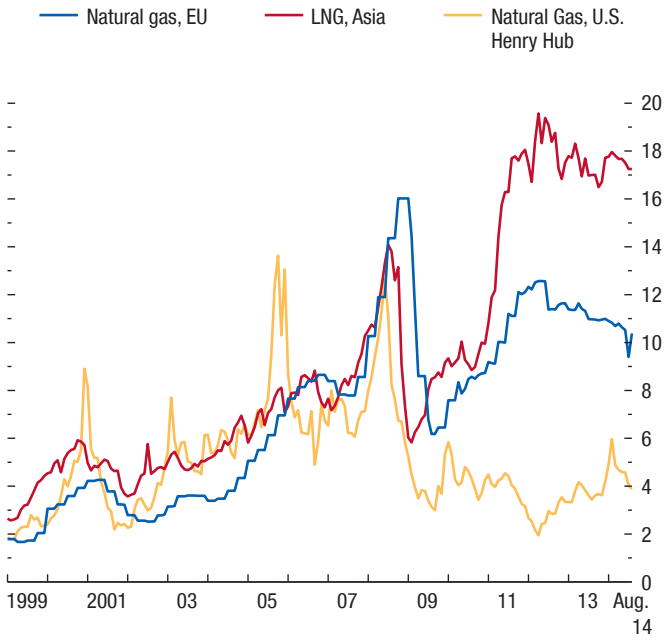
Figure 1.SF.2. Balance of Risks



Sources: Bloomberg, L.P.; and IMF staff estimates.
Note: MMBtu = million metric British thermal units. Price prospects are derived from prices of futures options on August 12, 2014.

Figure 1.SF.3. Natural Gas Prices

(U.S. dollars a million metric British thermal units)



Source: IMF, Primary Commodity Price System.
Note: EU = European Union; LNG = liquefied natural gas.

Stylized Facts

Natural gas is the cleanest source of energy among fossil fuels (petroleum products, natural gas, and coal) and does not suffer from the other liabilities potentially associated with nuclear power generation. At the same time, the cost and logistical difficulty of trading gas across borders imply that natural gas markets are much less integrated than oil markets. Shipping or transporting natural gas requires either costly pipeline networks or liquefaction infrastructure and equipment, including dedicated vessels, and then regasification at the destination. The limited integration of gas markets is evident from substantial price differences across regions in recent years resulting from the U.S. shale gas boom and the Fukushima disaster, and in spite of increasing liquefied natural gas trade (Figure 1.SF.3).[1]

The Islamic Republic of Iran, Russia, Qatar, Turkmenistan, and the United States have the largest reserves of natural gas (Tables 1.SF.1 and 1.SF.2). Technological improvements in exploration and drilling activities have enabled both new discoveries and exploitation of previously identified reserves of natural gas. As a result of these new discoveries and the heightened exploitation of existing reserves, there are many more producers of natural gas today than there were

[1]In view of the sector's high capital intensity, natural gas suppliers tend to enter long-term contracts with customers. Prices of natural gas are indexed to crude oil prices, which introduces rigidities on the price side.

in the 1990s.[2] The largest producers of natural gas are the United States and Russia, followed by the Islamic Republic of Iran, Qatar, and Canada (Table 1.SF.2).

Natural gas consumption has risen steadily. It now accounts for nearly 25 percent of global primary energy consumption, whereas the share of oil has declined rapidly, from 50 percent in 1970 to about 30 percent today. Global natural gas demand is projected to increase strongly in the medium term (IEA 2014), with emerging market and developing economies accounting for the bulk of the growth. Natural gas usage faces competition from substitutes for gas in many sectors, particularly from renewables and coal in power generation—in part because of subsidies and gas-pricing regimes. Natural gas is also expected to make further inroads into transportation, in which its use is still very limited, eventually including the use of liquefied natural gas as shipping fuel.

The pattern of global trade in natural gas has evolved rapidly. Because natural gas has mainly been transported to consumers via pipeline, only one-third of natural gas consumed is traded internationally. Europe and North America are by far the largest markets integrated by pipelines, but their net imports have declined since 2005 on account of weaker economic activity and higher gas production in the United States. One-third of internationally traded natural gas is shipped as liquefied natural gas, and that share has been expanding rapidly, with the increase going mainly to Asia (Figure 1.SF.4). There were almost 20 liquefied-natural-gas-producing countries in 2013. Qatar has rapidly developed liquefied natural gas export capacity in the past decade and is now the largest exporter, accounting for about one-third of global natural gas trade.

Table 1.SF.1. World Fossil Fuel Reserves, Production, and Consumption

	2007	2013
Proven Reserves		
Oil (thousand millions of barrels)	1,399	1,688
Natural Gas (trillions of cubic meters)	161	186
Coal (millions of tons)	. . .	891,531
Production		
Oil (thousands of barrels a day)	82,383	86,808
Natural Gas (billions of cubic meters)	2,963	3,370
Coal (millions of tons)	6,593	7,896
Consumption		
Oil (thousands of barrels a day)	86,754	91,331
Natural Gas (billions of cubic meters)	2,954	3,348
Coal (millions of tons of oil equivalent)	3,204	3,827

Source: British Petroleum, *Statistical Review of World Energy 2014.*

Table 1.SF.2. Natural Gas Reserves, Production, and Consumption, by Country

	2007	2013
Proven Reserves (percent of world reserves)		
Iran	17.46	18.19
Russia	18.91	16.83
Qatar	15.80	13.29
Turkmenistan	1.45	9.41
United States	4.18	5.03
Production (percent of world production)		
United States	18.41	20.40
Russia	19.98	17.95
Iran	4.22	4.94
Qatar	2.13	4.70
Canada	6.17	4.59
Consumption (percent of world consumption)		
United States	22.14	22.02
Russia	14.28	12.35
Iran	4.25	4.84
China	2.39	4.83
Japan	3.05	3.49
European Union	16.18	12.90

Source: British Petroleum, *Statistical Review of World Energy 2014.*

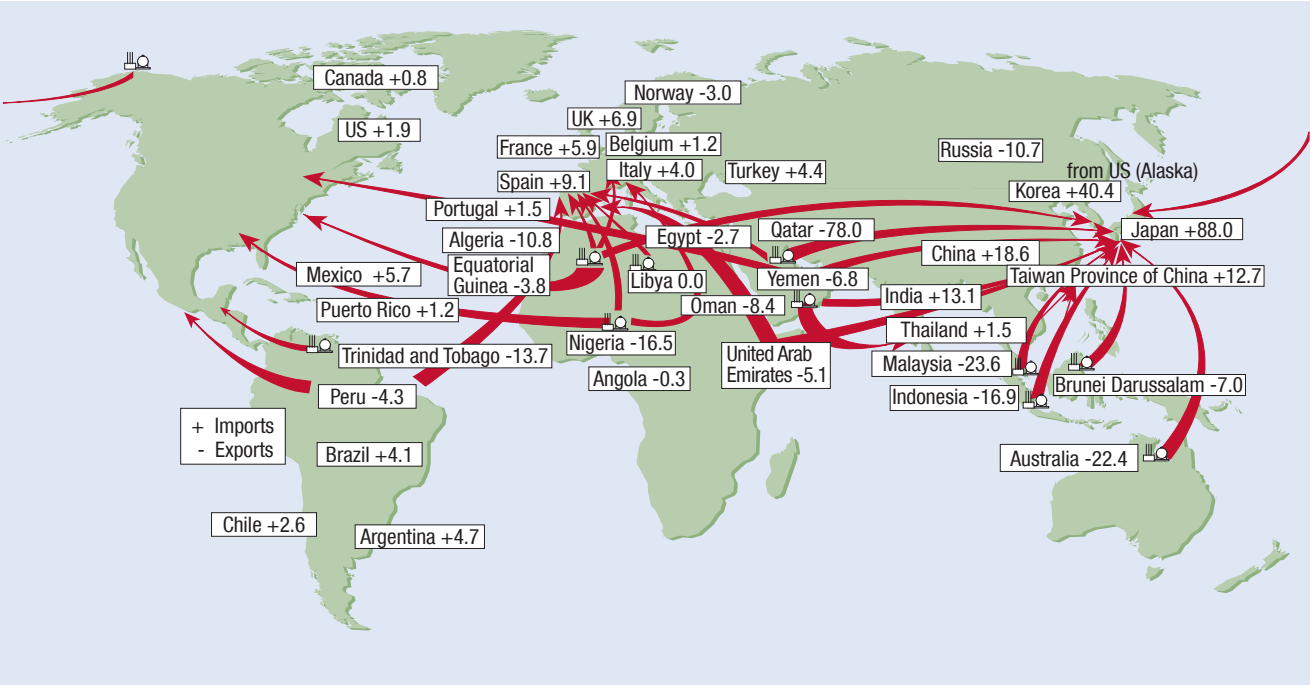
Global Implications of the U.S. Shale Boom

The surge in its production of shale gas has made the United States the largest natural gas producer in the world,[3] and it is expected to join the legion of liquefied natural gas exporters and even become a net exporter of natural gas later this decade (U.S. EIA 2014). With surging supply and weak demand, natural gas prices in the United States have fallen sharply in recent years and are effectively decoupled from those in the rest of the world. In particular, prices in Asia and the European Union have risen, partly because of the indexation of imported natural gas prices to oil prices. So far, energy users in the United States have been the main beneficiaries of the energy price declines that

[2]An index of diversification in global gas supplies shows a steady increase in the extent of diversification (Cohen, Joutz, and Loungani 2011).

[3]Natural gas production from shale deposits in the United States began in the 1980s, but the combination of hydraulic fracturing and horizontal drilling allowed gas production to increase sharply late in the first decade of the 2000s (with the higher natural gas prices supplying additional motivation). Shale gas production now accounts for about half of total U.S. natural gas production. The drilling technology has been applied to development of oil from shale deposits in part because of high oil prices, and the number of rigs drilling for shale oil has risen sharply.

Figure 1.SF.4. Liquefied Natural Gas Imports and Exports, 2013
(Millions of tons)



Source: Argus Media (www.argusmedia.com/Natural-Gas-LNG).
Note: UK = United Kingdom; US = United States.

have resulted from the U.S. shale revolution. However, that revolution has helped to stabilize international energy prices, including by freeing global energy supply for European and Asian markets, thus offsetting some of the shortages attributable to geopolitical disruptions.[4] Also, the U.S. shale boom has displaced coal from the United States to Europe, lowering energy costs in the latter.

The shale gas boom in the United States has also had a significant impact on the geography of global energy trade.[5] U.S. fossil fuel imports decreased to $225 billion (1.3 percent of GDP) in 2013 from $412 billion (2.8 percent of GDP) in 2008. Both demand for coal and coal prices in the United States have also declined. These declines, in turn, have encouraged increased exports of coal to Europe, which, together with weak activity there following the global economic and financial crisis, has reduced Europe's demand for natural gas.[6] The shale gas boom has drastically reduced U.S. liquefied natural gas imports from Africa, the Middle East, and Trinidad and Tobago (Figure 1.SF.5) and has also substantially reduced natural gas imports from Canada, triggering a sharp decline in prices as a result of a natural gas glut. Exporters have shifted energy exports to other locations, such as China, Europe, and India, in response to the U.S. reduction in energy imports.[7] In the United States, the shale gas boom has made much

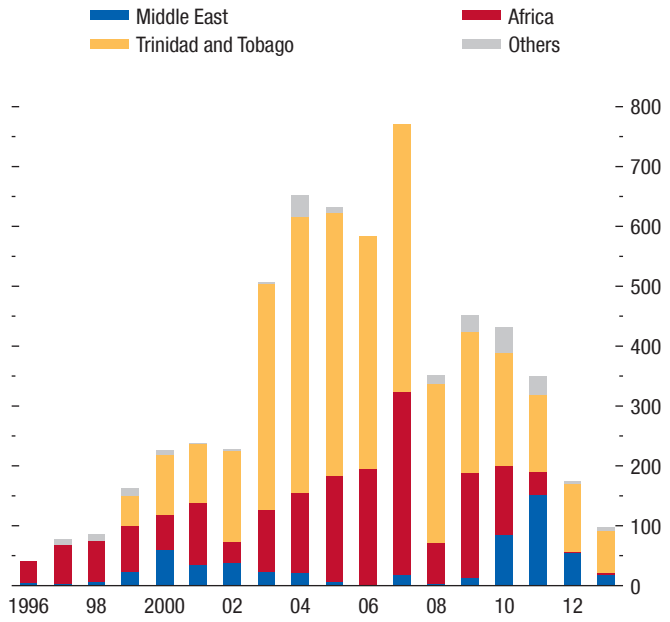
[4]While both the shale oil and gas booms have led to lower average world energy prices compared with what they would have been without these booms, the shale gas boom in particular has increased the dispersion in regional prices.

[5]Shale gas development has significant potential in many parts of the world, notably in Argentina, Australia, China, Poland, and Russia, where shale gas developments are under way, but also in many other locales. Development of this potential could further shift the patterns of global energy and nonenergy trade. However, shale gas production is expected to increase at a slower pace in countries other than the United States, because many of the conditions that facilitated the U.S. shale gas boom are not in place or at sufficient scale.

[6]In regard to trade, this shift has affected primarily Algeria, Norway, and Russia, the largest gas exporters to Europe.

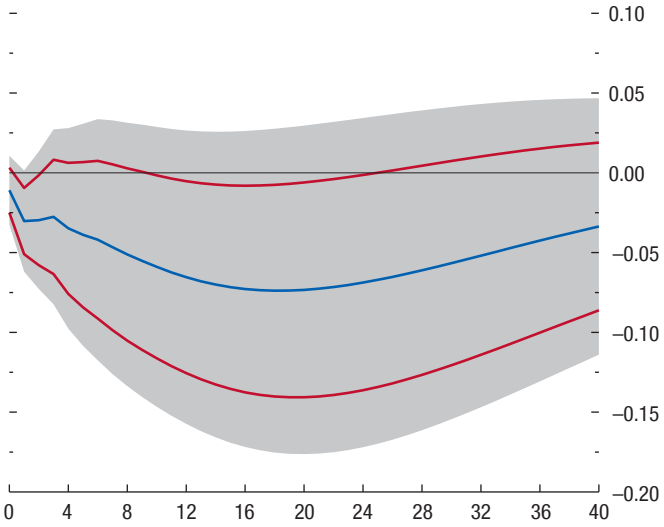
[7]Trinidad and Tobago has seen its exports of liquefied natural gas to the United States plummet. Since the start of the U.S. shale gas boom, however, Trinidad and Tobago has actively reoriented its liquefied natural gas exports toward South America, Europe, and Asia.

Figure 1.SF.5. United States: Liquefied Natural Gas Imports
(Billions of cubic feet)



Source: U.S. Energy Information Administration.

Figure 1.SF.6. Impulse Response of Relative Industrial Production to a Unit Relative Natural Gas Price Shock
(Months forward on x-axis)



Source: IMF staff calculations.
Note: The estimated vector autoregressive model includes two variables: relative industrial production in the United States and the euro area and the relative natural gas price in the United States and Germany, using monthly data for 2005–13. The impulse-response functions correspond to the response of relative industrial production to a unit shock in relative natural gas prices. Red lines indicate 80 percent confidence intervals, and shaded areas correspond to 95 percent confidence intervals.

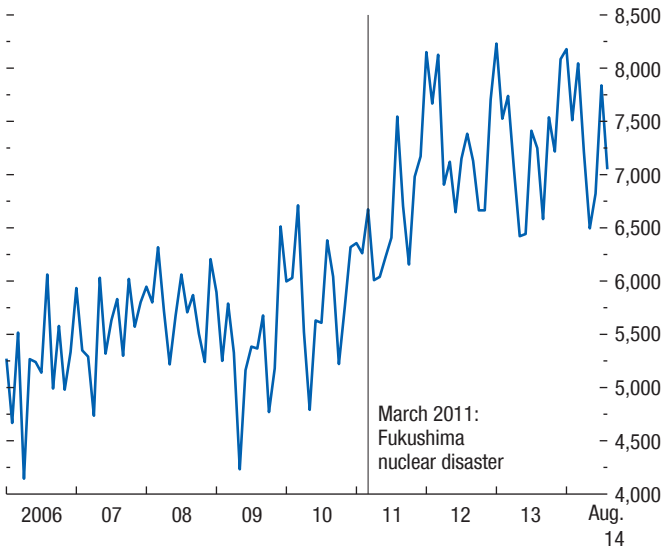
of the liquefied natural gas import infrastructure redundant. The infrastructure cannot easily be converted to export capacity, because liquefaction capacity is different from import regasification capacity. In addition, firms are required to obtain authorization to export natural gas (except to Canada and Mexico), though there are signs that the regulatory hurdles are loosening.[8] In the medium term, the removal of U.S. gas export restrictions would trigger the building up and reconversion of liquefied natural gas facilities for export purposes and in turn could help reduce energy price differences worldwide and further affect other natural gas exporters.

The U.S. advantage in natural gas has also led to an increase in U.S. competitiveness in nonenergy products, in turn affecting its competitors. Results of a bivariate vector autoregression including the difference in industrial production and the difference in the price of natural gas between the United States and Europe suggest that natural gas prices can have a substantial independent impact on economic activity (Figure 1.SF.6). This specification controls for global shocks such as the global economic and financial crisis, an issue that has been overlooked in other studies.[9] A 10 percent reduction in the relative price of natural gas in the United States is found to lead to an improvement in U.S. industrial production relative to that of the euro area of roughly 0.7 percent after one and a half years. Box 1.SF.1 provides estimates of the gain in international competitiveness of U.S. manufacturing exports due to cheaper natural gas.

[8]NERA (Baron and others 2014) estimates that the average annual increase in natural gas export revenues could reach almost $60 billion (in 2012 dollars) over the period 2018 to 2038 under a high-case scenario.

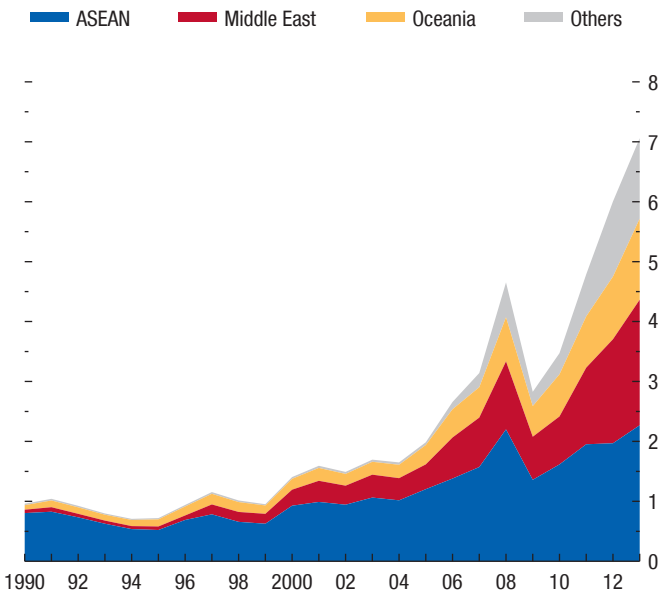
[9]Using industry-level data, Melick (2014) estimates that the fall in the price of natural gas since 2006 is associated with a 2–3 percent increase in activity for the entire manufacturing sector, with much larger effects of 30 percent or more for the most energy-intensive industries. Celasun and others (2014) find that a doubling of the natural gas price differential in favor of the home country would increase manufacturing industrial production in the home country by 1.5 percent.

Figure 1.SF.7. Japan: Liquefied Natural Gas Imports
(Thousands of metric tons)



Source: Thomson Reuters Datastream.

Figure 1.SF.8. Japan: Liquefied Natural Gas Imports by Region
(Trillions of Japanese yen)



Source: Thomson Reuters Datastream.
Note: ASEAN = Association of Southeast Asian Nations.

Aftermath of the Fukushima Disaster

The Fukushima Daiichi nuclear disaster in March 2011 highlighted the environmental liabilities associated with nuclear power generation and induced a sharp increase in natural gas usage. Before the disaster, about one-quarter of Japan's energy was generated by means of nuclear reactors. Following the disaster, the Japanese government decided to halt production at all nuclear power plants in the country. To compensate for the resulting loss in electricity generation, Japanese electric power companies increased their use of fossil-fuel power stations and appended natural gas turbines to existing plants. As a result, Japan's liquefied natural gas imports have increased dramatically—by about 40 percent—since the disaster (Figure 1.SF.7).

Japan is thus now the world's largest importer of liquefied natural gas. In 2013, the country's imports of liquefied natural gas amounted to 119 billion cubic meters: more than one-third of the world total. Increased natural gas demand from Japan has benefited producers in Asia, the Middle East, and Oceania at a time when global natural gas demand has slowed. Japan's imports have helped offset some of the negative effects of the reduction in U.S. liquefied natural gas imports. Australia, Brunei Darussalam, Indonesia, Malaysia, and Qatar have seen their liquefied natural gas exports to Japan rise rapidly (Figure 1.SF.8). The sharp increase in natural gas demand has led to higher prices in Asia, and Japan in particular, with prices in Asia reaching twice European prices and four times U.S. prices.

Risks from Geopolitical Tensions between Russia and Ukraine

The ongoing crisis in Ukraine has highlighted European energy markets' dependence on natural gas. In January 2009, Gazprom, the Russian energy utility, shut off all supply to Europe through Ukraine. In 2009, the spot price for gas increased by 50 percent, but the one-month-forward contract price moved up slowly—by 20 percent—during the three-week shutoff; crude oil prices did not react noticeably. Europe's dependence on natural gas transiting through Ukraine has decreased from 80 percent to roughly 50 percent since then. On June 16, 2014, Gazprom stopped providing natural gas to Ukraine but left the transit and supply to Europe unaffected.

Ukraine and countries in southeast Europe appear particularly vulnerable to potential disruptions of Russian gas supply. Should the gas cutoffs persist and be extended to other countries, the greatest impact will be on Ukraine and countries in southeast Europe that receive Russian gas transiting through Ukraine—in particular, Bulgaria and countries of the former Yugoslavia, which rely on Russian gas for virtually all of their import requirements and have only limited access to gas from alternative sources. Other countries, however, will be affected through rising spot prices, which may spread from natural gas to other fuels. Such risks can be mitigated through accumulation of reserves, purchasing pipeline gas from Algeria and Norway, importing liquefied natural gas, or buying Russian gas transported via other pipelines. Other fuels, notably coal and oil products, could also be substituted for gas.

Continental Europe imports a substantial portion of the gas it needs from Russia. In 2013, roughly 152 billion cubic meters of Russian gas—36 percent of European gas consumption—were exported to Europe via pipeline. On average, Russia supplies about 30 percent of Europe's natural gas needs. Roughly half of the gas supply from Russia is transported via pipeline through Ukraine (down from 80 percent before the Nord Stream pipeline was built). The share of natural gas in primary energy consumption ranges widely across European nations, from less than 2 percent in Sweden to 42 percent in the Netherlands.

So far the geopolitical tensions in the region have barely affected natural gas and crude oil prices. This price stability is less surprising in the case of crude oil because there are far fewer concerns about the consequences of a potential disruption in the supply of oil from Russia than about those of a natural gas supply disruption. In May of this year, Russia signed a $400 billion deal to transport 38 billion cubic meters of gas a year from eastern Siberia to China starting in 2018. Pricing has not been disclosed, but the price is thought to be somewhat less than what Europeans are paying for pipeline gas from Russia. This deal gives Russia greater export flexibility should European gas demand continue to fall.

Conclusions

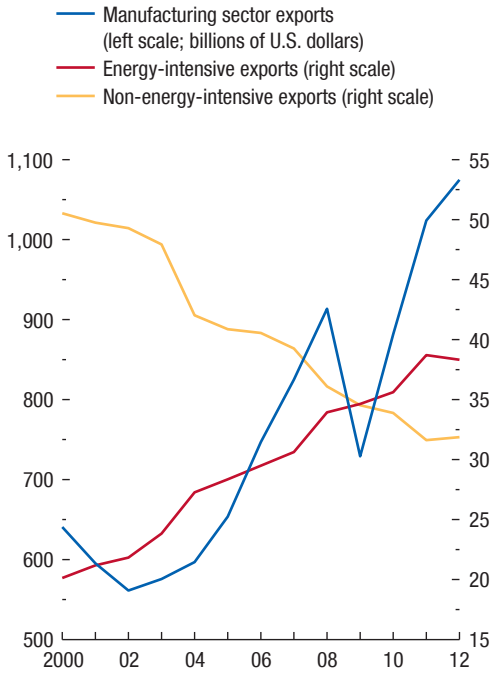
Overall, the pattern of global trade in liquefied natural gas, and energy more generally, is expected to evolve rapidly. In particular, the United States is likely to become a net exporter of liquefied natural gas by the end of 2015, Japan has become the world's largest importer of liquefied natural gas, and Europe faces uncertainty in its supply of natural gas, considering the geopolitical tensions between Russia and Ukraine. Energy policy, including for coal and renewables, plays a key role in shaping the energy mix, in turn affecting global trade in energy. Specifically, Europe and Japan are at a crossroads, facing a difficult balance between energy security, environmental concerns, and economic efficiency goals. In the medium term, natural gas prices in Asia are expected to decline, assuming the resumption of nuclear power generation in Japan and lower oil prices. European gas prices could edge lower as European countries move further toward spot-priced gas imports, but the tensions between Russia and Ukraine have led to increased uncertainty about future market developments. Domestic natural gas prices in the United States are expected to rise with rapidly growing liquefied natural gas exports but to remain markedly lower than those in Europe and Asia, given liquefaction costs.

Box 1.SF.1. The Trade Implications of the U.S. Shale Gas Boom

The shale gas boom has led to a debate in the United States about whether relaxing the restrictions on exporting natural gas would diminish the gains in external competitiveness resulting from lower domestic natural gas prices. As noted in the text of the Special Feature, the boom has led to a decoupling of U.S. natural gas prices from those in Europe and Asia since 2005, and the resulting price differentials are expected to persist. At the same time, the share of energy-intensive manufacturing exports in total U.S. manufacturing exports has been rising steadily, whereas the share of non-energy-intensive exports has been declining (Figure 1.SF.1.1).

This box sheds light on the global trade implications of international differences in natural gas prices using the U.S. shale gas boom as a natural experiment. The main finding, based on sector-level data, is that the current gap between U.S. prices and those in the rest of the world has led to a 6 percent increase, on average, in U.S. manufactured product exports since the start of the shale gas boom. Even though natural gas and energy costs in general represent relatively small shares of total input costs, the lower natural gas price in the United States, which is likely to persist, has had a noticeable effect on U.S. energy-intensive manufacturing exports.[1]

Figure 1.SF.1.1. Manufacturing Sector Exports
(Percent of total U.S. manufacturing exports, unless indicated otherwise)



Source: IMF staff calculations.

Energy intensity and manufacturing exports

For the period 2000–12, which covers the shale boom in the United States, the logarithm of manufactured-product exports is regressed on the interaction between differentials in energy intensity and in price between the United States and the rest of the world. The specification is a classical equation suggested by trade models. The coefficient associated with the interaction term is expected to be positive; that is, the more energy intensive a product is, the more likely it is to be exported. The equation estimated is

$$\ln(\text{product export}_{i,j,k,t}) = \alpha_{i,j,k} + \gamma_t + \eta \times \text{Energy Intensity}_{k,} \times \text{Price Differential}_t + \varepsilon_{ijkt},$$

in which $\alpha_{i,j,k}$ are origin, destination, and sector-specific joint fixed effects capturing sector-specific distance, and γ_t are time fixed effects capturing common shocks. Product export is equal to the exported value of a specific manufacturing sector at the five-digit level for which information is available (from Schott 2008) on the customs district of origin i and the country of destination j and sector k. The direct energy intensity is the share of energy cost obtained using input-output tables from the U.S. Bureau of Economic Analysis, as described by Fetzer (2014). The price differential is taken to be the ratio between the U.K. and U.S. prices obtained from the Organisation for Economic Co-operation and Development.[2] The baseline sample consists of more than 940,000 observations corre-

The author of this box is Rabah Arezki.

[1]These results are also robust to an array of checks, including additional controls such as country differences in labor costs and GDP. Arezki and Fetzer (forthcoming) present extensive technical details and robustness checks. A multitude of factors that go beyond the scope of this box are driving U.S. manufacturing exports. The interpretation of the present results is, of course, subject to all else being equal.

[2]Using benchmarks other than the United Kingdom yields similar results because the variation in the relative price is coming mostly from the U.S. prices.

Box 1.SF.1 *(continued)*

sponding to an unbalanced panel of manufacturing product exports from origin to destination pairs.

What is learned from the results?

The coefficient associated with the interaction between energy intensity and price differential is large, positive, and statistically significant (Table 1.SF.1.1). The baseline point estimate is 0.42 with a standard error of 0.10. The direct energy cost share for manufacturing products is a little more than 5 percent, and the total energy cost share is about 8 percent. In comparison, the direct labor cost share for manufacturing goods is 20 percent. The measure of the price differential between the rest of the world and the United States is of a factor of three, on average.[3] This suggests that for the average manufacturing product, U.S. exports have risen by at least 6 percent ($0.42 \times 3 \times 0.05$) as a result of the price gap.

The results are checked to determine their robustness to using the natural gas cost share as opposed to the energy share, and also to the use of year dummies instead of natural gas price differentials; furthermore, oil and petroleum manufacturing products, which have a direct energy cost share greater than 60 percent, are dropped. The direct natural gas cost share is on average 2 percent for manufacturing products. This measure does not account for the fact that gas could be indirectly consumed through electricity. The baseline results are robust to using these alternative measures of energy use and specifications, and broadly similar figures are obtained.

Further evidence suggests that the channels through which cheaper domestic natural gas prices in the United States might have an impact on manufacturing exports are operating both at the intensive (expansion by existing firms) and extensive (new firm entry) margins. As more countries exploit new sources of natural gas, not only is the geography of trade in energy products likely to continue to change, but the geography of manufacturing exports is likely to change as well.

[3]The price differential is measured as the ratio of the rest of the world's natural gas prices to those in the United States.

Table 1.SF.1.1. Regression Results

	Energy Cost Share		Natural Gas Cost Share	
	(1)	(2)	(3)	(4)
	Total	Direct	Total	Direct
total utility share × price difference	0.415*** (0.099)			
direct utility share × price difference		0.432*** (0.111)		
total natural gas share × price difference			0.423*** (0.099)	
direct natural gas share × price difference				0.402*** (0.115)
Number of Observations	944,135	944,135	944,135	944,135
Adjusted R^2	0.277	0.277	0.277	0.277

Note: The dependent variable is logarithm of the value of product exports at the five-digit level. The specification is a classical equation suggested by trade models and also controls for year, product, and location (destination and origin) fixed effects. The regressions include product level. Standard errors are in parentheses.

***$p < 0.1$.

Box 1.1. Housing Markets across the Globe: An Update

Developments in real estate markets have led to seemingly contradictory concerns about both overheating and slow recovery. This dichotomy reflects the fact that housing markets across the globe have broadly followed a two-speed pattern: in one group of countries, housing markets quickly rebounded after modest declines during the Great Recession, while in the other group, they are still recovering from much sharper declines.

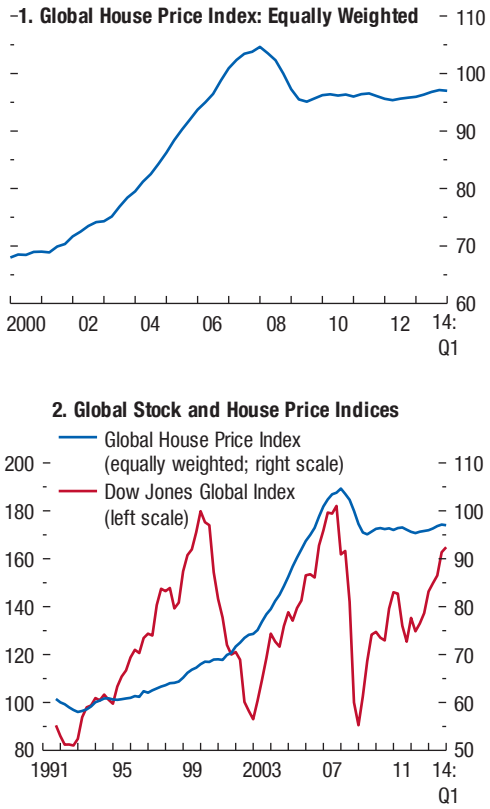
Reflecting these divergent movements, the IMF's Global House Price Index—an average of real house prices in 50 countries—has barely budged during the past two years, after a sharp drop during the crisis (Figure 1.1.1, panel 1). The recovery in house prices has been particularly anemic relative to that in other financial assets; for example, global indices of stock markets have rebounded to precrisis levels, although stock prices have also been much more volatile than house prices (Figure 1.1.1, panel 2).

However, the overall house price index masks the fact that economies fall into two clusters. The first cluster consists of 33 economies in which housing markets are still recovering: house prices in general dropped sharply at the onset of the Great Recession, and the subsequent recovery has been slow. The second cluster comprises 17 economies in which housing markets have rebounded: the drop in house prices in 2007–08 was more modest and was followed by a quick rebound (Figure 1.1.2, panel 1).[1] In the former group, real house prices are, on average, 20 percent lower than in 2008; in the latter group, they are about 25 percent higher. Credit has also expanded much more slowly in the former group than in the latter (Figure 1.1.2, panel 2).

In the economies in which house prices have rebounded, construction gross value added and real residential investment are both 15 percent higher than in 2008. In recovering economies, the two metrics began to show a small uptick only in the past year (Figure 1.1.3).

The placement of countries in the two groups has been influenced by a number of factors. The rebound economies, on average, had a smaller precrisis boom in house prices than did the recovering economies, and they were judged to have better prospects for a growth rebound when the crisis hit (see Box 1.2 of the October 2010 *World Economic Outlook*). Rebound economies have also turned out to have higher growth since the crisis: during the period 2008–13, the average annual growth in the rebound economies was 2.7 percent, compared with 0.5 percent in the recovering

Figure 1.1.1. IMF Global House Price Index
(2008:Q4 = 100)



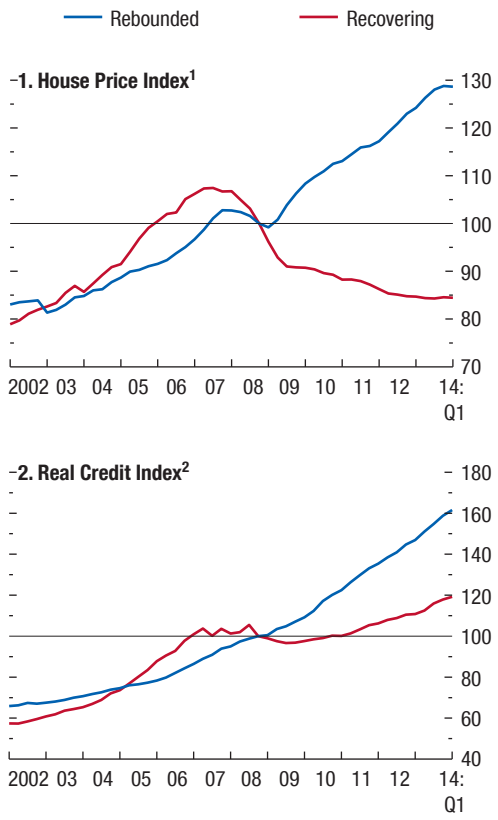
Sources: *Global Property Guide;* Haver Analytics; Organisation for Economic Co-operation and Development; and IMF staff calculations.

The main authors of this box are Hites Ahir and Prakash Loungani, drawing on their ongoing work with Philippe Bracke (Bank of England), Ambrogio Cesa-Bianchi (Bank of England), and Alessandro Rebucci (Johns Hopkins University), and with assistance from Deniz Igan and Heedon Kang.

[1]The determination of which group to place countries in is based on average real house price growth during the period 2007–14. Most countries clearly fall into one of the two groups, although a few are on the border. The results are not sensitive either to the placement of these countries or to their exclusion from the analysis. The results are also qualitatively similar if countries are weighted by GDP in group aggregates rather than weighted equally.

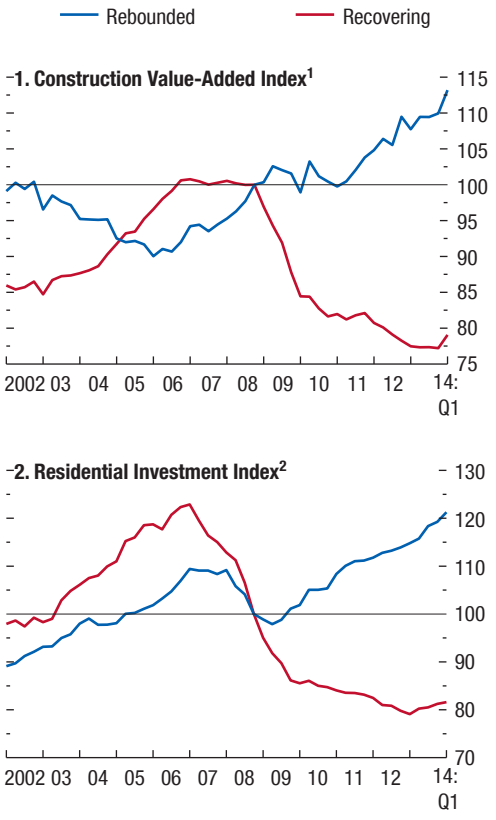
Box 1.1 *(continued)*

Figure 1.1.2. Two-Speed Recovery in Housing Markets
(2008:Q4 = 100)



Sources: Bank for International Settlements; *Global Property Guide;* Haver Analytics; Organisation for Economic Co-operation and Development; and IMF staff calculations.
[1]Rebounded = Australia, Austria, Brazil, Canada, China, Colombia, Germany, Hong Kong SAR, Israel, Luxembourg, Malaysia, New Zealand, Norway, Philippines, Singapore, Sweden, Switzerland. Recovering = Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Greece, Hungary, Iceland, India, Indonesia, Ireland, Italy, Japan, Korea, Latvia, Lithuania, Malta, Mexico, Netherlands, Poland, Portugal, Russia, Slovak Republic, Slovenia, South Africa, Spain, Thailand, United Kingdom, United States.
[2]Rebounded = Australia, Brazil, China, Colombia, Hong Kong SAR, Malaysia, Philippines, Singapore, Switzerland. Recovering = Croatia, Iceland, India, Indonesia, Japan, Korea, Mexico, Russia, South Africa, Thailand, United Kingdom, United States.

Figure 1.1.3. Construction Gross Value Added and Residential Investment
(2008:Q4 = 100)



Sources: Haver Analytics; Organisation for Economic Co-operation and Development; and IMF staff calculations.
[1]Rebounded = Australia, Austria, Brazil, Canada, Colombia, Germany, Hong Kong SAR, Luxembourg, Malaysia, New Zealand, Norway, Philippines, Singapore, Sweden, Switzerland. Recovering = Belgium, Bulgaria, Croatia, Denmark, Estonia, Finland, France, Greece, Hungary, India, Indonesia, Ireland, Italy, Korea, Latvia, Lithuania, Malta, Netherlands, Poland, Portugal, Russia, Slovak Republic, Slovenia, South Africa, Spain, Thailand, United Kingdom, United States.
[2]Rebounded = Australia, Austria, Canada, Germany, Israel, Luxembourg, New Zealand, Norway, Sweden. Recovering = Belgium, Czech Republic, Denmark, Estonia, Finland, France, Hungary, Ireland, Italy, Japan, Korea, Mexico, Netherlands, Portugal, Slovak Republic, Slovenia, Spain, United Kingdom, United States.

Box 1.1 *(continued)*

economies. The slower growth in the recovering group may partly reflect the drag from household sector deleveraging: many economies in that group had a significant buildup in leverage during the boom period.

Cause for concern?

In countries where housing markets are still recovering, the policy challenge is to bring about a more robust recovery while addressing the underlying cause of the unsustainable booms that led to the crisis. For instance, in the United States, the resumption of mortgage lending to lower-rated borrowers has been slow, given the recognition that lending to such borrowers was one trigger for the crisis.[2]

Concerns about sustainability are greater in economies in which housing markets have rebounded, particularly for the emerging market economies in this group, for which growth prospects have been revised downward considerably in recent years. The most notable case is China, where the challenge is to allow for the necessary correction in real estate markets while preventing an excessively sharp slowdown. In large cities in China, house prices show signs of overvaluation relative to fundamentals, despite measures aimed at restricting speculative demand. In contrast, many smaller cities have experienced oversupply because local governments promoted large-scale development to boost growth and used land sales to finance local-government spending. In recent months, real estate markets in China appear to have entered a downturn. In Brazil, house prices and lending have increased sharply since 2009, and although the real-estate-loan-to-GDP ratio has tripled, it started from a very low base.

In other countries where housing markets have rebounded, IMF assessments point to modest overvaluations in Canada and Israel and more substantial overvaluations in Norway and Sweden (Table 1.1.1).[3]

In many cases, the house price booms are restricted to particular cities (in Australia and Germany, for example) or are amplified by supply constraints (New Zealand for example).[4]

Active use of macroprudential tools

Many countries—particularly those in the rebound group—have been actively using macroprudential tools to manage house price booms (Figure 1.1.4). The main macroprudential tools employed for this purpose are limits on loan-to-value ratios and debt-service-to-income ratios and sectoral capital requirements.[5] Such limits have long been in use in some economies, particularly in Asia (see Chapter 4 of the April 2014 *Regional Economic Outlook: Asia and Pacific*). For example, Hong Kong SAR has had a loan-to-value cap in place since the early 1990s and introduced a debt-service-to-income cap in 1994. In Korea, loan-to-value limits were introduced in 2002, followed by debt-service-to-income limits in 2005. Recently, many other advanced and emerging market economies have followed the example of Hong Kong SAR and Korea. In some countries, such as Bulgaria, Malaysia, and Switzerland, higher risk weights or additional capital requirements have been imposed on mortgage loans with high loan-to-value ratios.[6] Empirical studies thus

[2]The United Kingdom experienced a sharp decline in house prices during 2008–10, which is why it ends up being classified here in the recovering group. During the past year, U.K. house prices have risen substantially, particularly in the London market. The IMF's recent Selected Issues paper for the United Kingdom notes that "the increase in house prices in a context of weak credit growth suggests that cash transactions, in particular by foreigners, are playing an increasingly important role in the housing recovery" (IMF 2014d, 12). The report also points to tight housing supply constraints as another factor behind house price increases.

[3]Table 1.1.1 also notes the dates on which these assessments were published. It is important to keep these in mind, because some adjustments in prices may have taken place since these dates. The assessments are based on different methods but broadly relate developments in house prices to a set of fundamentals such as GDP growth, interest rates, and rents. (See Igan and Loungani 2012 for typical results from regressions of house prices on fundamentals.)

[4]In the United Arab Emirates, rapid increases in some segments of the real estate market have prompted concerns about possible excessive risk taking. The IMF staff has advised that additional measures—such as macroprudential tightening and setting higher fees for reselling within a short time—are warranted, especially if real estate prices and lending continue to rise (IMF 2014c).

[5]Limits on loan-to-value ratios cap the size of a mortgage loan relative to the value of the property associated with the loan, in essence imposing a minimum down payment. Limits on debt-service-to-income ratios restrict the size of a debt service payment to a fixed share of household income, containing unaffordable increases in household debt. Sectoral capital requirements force lenders to hold extra capital against loans to a specific sector, such as real estate, discouraging heavy exposures to the sector. See IMF 2013 for a fuller discussion of the role of macroprudential policies as part of the tool kit for managing house price booms.

[6]In Norway, higher risk weights have been assigned to all mortgage loans from banks using the Basel II internal-ratings-based (IRB) approach to capital requirements, not just those with high loan-to-value ratios.

Box 1.1 *(continued)*

Table 1.1.1. IMF Assessments of Housing Market Developments in Rebound Economies

Country (date of assessment)	Assessment
Australia (February 2014)	The rise in prices is concentrated in Sydney, Melbourne, and Perth. It has not been accompanied by an overall increase in leverage. Credit growth is moderate, and many households continue to pay down debt.
Austria (September 2013)	The housing market has experienced strong price growth, but from low levels. From a medium-term perspective, the real price increase appears modest: a cumulative 40 percent over 10 years in Vienna and about 5 percent elsewhere.
Brazil (October 2013)	Since the global financial crisis, Brazil has experienced a rapid expansion in real estate loans and housing prices. During 2009–12, the real-estate-loan-to-GDP ratio increased to 6.9 percent from 2.3 percent.
Canada (February 2014)	House prices are high relative to both income and rents. The IMF staff estimates that real average house prices in Canada are about 10 percent higher than fundamental values, with most of the gap coming from the markets in Ontario and Quebec.
China (July 2014)	In large cities in China, house prices show signs of overvaluation relative to fundamentals, despite measures aimed at restricting speculative demand. In contrast, many smaller cities have experienced oversupply because local governments have promoted large-scale development to boost growth and used land sales to finance local-government spending.
Colombia (June 2014)	Real house prices have nearly doubled during the past decade, driven mainly by prices in the capital and two other cities.
Germany (July 2014)	Recent house price inflation has been stronger in cities such as Hamburg and Munich. Bundesbank analysis suggests that prices in Germany as a whole are close to fundamental values, but apartment prices in large cities may be overvalued by about 25 percent.
Hong Kong SAR (May 2014)	Property prices have increased some 300 percent from their trough in 2003. Although prices have leveled off more recently, estimates from IMF staff models indicate that they could be higher than suggested by fundamentals.
Israel (February 2014)	Property prices are currently about 25 percent higher than their equilibrium value, owing largely to low mortgage interest rates and supply shortages. Price-to-income and price-to-rent ratios are also well above their equilibrium values.
Luxembourg (May 2014)	Relatively high prices reflect both upward pressure from strong demand and supply bottlenecks. Although households' financial positions appear relatively sound, rising real estate exposures in domestically oriented banks warrant close monitoring.
Malaysia (March 2014)	House prices have increased rapidly, outpacing income and rental growth. Strong demand for residential property loans has been driven by a robust labor market and falling lending rates. However, underwriting standards do not appear to have deteriorated.
New Zealand (June 2014)	From historical and international comparisons and by some measures of affordability, house prices appear elevated, in part reflecting limited housing stock caused by low housing investment and geographical constraints preventing a rapid housing supply response.
Norway (August 2014)	Various factors have been contributing to rising house prices, including high income and wage growth, immigrant inflows, and supply constraints. Nevertheless, there are signs of overvaluation, with a sustained increase in the price-to-income ratio and a large deviation in the price-to-rent ratio from its historical average.
Philippines (August 2014)	House price increases have been modest compared with those in many other countries in Asia. The price-to-rent ratio has declined modestly since 2010 and does not signal price misalignment.
Singapore (November 2013)	After having risen more than 50 percent from their mid-2009 trough, house prices stabilized, and have recently started to fall, on intensive application of macroprudential policies. Indicators on the quantity side also indicate a softening of the market.
Sweden (June 2014)	Real house prices increased by about 50 percent between 2005 and May 2014, with the annual increase averaging about 7 percent since 2012. Standard indicators suggest house prices are 20 percent higher than those suggested by fundamentals.
Switzerland (May 2014)	With monetary conditions remaining accommodative and housing prices growing faster than incomes, measures to curb mortgage demand, especially from the more vulnerable households, need to be strengthened.

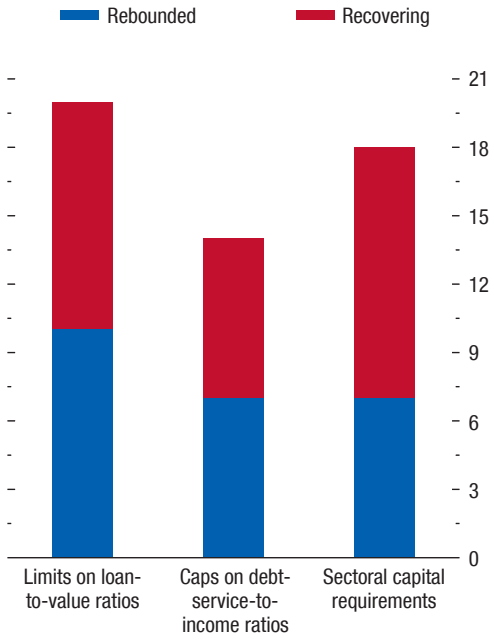
Source: IMF staff compilation.

Note: Rows shaded in blue indicate economies in which assessments have been made since the April 2014 *World Economic Outlook*.

Box 1.1 *(continued)*

Figure 1.1.4. Use of Macroprudential Tools to Manage Housing Booms

(Number of countries adopting the tool)



Source: IMF staff calculations.
Note: Rebounded = Australia, Austria, Brazil, Canada, China, Colombia, Hong Kong SAR, Israel, Malaysia, New Zealand, Norway, Singapore, Sweden, Switzerland. Recovering = Bulgaria, Croatia, Estonia, Finland, Hungary, India, Indonesia, Ireland, Korea, Latvia, Mexico, Netherlands, Poland, Russia, Slovak Republic, Spain, Thailand, United Kingdom, United States.

far suggest that limits on loan-to-value and debt-service-to-income ratios have effectively cooled off both house price and credit growth in the short term.[7]

[7]See, for example, Zhang and Zoli 2014 on the evidence for Asian countries and also Claessens, Ghosh, and Mihet 2014 and Lim and others 2011.

Implementation of these tools has costs as well as benefits, so each needs to be designed carefully to target risky segments of mortgage loans and minimize unintended side effects. For instance, stricter loan-to-value limits can be applied to differentiate speculators with multiple mortgage loans from first-time home buyers (as in, for example, Israel and Singapore) or to target regions or cities with exuberant house price appreciation (as in, for example, Korea). Regulators also should monitor whether credit operations move toward unregulated or loosely regulated entities and should expand the regulatory perimeter to address the leakages if necessary. For example, when sectoral macroprudential instruments are used to limit mortgage loans from domestic banks, they can be circumvented through a move to nonbanks (as in, for example, Korea) or foreign banks or branches (as in, for example, Bulgaria and Serbia).

Macroprudential tools may also not be effective for targeting house price booms that are driven by increased demand from foreign cash inflows that bypass domestic credit intermediation. In such cases, other tools are needed. For instance, stamp duties have been imposed to cool down rising house prices in Hong Kong SAR and Singapore. Evidence shows that this measure has reduced house demand from foreigners, who were outside the loan-to-value and debt-service-to-income regulatory perimeters.[8] In other instances, high house prices could reflect supply bottlenecks, which would need to be addressed through structural policies such as urban planning measures.

[8]Higher transaction taxes may not be the desired policy response in all cases. Taxes based on property values may be less distortionary. Moreover, financial stability risks may be lower if houses are bought with cash rather than credit, taking away some of the need for a policy response. See Crowe and others 2011 for a discussion of the effectiveness of various policies to manage real estate booms, including the difficulties of calibrating many of the macroprudential tools (for example, because of circumvention) and political economy considerations.

Box 1.2. The Origins of IMF Growth Forecast Revisions since 2011

After a sharp rebound following the global financial crisis, global growth declined every year between 2010 and 2013—from 5.4 percent to 3.3 percent. The slowdown was partly driven by new shocks, such as the euro area crisis. But even though forecasts in *World Economic Outlook* (WEO) reports were also pared down, global growth outturns have still surprised on the downside relative to each successive WEO forecast since 2011. Against this backdrop, this box analyzes the origins of the growth forecast errors in recent WEO projections, beginning with the October 2010 WEO.[1]

Growth forecast errors: Where, when, and how much?

One-year-ahead forecasts for global growth in 2011–14 were, on average, too optimistic—some 0.6 percentage point higher than outcomes (Table 1.2.1).[2] Average forecast errors for emerging market and developing economies (which accounted for some 80 percent of world growth during this period) were almost twice as large as those for advanced economies. The table also shows that a few economies account for the lion's share of the forecast error. Specifically, Brazil, China, India, and Russia (the BRICs), whose share in global GDP at purchasing-power-parity weights is about 28 percent, account for about half of the overall forecast error.[3] And four stressed economies in the Middle East account for another 20 percent of the global forecast error. For advanced economies, much of the overprediction of growth was for 2011–12, reflecting the euro area crisis (with large revisions especially for stressed euro area economies), the 2011 Japanese earthquake, and lower growth in some advanced Asian economies excluding Japan (particularly in 2012). For these advanced Asian economies, the error is likely related to the 1.4 percentage point growth forecast error for China in 2012. Forecast errors for the United States and for the remaining emerging market and developing economies were, on average, minor.

Growth forecast errors: Which GDP component?

The overprediction of global growth in 2011–13 primarily reflects an overprediction of investment (Figure 1.2.1). The contribution of the forecast errors for other demand components, such as net exports and consumption, varied across regions and countries—for instance, net exports were weaker than forecast in both Latin America and sub-Saharan Africa. These results do not identify the ultimate sources behind shortfalls in investment growth. Nevertheless, they suggest that domestic factors played a role in lowering investment growth below expectations, especially where disappointments in investment exceeded those in export growth. This implication resonates with recent studies that find that external factors play an important role in, but do not fully explain, the recent slowdown in emerging market and developing economies (see Chapter 4 of the April 2014 WEO; Cubeddu and others 2014; and IMF 2014b).

Growth forecast errors: Domestic and in trading partners

Further suggestive evidence is provided in Figure 1.2.2, which shows the relationship between forecast errors for domestic growth and those for growth in trading partners. In 2011–13, the forecast errors for both domestic and partner-country growth were typically negative and positively correlated, with a 1 percentage point forecast error in trading partners' growth associated, on average, with a domestic growth forecast error of some 0.9 percentage point. However, growth forecast errors for trading partners explain only a small fraction of the variance in forecast errors for domestic growth.

Serial prediction errors?

Was growth systematically overpredicted in the same countries? The scatter plot in Figure 1.2.3, based

The authors of this box are Rupa Duttagupta and Thomas Helbling, with support from Angela Espiritu.

[1]This analysis also updates that in the October 2013 WEO, which documented the origins of forecast revisions for regional growth through the fall of 2013.

[2]These errors measure the difference between estimates for actual growth in year *t* reported in the fall 2014 WEO (with *t* varying between 2011 and 2014) and the growth projection for year *t* made in the fall WEO of the previous year. For 2014, the forecast revision between the fall 2014 WEO and the fall 2013 WEO is used instead of the forecast error because the 2014 actual is not yet known.

[3]To make the forecasts analyzed here comparable across the WEO reports, all regional and global growth aggregates use the recently revised purchasing power parities of the 2011 International Comparison Program. Also, all regions and economies in the analysis represent a constant composition of countries, classified as advanced or emerging market and developing economies according to the October 2014 WEO. However, the figures are not adjusted for revisions in the historical data.

Box 1.2 *(continued)*

Table 1.2.1. Contribution to Global Growth Forecast Error[1]

(Percentage points, unless noted otherwise)

	Average, 2011–13 (percent)		Growth Forecast Error						Contribution to Global Growth Forecast Error	
	PPP share in:						Average		Average	
	World	Group	2011	2012	2013	2014	2011–13	2011–14	2011–13	2011–14
World	100.0		–0.3	–0.9	–0.6	–0.4	–0.6	–0.6	–0.60	–0.55
AEs	44.5	100.0	–0.5	–0.7	–0.1	–0.2	–0.4	–0.4	–0.20	–0.17
Of Which:										
United States	16.6	37.4	–0.7	0.5	0.1	–0.4	0.0	–0.1	0.00	–0.02
Japan	4.7	10.5	–2.0	–0.8	0.3	–0.4	–0.8	–0.7	–0.04	–0.03
Stressed EA	4.4	10.0	–0.9	–2.7	–0.6	0.1	–1.4	–1.0	–0.06	–0.05
EA Excl. Stressed EA	8.3	18.7	0.8	–1.1	–0.4	–0.2	–0.2	–0.2	–0.02	–0.02
Asia Excl. Japan	3.0	6.8	–0.5	–2.6	–1.0	–0.2	–1.4	–1.1	–0.04	–0.03
Other AEs	7.4	16.7	–0.4	–0.9	0.0	0.4	–0.4	–0.2	–0.03	–0.02
EMDEs	55.5	100.0	–0.1	–1.2	–0.9	–0.6	–0.7	–0.7	–0.40	–0.39
Of Which:										
BRICs	28.2	50.8	–0.5	–1.6	–1.0	–0.3	–1.0	–0.9	–0.30	–0.24
Brazil	3.0	5.4	–1.4	–2.6	–1.5	–2.2	–1.8	–1.9	–0.05	–0.06
Russia	3.5	6.2	0.0	–0.7	–2.5	–2.8	–1.1	–1.5	–0.04	–0.05
India[2]	6.5	11.8	–0.9	–2.3	–1.0	0.7	–1.4	–0.9	–0.09	–0.06
China	15.2	27.4	–0.3	–1.4	–0.5	0.1	–0.7	–0.5	–0.11	–0.08
Stressed Middle East	2.8	5.0	–2.7	–5.1	–4.8	–3.4	–4.2	–4.0	–0.11	–0.11
Other EMDEs	24.6	44.2	0.7	–0.2	–0.4	–0.6	0.0	–0.1	0.01	–0.03

Source: IMF staff estimates.

Note: Forecast errors are actual data minus forecasts for the specified year made in the previous year. AEs = advanced economies; Asia Excl. Japan = Hong Kong SAR, Korea, Taiwan Province of China; BRICs = Brazil, Russia, India, China; EA = euro area; EMDEs = emerging market and developing economies; stressed EA = Greece, Ireland, Italy, Portugal, Spain; stressed Middle East = Egypt, Iran, Iraq, Libya; PPP = purchasing power parity.

[1]Forecast revisions for growth in 2014.

[2]India's data for fall 2013 and fall 2014 WEO reports are transformed from a fiscal year basis to a calendar year basis to be comparable with the previous reports, in which the data were on a calendar year basis. Given that India's fiscal year runs from April 1 to March 31, the following proxy is used: GDP in calendar year (t) = 3/4 × GDP in fiscal year (t) + 1/4 × GDP in fiscal year ($t-1$).

on a panel of the 50 largest economies for 2011–13, shows a positive and statistically significant correlation between the growth forecast errors in consecutive years. But the magnitude of this correlation is relatively small.[4]

Summary

In sum, the analysis in this box shows that much of the overprediction in global growth for 2011–14 can be traced to a relatively small number of economies, accounting for some 43 percent of world GDP in purchasing-power-parity terms. These include the four largest emerging markets (the BRICs), a few stressed economies in the Middle East and the euro area, Japan, and some Asian advanced economies. The contribution of the remaining advanced economies as well as other emerging market and developing economies to global growth disappointments has been generally small. Growth forecast errors for advanced economies were concentrated in 2011–12 and have been, on average, much smaller than the size of errors for emerging market and developing economies. There has been a general tendency toward repeated overprediction of growth, as reflected in positive serial correlation in forecast errors. But the magnitude of serial correlation seems relatively small in general.

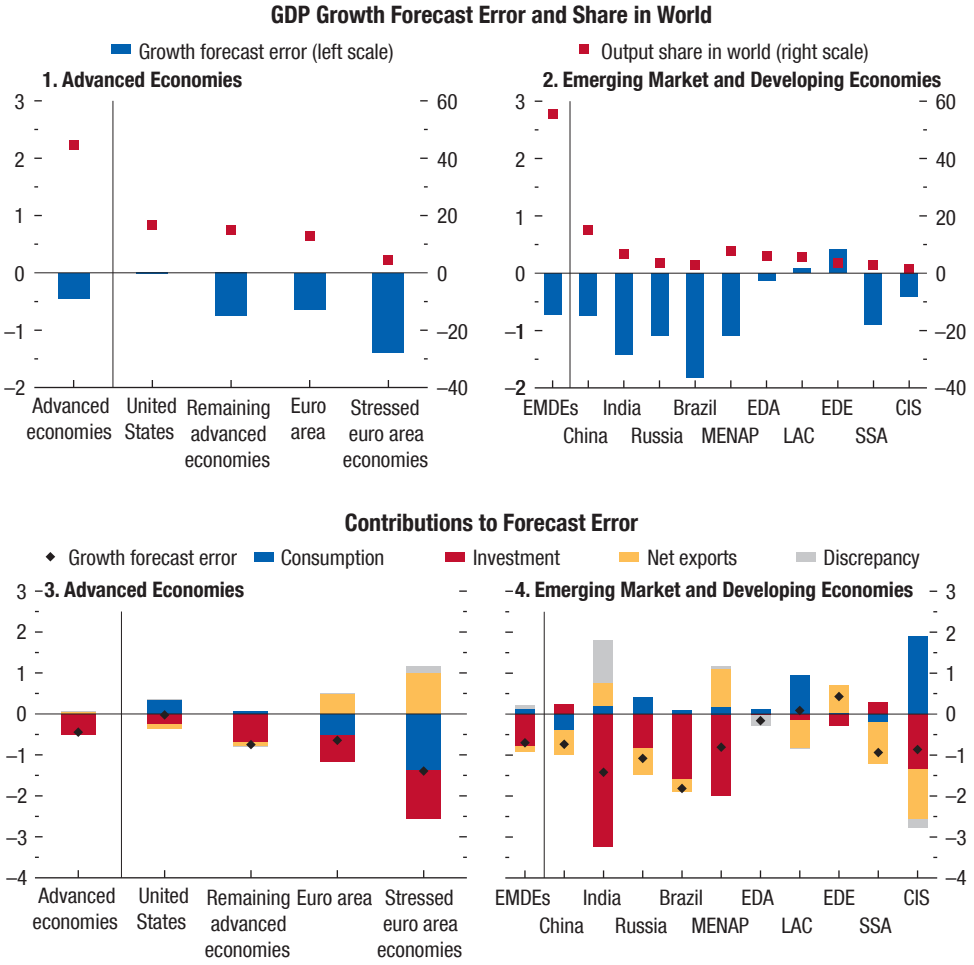
How should these results be interpreted? A plausible explanation is that in some economies, particularly the BRICs, there has been a gradual downward revi-

[4]A small, positive serial correlation in next-year forecast errors for growth also holds in a panel for all economies with WEO forecasts during this period (the coefficient is not statistically significant, however).

Box 1.2 *(continued)*

Figure 1.2.1. Growth Forecast Errors by Region, 2011–13

(Average annual percentage points)

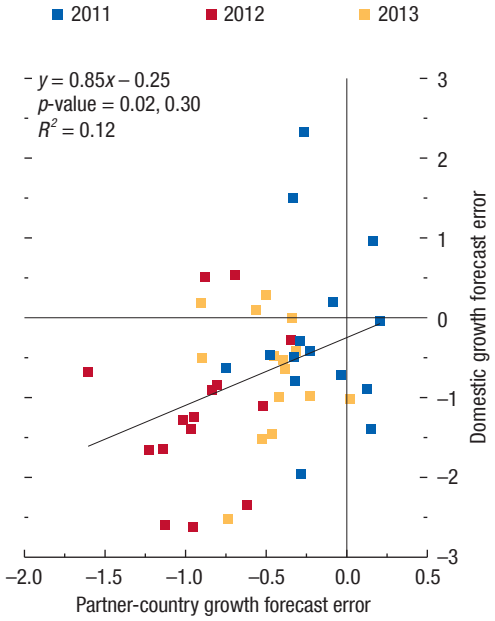


Source: IMF staff estimates.

Note: Forecast errors are actual data minus forecasts for the specified year made in the previous year. CIS = Commonwealth of Independent States excluding Russia; EDA = emerging and developing Asia excluding China and India; EDE = emerging and developing Europe; EMDEs = emerging market and developing economies; LAC = Latin America and the Caribbean excluding Brazil; MENAP = Middle East, North Africa, Afghanistan, and Pakistan; SSA = sub-Saharan Africa; stressed euro area economies = Greece, Ireland, Italy, Portugal, Spain. GDP growth forecast errors in panels 1 and 2 include all countries with real GDP growth forecasts. Data in panels 3 and 4 include only those countries with forecasts for all components of GDP. India's data for fall 2013 and fall 2014 WEO reports are transformed from a fiscal year basis to a calendar year basis to be comparable with the previous reports, in which the data were on a calendar year basis. Given that India's fiscal year runs from April 1 to March 31, the following proxy is used: GDP (contribution to GDP) in calendar year (t) = ¾ × GDP (contribution to GDP) in fiscal year (t) + ¼ × GDP (contribution to GDP) in fiscal year ($t-1$).

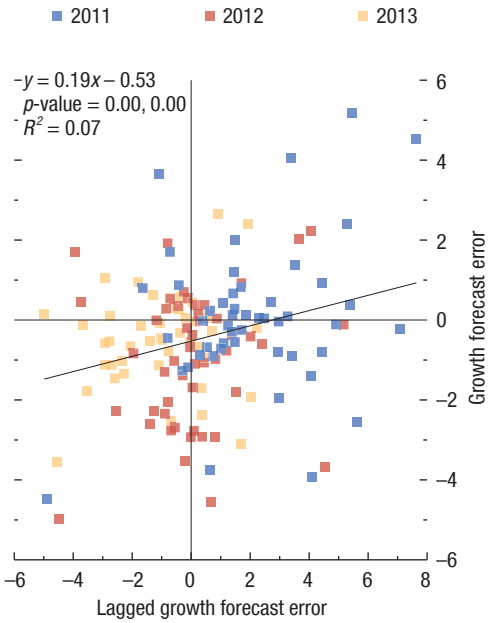
Box 1.2 *(continued)*

Figure 1.2.2. Partner-Country versus Domestic Growth Forecast Error
(Percentage points)



Source: IMF staff estimates.
Note: Forecast errors are actual data minus forecasts for the specified year made in the previous year. Among the advanced economies, the figure shows data for (1) the euro area; (2) Hong Kong SAR, Korea, and Taiwan Province of China; (3) Japan; (4) the United States; and (5) remaining advanced economies. For emerging market and developing economies, the figure shows data for (1) Brazil; (2) China; (3) India; (4) Russia; (5) the Commonwealth of Independent States excluding Russia; (6) emerging and developing Asia excluding China and India; (7) emerging and developing Europe; (8) Latin America and the Caribbean excluding Brazil; (9) the Middle East, North Africa, Afghanistan, and Pakistan; and (10) sub-Saharan Africa. See note to Figure 1.2.1 for details on forecasts for India.

Figure 1.2.3. Growth Forecast Error versus Lagged Growth Forecast Error
(Percentage points)



Source: IMF staff estimates.
Note: Forecast errors are actual data minus forecasts for the specified year made in the previous year. Data are for the top 50 economies in terms of purchasing-power-parity GDP averaged over 2011–13 excluding those with absolute forecast errors greater than 10 percent. See note to Figure 1.2.1 for details on forecasts for India.

sion to previously overestimated trend growth rates based on these countries' strong growth performance before and immediately after the global crisis. Indeed, Figure 1.2.4 shows that for the BRICs, forecast revisions have applied to both near-term growth and trend growth, as seen in the growing distance between the output paths between the fall 2011 and subsequent WEO reports. For stressed economies in the Middle East and to some extent for Russia, growth revisions also represent new shocks related to geopolitical tensions. For advanced economies, growth forecasts for 2011–12 underpredicted the severity of the euro area crisis, particularly for stressed euro area economies. And exogenous shocks—such as the downward revisions to growth in Japan following the 2011 earthquake—have clearly played some role.

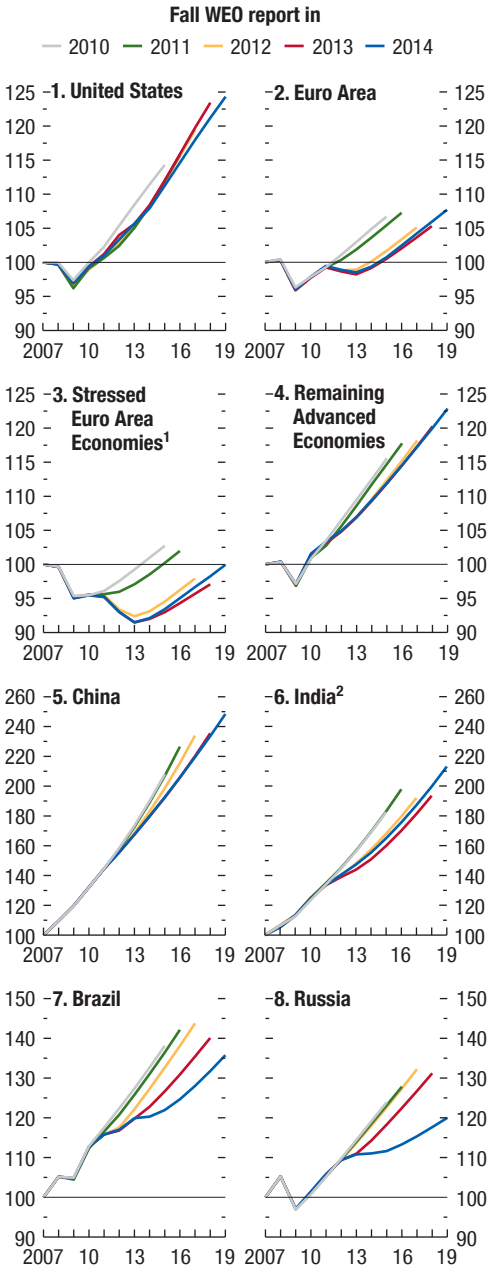
The analysis also suggests that although the growth shortfalls over the period studied have been associated with negative surprises in countries' expecta-

Box 1.2 *(continued)*

tions of growth in trading partners, domestic factors have played an important role, with forecast errors in investment explaining a large fraction of growth shortfalls for most economies.

Figure 1.2.4. Growth and Forecast Revisions in Major Economies

(Real GDP; index, 2007 = 100)



Source: IMF staff estimates.
[1]Greece, Ireland, Italy, Portugal, Spain.
[2]See note to Figure 1.2.1 for details on forecasts for India.

References

Arezki, Rabah, and Thiemo Fetzer. Forthcoming. "The Trade Implications of the U.S. Shale Gas Boom." IMF Working Paper, International Monetary Fund, Washington.

Baron, Robert, Paul Bernstein, W. David Montgomery, and Sugandha D. Tuladhar. 2014. "Updated Macroeconomic Impacts of LNG Exports from the United States." NERA Economic Consulting, Washington.

Celasun, Oya, Gabriel Di Bella, Tim Mahedy, and Chris Papageorgiou. 2014. "The U.S. Manufacturing Recovery: Uptick or Renaissance?" IMF Working Paper 14/28, International Monetary Fund, Washington.

Claessens, Stijn, Swati Ghosh, and Roxana Mihet. 2014. "Macro-prudential Policies to Mitigate Financial System Vulnerabilities." IMF Working Paper 14/155, International Monetary Fund, Washington.

Cohen, Gail, Frederick Joutz, and Prakash Loungani. 2011. "Measuring Energy Security: Trends in the Diversification of Oil and Natural Gas Supplies." *Energy Policy* 39 (9): 4860–69.

Crowe, Christopher, Giovanni Dell'Ariccia, Deniz Igan, and Pau Rabanal. 2011. "Policies for Macrofinancial Stability: Options to Deal with Real Estate Booms." IMF Staff Discussion Note 11/02, International Monetary Fund, Washington.

Cubeddu, Luis, Alex Culiuc, Ghada Fayad, Yuan Gao, Kalpana Kochhar, Annette Kyobe, Ceyda Oner, and others. 2014. "Emerging Markets in Transition: Growth Prospects and Challenges." IMF Staff Discussion Note 14/06, International Monetary Fund, Washington.

Decressin, Jörg, and Douglas Laxton. 2009. "Gauging Risks for Deflation." IMF Staff Position Note 09/01, International Monetary Fund, Washington.

Fernald, John 2014. "Productivity and Potential Output before, during, and after the Great Recession." NBER Working Paper 20248, National Bureau of Economic Research, Cambridge, Massachusetts.

Fetzer, Thiemo. 2014. "Fracking Growth." CEP Discussion Paper 1278, Centre for Economic Performance, London School of Economics and Political Science, London.

Gordon, Robert J. 2014. "The Demise of U.S. Economic Growth: Restatement, Rebuttal, and Reflections." NBER Working Paper 19895, National Bureau of Economic Research, Cambridge, Massachusetts.

Hall, Robert E. 2014. "Quantifying the Lasting Harm to the U.S. Economy from the Financial Crisis." NBER Working Paper 20183, National Bureau of Economic Research, Cambridge, Massachusetts.

Igan, Deniz, and Prakash Loungani. 2012. "Global Housing Cycles." IMF Working Paper 12/217, International Monetary Fund, Washington.

IHS. 2013. "America's New Energy Future: The Unconventional Oil and Gas Revolution and the US Economy—Volume 3: A Manufacturing Renaissance." Englewood, Colorado.

International Energy Agency (IEA). 2014. *Gas: Medium-Term Market Report 2014.* Paris.

International Monetary Fund (IMF). 2013. "Key Aspects of Macroprudential Policy." IMF Policy Paper, International Monetary Fund, Washington.

———. 2014a. *2014 Pilot External Sector Report.* Washington.

———. 2014b. *2014 Spillover Report.* Washington.

———. 2014c. "United Arab Emirates: 2014 Article IV Consultation—Staff Report." IMF Country Report 14/187, Washington.

———. 2014d. "United Kingdom: Selected Issues." IMF Country Report 14/234, Washington.

Kumar, Manmohan. 2003. "Deflation: Determinants, Risks, and Policy Options." IMF Occasional Paper 221, International Monetary Fund, Washington.

Lim, Cheng Hoon, Francesco Columba, Alejo Costa, Piyabha Kongsamut, Akira Otani, Mustafa Saiyid, Torsten Wezel, and Xiaoyong Wu. 2011. "Macroprudential Policy: What Instruments and How to Use Them?" IMF Working Paper 11/238, International Monetary Fund, Washington.

Melick, William R. 2014. "The Energy Boom and Manufacturing in the United States." International Finance Discussion Paper 1108, Board of Governors of the Federal Reserve System, Washington.

Schott, Peter K. 2008. "The Relative Sophistication of Chinese Exports." *Economic Policy* 23 (53): 5–49.

U.S. Energy Information Administration (U.S. EIA). 2014. *Annual Energy Outlook.* Washington.

Zhang, Longmei, and Edda Zoli. 2014. "Leaning against the Wind: Macroprudential Policy in Asia." IMF Working Paper 14/22, International Monetary Fund, Washington.