CHAPTER 1

GLOBAL PROSPECTS AND POLICIES

Thus far, economic recovery is proceeding broadly as expected, although downside risks remain elevated. Most advanced and a few emerging economies still face major adjustments, including the need to strengthen household balance sheets, stabilize and subsequently reduce high public debt, and repair and reform their financial sectors. In many of these economies, the financial sector is still vulnerable to shocks, and growth appears to be slowing as policy stimulus wanes. By contrast, in emerging and developing economies prudent policies, implemented partly in response to earlier crises, have contributed to a significantly improved medium-term growth outlook relative to the aftermath of previous global recessions. However, activity in these economies, particularly those in emerging Asia, remains dependent on demand in advanced economies. In this setting, global activity is forecast to expand by 4.8 percent in 2010 and 4.2 percent in 2011, with a temporary slowdown during the second half of 2010 and the first half of 2011. Output of emerging and developing economies is projected to expand at rates of 7.1 percent and 6.4 percent in 2010 and 2011, respectively. In advanced economies, however, growth is projected to be only 2.7 percent and 2.2 percent, respectively. Risks to the forecast are mainly to the downside. Sustained, healthy recovery rests on two rebalancing acts: internal rebalancing, with a strengthening of private demand in advanced economies, allowing for fiscal consolidation; and external rebalancing, with an increase in net exports in deficit countries and a decrease in net exports in surplus countries, notably emerging Asia. The two interact in strong ways. Increased net exports in advanced economies imply higher demand and higher growth, allowing more room for fiscal consolidation. A number of policies are required to support these rebalancing acts. In advanced economies, repair and reform of the financial sector need to accelerate to allow a resumption of healthy credit growth. In addition, fiscal adjustment needs to start in earnest in 2011. Specific plans to cut future budget deficits are urgently needed to create new room for fiscal policy maneuver. If global growth threatens to slow appreciably more than expected, countries with fiscal room could postpone some of the planned consolidation. Meanwhile, key emerging economies will need to further develop domestic sources of growth, with the support of greater exchange rate flexibility.

Stronger Activity, but Setbacks to Financial Stability

Economic recovery continued to strengthen during the first half of 2010, but global financial stability suffered a major setback with the turmoil in sovereign debt markets in the second quarter of 2010. The extent of economic recovery differs importantly across regions, with Asia in the lead. The United States and Japan experienced a noticeable slowdown during the second quarter of 2010, while growth accelerated in Europe and stayed strong in emerging and developing economies. Financial conditions have begun to normalize, but institutions and markets are still fragile. In general, volatility in financial, currency, and commodity markets remains elevated.

Growing Momentum through the First Half of 2010

The world economy expanded at an annual rate of about 5¼ percent during the first half of 2010—about ½ percent higher than in the July 2010 *World Economic Outlook* (WEO) *Update* (Table 1.1). World industrial production reached growth rates of about 15 percent, and global trade recovered at rates over 40 percent during this period (Figure 1.1). A surge in inventory and, lately, fixed investment accounts for this dramatic rise—with the latter in particular boding well for continued recovery. Manufacturing confidence indices are back to precrisis levels, and employment in advanced economies is expanding moderately. Household spending is doing well in emerging market economies, but in advanced economies, low consumer confidence, high unemployment, stagnant incomes, and reduced household wealth are holding consumption down. Chapter 2 discusses regional developments in more detail.

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 2010 WEO Projections		Estimate	Projections	
	2008	2009	2010	2011	2010	2011	2009	2010	2011
World Output[1]	**2.8**	**–0.6**	**4.8**	**4.2**	**0.2**	**–0.1**	**2.0**	**4.3**	**4.4**
Advanced Economies	**0.2**	**–3.2**	**2.7**	**2.2**	**0.1**	**–0.2**	**–0.4**	**2.4**	**2.5**
United States	0.0	–2.6	2.6	2.3	–0.7	–0.6	0.2	2.2	2.7
Euro Area	0.5	–4.1	1.7	1.5	0.7	0.2	–2.0	1.9	1.4
Germany	1.0	–4.7	3.3	2.0	1.9	0.4	–2.0	3.9	1.2
France	0.1	–2.5	1.6	1.6	0.2	0.0	–0.5	1.7	1.6
Italy	–1.3	–5.0	1.0	1.0	0.1	–0.1	–2.8	1.3	1.1
Spain	0.9	–3.7	–0.3	0.7	0.1	0.1	–3.0	0.1	1.4
Japan	–1.2	–5.2	2.8	1.5	0.4	–0.3	–1.4	1.9	2.1
United Kingdom	–0.1	–4.9	1.7	2.0	0.5	–0.1	–2.9	2.8	1.6
Canada	0.5	–2.5	3.1	2.7	–0.5	–0.1	–1.1	3.1	2.9
Other Advanced Economies	1.7	–1.2	5.4	3.7	0.8	–0.0	3.2	4.2	4.7
Newly Industrialized Asian Economies	1.8	–0.9	7.8	4.5	1.1	–0.2	6.1	5.2	6.6
Emerging and Developing Economies[2]	**6.0**	**2.5**	**7.1**	**6.4**	**0.3**	**0.0**	**5.6**	**7.0**	**7.0**
Central and Eastern Europe	3.0	–3.6	3.7	3.1	0.5	–0.3	1.8	2.9	4.3
Commonwealth of Independent States	5.3	–6.5	4.3	4.6	0.0	0.3	–3.2	3.3	5.0
Russia	5.2	–7.9	4.0	4.3	–0.3	0.2	–2.9	3.2	5.0
Excluding Russia	5.4	–3.2	5.3	5.2	0.9	0.5	. . .	. . .	. . .
Developing Asia	7.7	6.9	9.4	8.4	0.2	–0.1	9.5	9.1	8.7
China	9.6	9.1	10.5	9.6	0.0	0.0	11.4	9.9	9.6
India	6.4	5.7	9.7	8.4	0.3	0.0	7.3	10.3	7.9
ASEAN-5[3]	4.7	1.7	6.6	5.4	0.2	–0.1	5.1	5.0	6.8
Latin America and the Caribbean	4.3	–1.7	5.7	4.0	0.9	0.0	1.4	4.8	4.4
Brazil	5.1	–0.2	7.5	4.1	0.4	–0.1	4.4	5.6	4.5
Mexico	1.5	–6.5	5.0	3.9	0.5	–0.5	–2.3	3.1	4.5
Middle East and North Africa	5.0	2.0	4.1	5.1	–0.4	0.2	. . .	. . .	. . .
Sub-Saharan Africa	5.5	2.6	5.0	5.5	0.0	–0.4	. . .	. . .	. . .
Memorandum									
European Union	0.8	–4.1	1.7	1.7	0.7	0.1	–2.1	2.1	1.7
World Growth Based on Market Exchange Rates	1.6	–2.0	3.7	3.3	0.1	–0.1	. . .	. . .	. . .
World Trade Volume (goods and services)	**2.9**	**–11.0**	**11.4**	**7.0**	**2.4**	**0.7**	**. . .**	**. . .**	**. . .**
Imports									
Advanced Economies	0.4	–12.7	10.1	5.2	2.9	0.6	. . .	. . .	. . .
Emerging and Developing Economies	9.0	–8.2	14.3	9.9	1.8	0.6	. . .	. . .	. . .
Exports									
Advanced Economies	1.9	–12.4	11.0	6.0	2.8	1.0	. . .	. . .	. . .
Emerging and Developing Economies	4.6	–7.8	11.9	9.1	1.4	0.1	. . .	. . .	. . .
Commodity Prices (U.S. dollars)									
Oil[4]	36.4	–36.3	23.3	3.3	1.5	0.3	. . .	. . .	. . .
Nonfuel (average based on world commodity export weights)	7.5	–18.7	16.8	–2.0	1.3	–0.6	. . .	. . .	. . .
Consumer Prices									
Advanced Economies	3.4	0.1	1.4	1.3	0.0	0.0	0.8	1.1	1.6
Emerging and Developing Economies[2]	9.2	5.2	6.2	5.2	–0.1	0.2	4.8	5.9	4.4
London Interbank Offered Rate (percent)[5]									
On U.S. Dollar Deposits	3.0	1.1	0.6	0.8	0.0	–0.1	. . .	. . .	. . .
On Euro Deposits	4.6	1.2	0.8	1.0	0.0	–0.2	. . .	. . .	. . .
On Japanese Yen Deposits	1.0	0.7	0.6	0.4	0.1	–0.2	. . .	. . .	. . .

Note: Real effective exchange rates are assumed to remain constant at the levels prevailing during August 4–September 1, 2010. Country weights used to construct aggregate growth rates for groups of economies were revised. 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]The quarterly estimates and projections account for approximately 78 percent of the emerging and developing economies.

[3]Indonesia, Malaysia, Philippines, Thailand, and Vietnam.

[4]Simple average of prices of U.K. Brent, Dubai, and West Texas Intermediate crude oil. The average price of oil in U.S. dollars a barrel was $61.78 in 2009; the assumed price based on futures markets is $76.20 in 2010 and $78.75 in 2011.

[5]Six-month rate for the United States and Japan. Three-month rate for the euro area.

Growth in advanced economies reached about 3½ percent during the first half of 2010. This is low, considering that these economies are emerging from the deepest recession since World War II. Three groups can be distinguished (Figure 1.2):

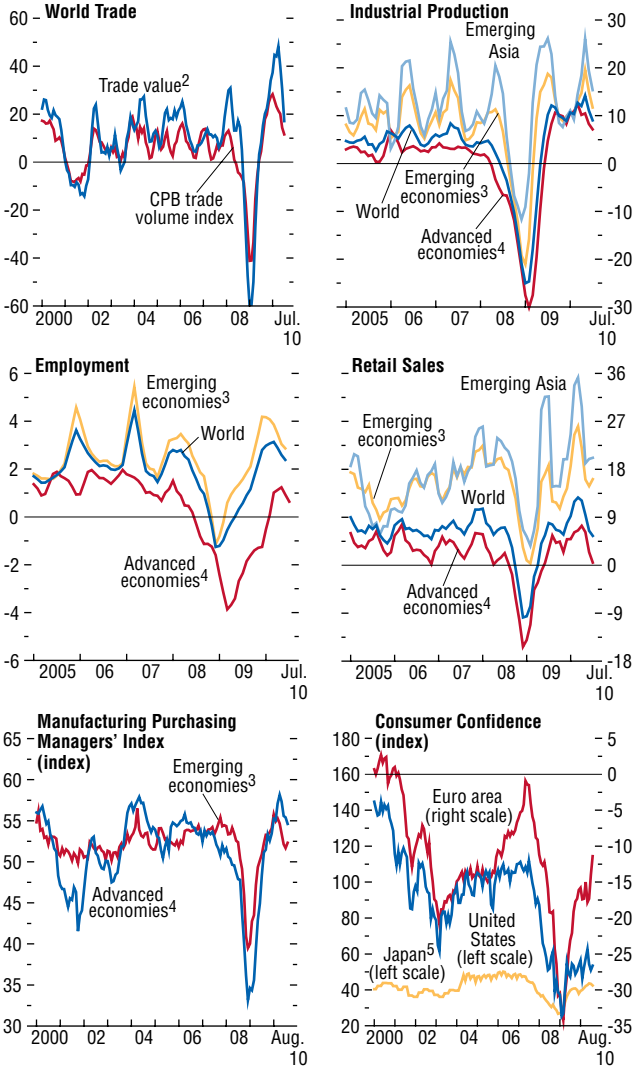
- The economies of advanced Asia, other than Japan, have enjoyed a strong rebound. Their large manufacturing sectors have benefited from the global rebound in trade. As a result, their output is already above precrisis levels.
- The United States is close to precrisis levels of output but far below precrisis trends, and activity slowed noticeably in the second quarter of 2010. Consumption has been growing since the third quarter of 2009, but at low rates considering the depth of the retrenchment. At the same time, investment in business equipment and software has been rising strongly lately, helped by foreign demand, rebounding profits, and normalizing financial conditions. However, this has not yet triggered a sustained, solid recovery in employment and real estate activity remains very weak.
- Japan and the euro area are still appreciably below precrisis levels of output and remain dependent on foreign demand. In Japan, fiscal stimulus and the rebound in global trade and strong demand elsewhere in Asia have boosted output growth since the fourth quarter of 2009, but activity weakened significantly in the second quarter of 2010. In the euro area, led by Germany, activity showed significant strength only in the second quarter of this year, following a bad winter. The area's dependence on bank credit is restraining demand, as banks continue to be unusually cautious in lending. However, the depreciation of the euro from previous highs is beginning to support the euro area's tradable goods sector, and fixed investment is staging a modest comeback.

Emerging economies expanded by about 8 percent during the first half of the year. As in advanced economies, there is significant heterogeneity both across and within regions, with Asian and Latin American economies in the lead. In both regions, fixed investment has expanded vigorously, just as inventory rebuilding has slowed and policy stimulus has waned. This is a sign that autonomous private

Figure 1.1. Current and Forward-Looking Indicators[1]

(Annualized percent change of three-month moving average over previous three-month moving average, unless noted otherwise)

World trade and industrial production have continued to rebound, and employment has begun to grow again in advanced economies. Retail sales have recovered. They are buoyant in emerging economies but lagging in advanced economies, reflecting still-low consumer confidence. Recently, manufacturing confidence has receded, but it remains consistent with further expansion.



Sources: Netherlands Bureau for Economic Policy Analysis for CPB trade volume index; for all others, Haver Analytics and NTC Economics; and IMF staff calculations.

[1]Not all economies are included in the regional aggregations. For some economies, monthly data are interpolated from quarterly series.

[2]In SDR terms.

[3]Argentina, Brazil, Bulgaria, Chile, China, Colombia, Estonia, Hungary, India, Indonesia, Latvia, Lithuania, Malaysia, Mexico, Pakistan, Peru, Philippines, Poland, Romania, Russia, South Africa, Thailand, Turkey, Ukraine, and Venezuela.

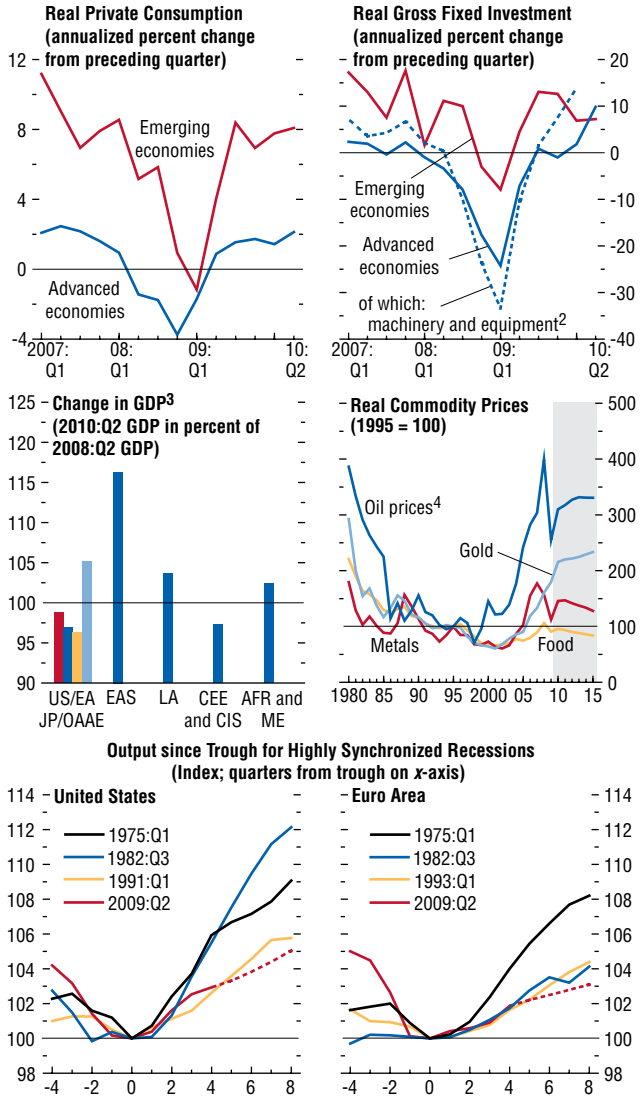
[4]Australia, Canada, Czech Republic, Denmark, euro area, Hong Kong SAR, Israel, Japan, Korea, New Zealand, Norway, Singapore, Sweden, Switzerland, Taiwan Province of China, United Kingdom, and United States.

[5]Japan's consumer confidence data are based on a diffusion index, where values greater than 50 indicate improving confidence.

Figure 1.2. Global Indicators[1]

(Annual percent change, unless noted otherwise)

Private consumption has recovered impressively in emerging economies but is lagging in advanced economies. However, investment excluding construction has staged a rebound in advanced economies, suggesting medium- rather than short-term considerations are increasingly driving activity. This bodes well for employment and consumption in the future. In the meantime, output in many advanced economies is still around or below precrisis levels. Commodity prices have recovered. Recent wheat price hikes are not representative of broader developments in food prices.



Source: IMF staff estimates.

[1]Aggregates are computed on the basis of purchasing-power-parity (PPP) weights, unless noted otherwise.

[2]PPP-weighted averages of metal products and machinery for euro area, plants and equipment for Japan, plants and machinery for the United Kingdom, and equipment and software for the United States.

[3]US/EA/JP/OAAE: United States/euro area/Japan/other advanced Asian economies; EAS: emerging Asia; LA: Latin America; CEE and CIS: central and eastern Europe and Commonwealth of Independent States; AFR and ME: Africa and Middle East.

[4]Simple average of spot prices of U.K. Brent, Dubai Fateh, and West Texas Intermediate crude oil.

demand is overtaking short-term, policy-related factors in the recovery.

- Growth in emerging Asia reached about 9½ percent, as robust domestic demand spread from China, India, and Indonesia to other Asian economies. In China, major fiscal stimulus, a large expansion of credit, and a number of specific measures to boost household incomes and consumption increased domestic demand growth to close to 13 percent in 2009, contributing to a large decline in the current account surplus. The recovery is now well established, and a transition from public stimulus to private-sector-led growth is under way.
- Latin America has also recovered strongly, with real GDP growth at about 7 percent. The recovery is being led by Brazil, where real GDP growth has been running close to 10 percent since the third quarter of 2009 and the economy is now showing signs of overheating. A number of other economies have also returned to solid growth. However, Mexico is lagging, partly because of its strong trade linkages with the United States. Growth in Mexico recently picked up on the back of strengthening exports to the United States, but the output gap remains large.
- Many developing economies were less affected by the global recession and now seem to be sharing in the pickup in world trade, and estimates for growth in 2010 are generally encouraging. Available data for African and Middle Eastern economies point to robust growth. By contrast, economies that were hit particularly hard by the crisis are struggling to return to sustained growth, including in many parts of emerging Europe and the Commonwealth of Independent States, where the recovery remains much more subdued.

Unemployment in advanced economies has receded only modestly from peak rates. Estimates are that more than 210 million people across the globe are unemployed, an increase of more than 30 million since 2007. Three-fourths of the increase has occurred in the advanced economies (with the remainder in emerging market economies). In the United States, the unemployed face record-long periods of joblessness, and recent payroll data point to a slowdown in employment growth in the second

quarter. In the euro area, the labor market shows continued resilience in Germany, considering the depth of the recession, but in Spain unemployment is not showing any signs of abating from very high levels, owing to labor market rigidities and the collapse of construction. In emerging economies, unemployment has broadly declined in parallel with a strengthening recovery, with a few exceptions (for example, South Africa).

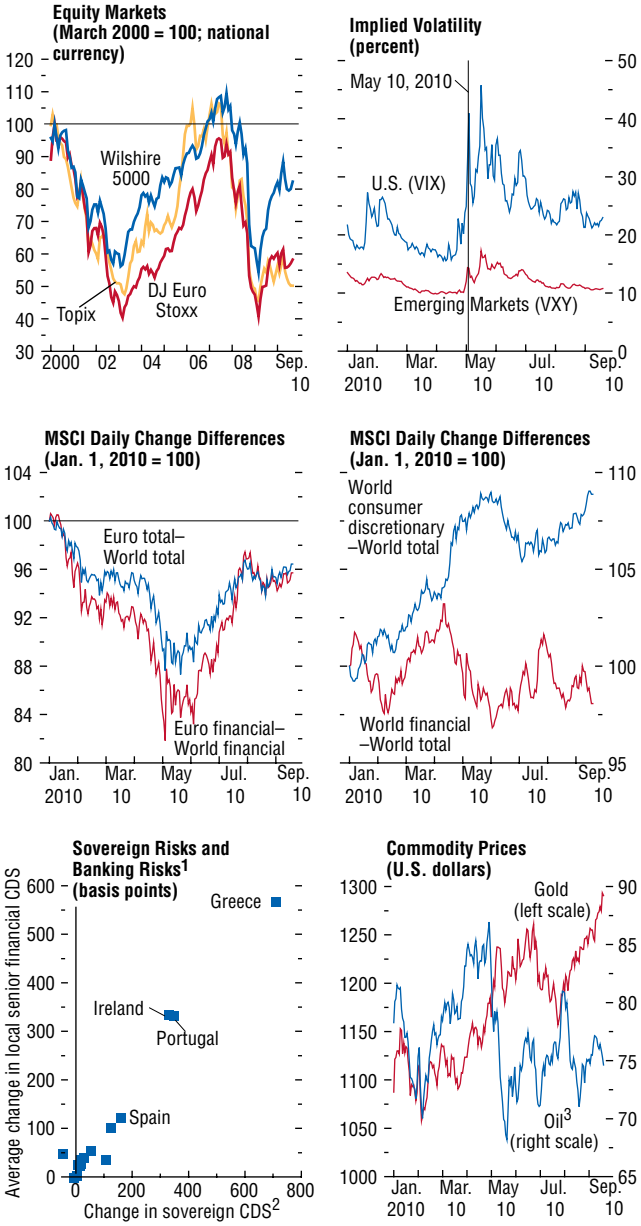
Setbacks to Financial Stability

Financial stability suffered a major setback during the first half of the year. As explained in the accompanying October 2010 *Global Financial Stability Report* (GFSR), market volatility increased and risk appetite declined when heavy selling of the sovereign debt of vulnerable euro area economies rattled banking systems and triggered a systemic crisis as funding stress spread to banks and sovereigns. This added to existing worries about the sustainability of the recovery and caused a broader decline in stocks. Prices in many stock exchanges fell by 10 to 15 percent (Figure 1.3). Initially, the fall was led by financial stocks and by European markets. Risk premiums on corporate bonds widened (Figure 1.4), and corporate bond issues slowed to a trickle in May. Bond issuance in emerging markets also dropped sharply (Figure 1.5).

The second quarter sovereign debt turmoil posed a threat to the recovery. There were only limited propagation effects on sovereign borrowers beyond the vulnerable euro area countries, in part due to a "flight to safety" in major markets (Figure 1.6). Nonetheless, there were small and brief increases in the spreads of euro area countries whose creditworthiness is typically considered on par with that of Germany, and this underscores the uncertainty of the environment for all sovereign issuers. Correlation analysis (beyond that shown in Figure 1.6) suggests that the behavior of sovereign risk premiums during May–June is significantly explained by the interaction between high external net liabilities/deficits on the one hand and high public debt/deficits on the other. Simultaneously addressing both budgetary and competitiveness problems in a deteriorating external environment is likely to take

Figure 1.3. Recent Financial Market Developments

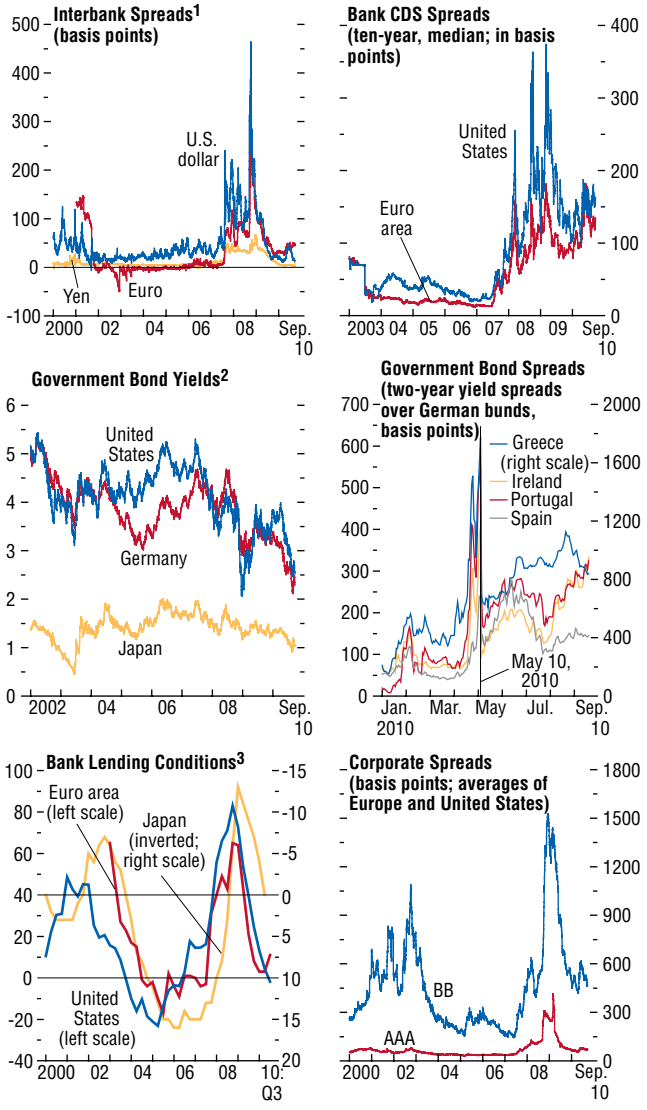
Equity markets have surrendered part of their large 2009 gains, and volatility spiked during the first quarter. Losses were led by financial stocks in Europe. However, as concerns about sustainability of the recovery grew, losses broadened to other regions and sectors, particularly to companies producing discretionary consumer products. Commodity prices generally retreated, but gold prices shot up, driven by rising investor risk aversion.



Sources: Bloomberg Financial Markets; Thomson Datastream; and IMF staff calculations.
[1]October 2009–September 2010.
[2]CDS = credit default swap spread.
[3]Simple average of spot prices of U.K. Brent, Dubai Fateh, and West Texas Intermediate crude oil.

Figure 1.4. Developments in Mature Credit Markets

Funding strains in advanced economy banking markets reappeared, but tensions remained much lower than one year earlier. Bond yields for Germany, Japan, and the United States declined amid investor flight to safe havens and rising concerns about the sustainability of the recovery. However, yields in vulnerable euro area countries rose because of concerns about high public and external deficits and debt. Notwithstanding the turbulence, bank lending conditions in major economies continued to normalize. Corporate spreads widened somewhat, and issuance briefly dried up.



Sources: Bank of America/Merrill Lynch; Bank of Japan; Bloomberg Financial Markets; European Central Bank; Federal Reserve Board of Governors; and IMF staff calculations.

[1]Three-month London interbank offered rate minus three-month government bill rate.

[2]Ten-year government bonds.

[3]Percent of respondents describing lending standards as tightening "considerably" or "somewhat" minus those indicating standards as easing "considerably" or "somewhat" over the previous three months. Survey of changes to credit standards for loans or lines of credit to enterprises for the euro area; average of surveys on changes in credit standards for commercial/industrial and commercial real estate lending for the United States; diffusion index of "accommodative" minus "severe," Tankan survey of lending attitude of financial institutions for Japan.

a heavy toll on growth, which may help explain why some euro area banking systems came under particular strain.

There Are Signs of Normalization, but Important Vulnerabilities Remain

In recent months, financial conditions have been easing again. Tail risks have been reduced by unprecedented European policy initiatives—the European Central Bank's (ECB's) Securities Markets Program (SMP) and euro area governments' European Stabilization Mechanism—and by a front-loading of fiscal adjustment in response to market pressures. However, underlying sovereign and banking vulnerabilities pose a significant challenge amid lingering concerns about risks to the global recovery.

- Sovereign bond auctions in the euro area have successfully rolled over substantial maturities, albeit at higher costs. But concerns about rollover failures remain elevated.
- After declining sharply in May, there was some recovery in the issuance of both advanced economy nonfinancial corporate bonds and emerging market sovereign and corporate bonds in June and more through September.

The stress test exercise of the Committee of European Banking Supervisors was generally welcomed by markets for improving disclosure. Following the tests, credit default swap spreads on euro area bank bonds declined, bank stocks recovered, and several banks successfully tapped bond markets. However, significant tiering in interbank markets and still-heavy reliance by many banks on ECB financing suggest that major policy challenges remain to be addressed.

The recovery has helped improve the health of the banking system. According to the October 2010 GFSR, total bank write-downs and loan provisions are $2.2 trillion, down from the April 2010 estimate of $2.3 trillion. Banks have made further progress in realizing these write-downs, with more than three-quarters already reported, leaving a residual amount of approximately $550 billion. In addition, the average Tier 1 capital ratio in the global banking system rose to more than 10 percent at end-2009, although this mostly reflects govern-

ment recapitalization, given that less than half the capital raised was from market sources.

Overall, however, heightened economic uncertainty, continued deleveraging, and sovereign spillovers imply that core banking systems remain vulnerable to confidence shocks and are heavily reliant on government or central bank support. As discussed further below, banks face major refinancing requirements in wholesale markets that are still in disrepair. This poses particular challenges for euro area banks because of their high reliance on wholesale funding markets. As noted in the October 2010 GFSR, the financial system remains vulnerable to downside risks because capital and liquidity buffers are insufficient to support market confidence under renewed stress.

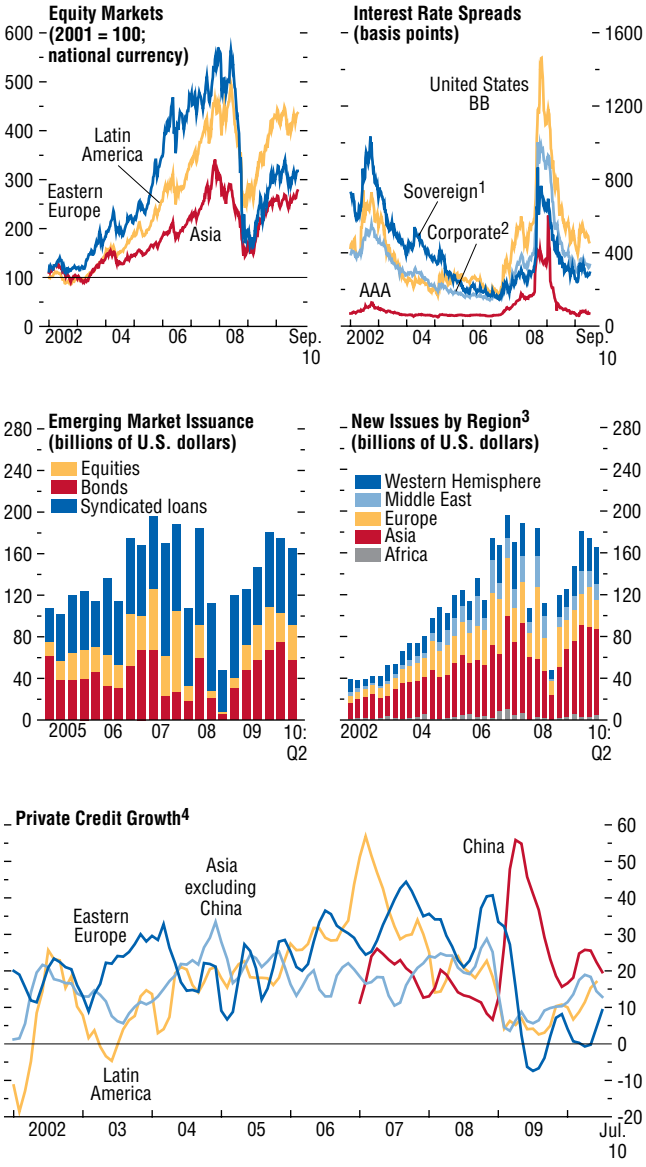
Volatile Currencies and Commodity Prices

Financial turbulence led to sharp currency movements in the first half of 2010 (Figure 1.7). The euro depreciated by about 15 percent in real effective terms, although it has partially recovered and is currently trading at a level broadly in line with medium-term fundamentals, according to IMF staff estimates. The U.S. dollar appreciated in real effective terms as risk aversion rose during May–June, but it has since returned to levels seen earlier in the year, on the strong side of medium-term fundamentals. The yen weakened briefly in April but has been appreciating since and now stands more than 25 percent above 2007 levels, prompting the authorities to intervene in exchange markets due to concerns about disruptive yen movements. At current levels, the yen remains broadly in line with medium-term fundamentals. With a few exceptions, emerging Asian currencies, including the Chinese renminbi, appreciated modestly in real effective terms. However, many remain undervalued relative to medium-term fundamentals.

Commodity prices surrendered some of the strong gains realized during the initial phase of the recovery (see Figures 1.2 and 1.3). These early gains reflected a combination of strong demand in emerging economies and, considering the phase of the cycle, low inventories for some commodities

Figure 1.5. Emerging Market Conditions

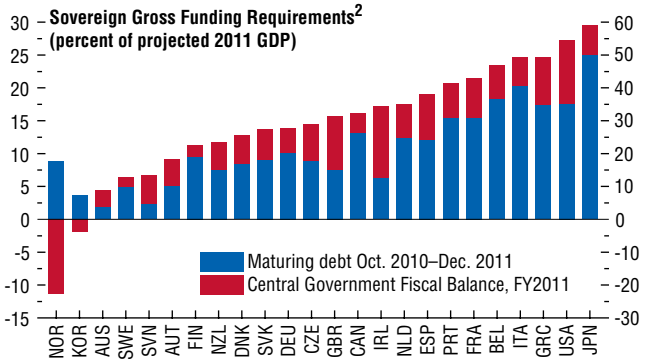
Equity markets in emerging economies also surrendered a small part of earlier gains during the turbulent months of May and June. Spreads widened moderately and issuance fell. However, local bank credit markets continue to recover, with emerging Europe lagging. China has slowed very high credit growth rates to address growing macroprudential concerns.

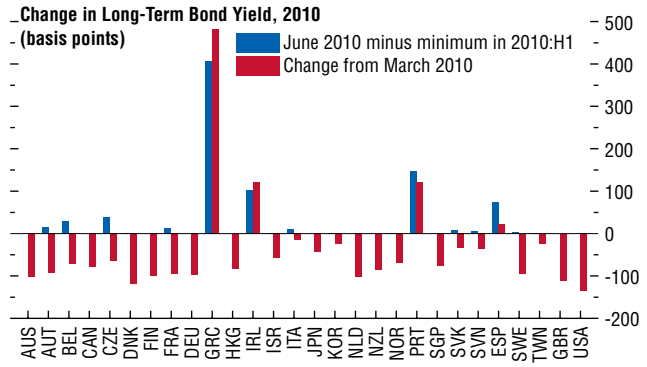


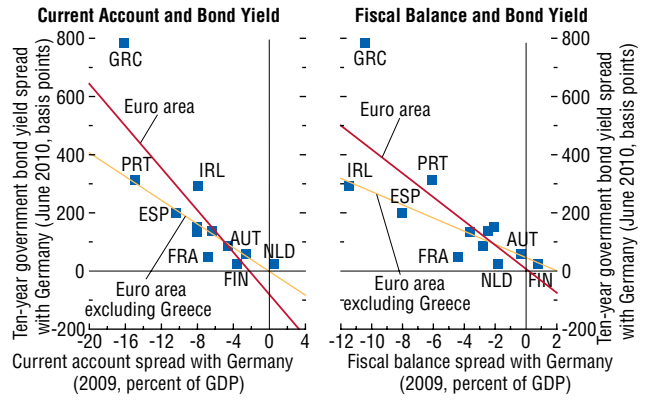
Sources: Bloomberg Financial Markets; Capital Data; IMF, *International Financial Statistics;* and IMF staff calculations.
[1]JPMorgan EMBI Global Index spread.
[2]JPMorgan CEMBI Broad Index spread.
[3]Total of equity, syndicated loans, and international bond issues.
[4]Annualized percent change of three-month moving average over previous three-month moving average.

Figure 1.6. Public Sector Financing[1]

Public sector financing needs are very large in many economies. However, demand for sovereign debt has remained strong because of high risk aversion. Accordingly, long-term government bond rates of most advanced economies have declined since March 2010 as concerns about the recovery rose. Also, even during the most turbulent times in June, only a few governments experienced a major widening of spreads. In the euro area, widening spreads correlate negatively with strong current account or fiscal balances.







Source: IMF staff estimates.
[1]AUS: Australia; AUT: Austria; BEL: Belgium; CAN: Canada; CZE: Czech Republic; DNK: Denmark; FIN: Finland; FRA: France; DEU: Germany; GRC: Greece; HKG: Hong Kong SAR; ISL: Iceland; IRL: Ireland; ISR: Israel; ITA: Italy; JPN: Japan; KOR: Korea; NLD: Netherlands; NZL: New Zealand; NOR: Norway; PRT: Portugal; SGP: Singapore; SVK: Slovak Republic; SVN: Slovenia; ESP: Spain; SWE: Sweden; TWN: Taiwan Province of China; GBR: United Kingdom; USA: United States.
[2]All left scale except Japan; Japan right scale.

(Appendix 1.1). Precious metals, however, continued to soar during the turbulence, amid heavy buying by risk-averse investors. Furthermore, the weather-related downgrades in harvest expectations for some major exporters recently pushed up wheat prices. Although the market for wheat remains appreciably less tight than during the price spikes of 2007–08, and prices of other food and agricultural inputs (for example, fertilizer) have not risen much, policymakers may have to take action to protect the poor from sharp price increases in major food staples, such as wheat.

Questions about the Pace of Recovery

Thus far, economic recovery is proceeding more or less as expected. Sustained, healthy recovery rests on two rebalancing acts: internal rebalancing, with a strengthening of private demand in advanced economies allowing for fiscal consolidation; and external rebalancing, with an increase in net exports in deficit economies, such as the United States, and a decrease in net exports in surplus economies, notably emerging Asia. The two interact in strong ways. Increases in net exports in advanced economies imply higher demand and higher growth, creating more room for fiscal consolidation. In the short term, high uncertainty in financial markets; weak real estate markets, household balance sheets, and incomes; and slowing inventory rebuilding will restrain the transition from publicly to privately led recovery in advanced economies. Domestic demand in most emerging economies is expected to be robust in comparison with recovery following past global recessions as a result of improved fundamentals. Over the medium term, however, domestic demand is unlikely to be strong enough to offset weaker demand in advanced economies, and global demand rebalancing is therefore projected to stall. At the same time, unless financial and structural policies are significantly strengthened, potential output in advanced economies is likely to remain appreciably below precrisis trends. Together, these developments portend a slow and sluggish recovery that is broadly in line with earlier WEO projections and that is vulnerable to downside risks.

Questions about Near-Term Prospects

The momentum of the global recovery appears to be slowing in the third quarter in both advanced and emerging economies. The IMF staff's momentum tracker does, however, indicate that growth remains above potential in many places (Figure 1.8; Appendix 1.2). This reflects exceptionally strong growth in manufacturing and trade during the past year. A key question is how the recovery will evolve during the remainder of 2010 and in 2011. On the downside, the inventory rebound can be expected to slow, fiscal policy stimulus is being withdrawn, and there are ongoing uncertainties in financial markets. Taken together with the positive factors that are also in the pipeline, the recovery is likely to slow in the near term and to reaccelerate during 2011, but in advanced economies to stay sluggish by past standards. Moreover, the recovery remains vulnerable to shocks, and downside risks predominate.

Forces driving the near-term recovery

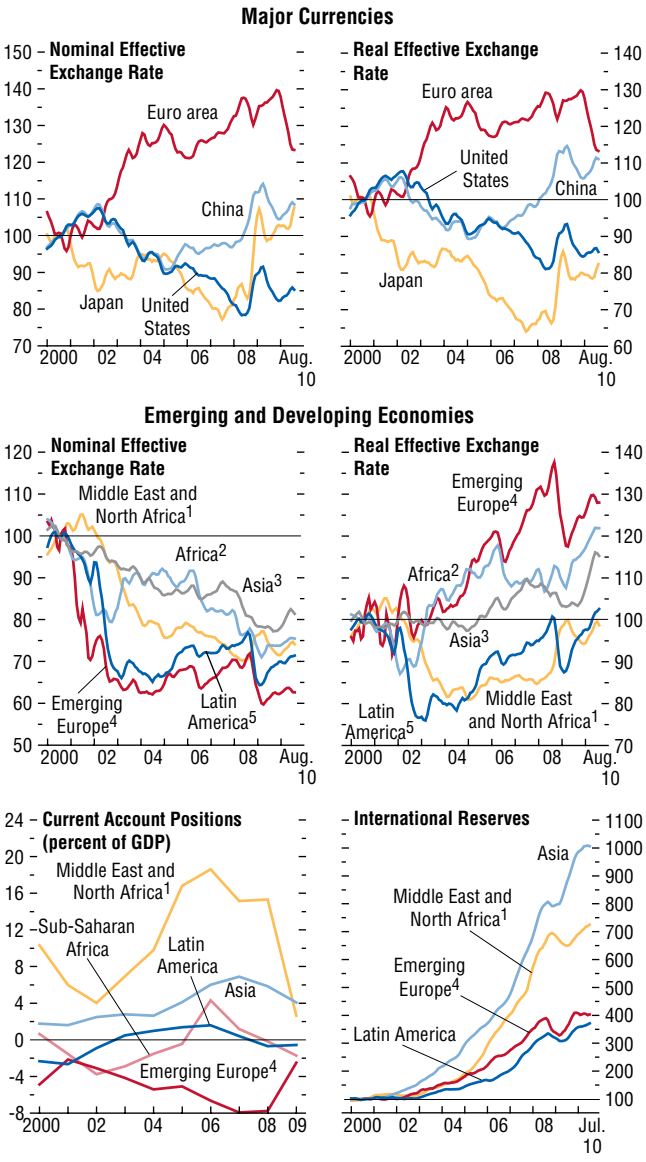
Robust growth in many emerging market economies will pull the recovery along over the near term. In most, the recovery seems to have entered a self-sustaining phase, beyond restocking and on to consumption and fixed investment, which are strong because large increases in industrial production have eroded excess capacity (Figures 1.2 and 1.9). Emerging market economies have coped much better with the global downturn by virtue of strong trend growth and avoidance of financial excess (Box 1.1). Many developing economies, particularly in sub-Saharan Africa, were less affected by the global downturn and are experiencing solid domestic demand growth. High import growth is projected to lower the overall current account surpluses (net lending) of the emerging and developing economies from about 3½ percent of GDP in 2008 to about 1½ percent of GDP in 2011. As explained in the October 2010 GFSR, relatively stronger growth prospects, a shift in global asset allocation, and expectations for low interest rates in mature markets continue to boost emerging market capital flows.

In advanced economies, both manufacturing and investment in machinery and equipment should continue to recover. Industrial production remains con-

Figure 1.7. External Developments

(Index, 2000 = 100; three-month moving average, unless noted otherwise)

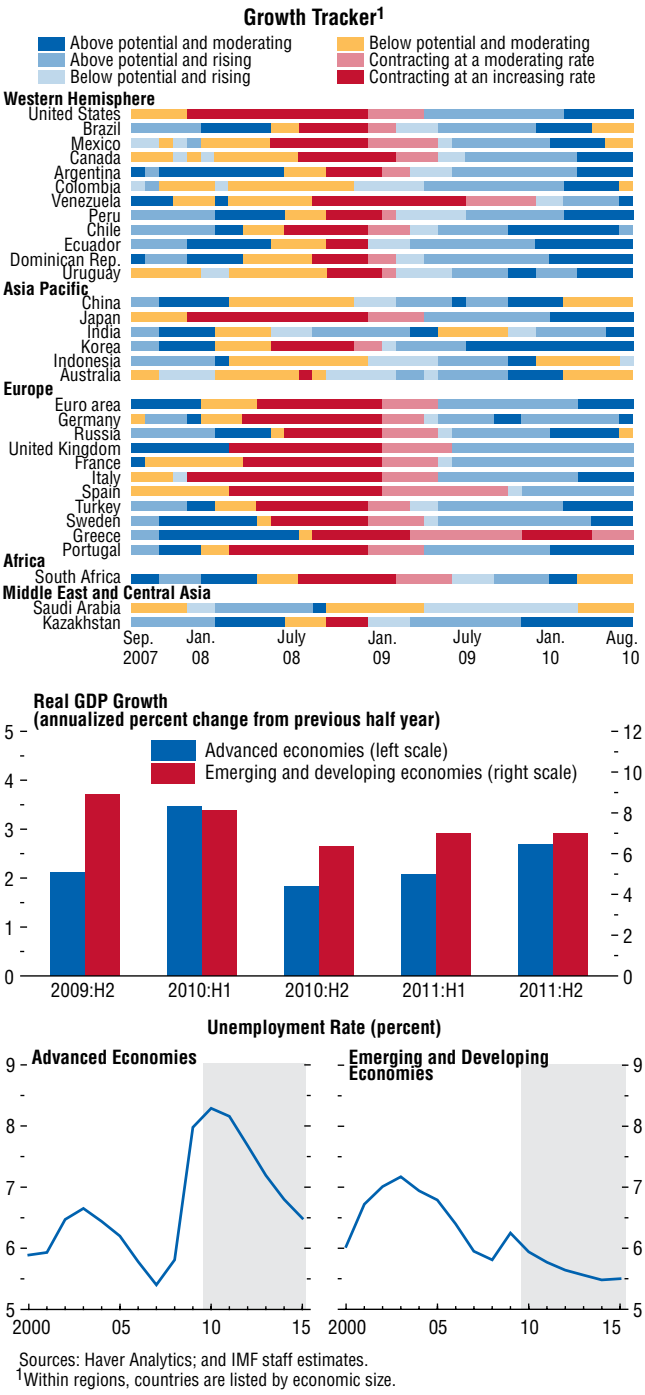
The euro depreciated significantly during May–June 2010, while the currencies of China, Japan, and the United States appreciated. More generally, the currencies of many emerging economies appreciated noticeably from troughs recorded during the crisis. Many emerging economies, notably in Asia, are building up international reserves. This slows the rebalancing of global demand.



Sources: IMF, *International Financial Statistics;* and IMF staff calculations.
[1]Bahrain, Djibouti, Egypt, Islamic Republic of Iran, Jordan, Kuwait, Lebanon, Libya, Oman, Qatar, Saudi Arabia, Sudan, Syrian Arab Republic, United Arab Emirates, and Republic of Yemen.
[2]Botswana, Burkina Faso, Cameroon, Chad, Republic of Congo, Côte d'Ivoire, Equatorial Guinea, Ethiopia, Gabon, Ghana, Guinea, Kenya, Madagascar, Mali, Mauritius, Mozambique, Namibia, Niger, Nigeria, Rwanda, Senegal, South Africa, Tanzania, Uganda, and Zambia.
[3]Asia excluding China.
[4]Bulgaria, Croatia, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, and Turkey.
[5]Argentina, Brazil, Chile, Colombia, Mexico, Peru, and Venezuela.

Figure 1.8. Prospects for Near-Term Activity

Lead economic and sentiment indicators point to diminishing growth momentum in many parts of the world. However, momentum is generally expected to remain above WEO trend growth rates. Activity is forecast to slow during the second half of 2010 and then to re-accelerate, reflecting diminishing policy stimulus but growing private sector demand. This change in momentum is apparent in most countries. Unemployment is expected to stay high for some time in many advanced economies.



Sources: Haver Analytics; and IMF staff estimates.
[1]Within regions, countries are listed by economic size.

siderably below precrisis levels, reflecting the adverse impact of uncertainty and financial conditions on purchases of "postponable" items—consumer durables and investment goods (see Figure 1.9). Although part of the output loss may be permanent, the remainder is likely to disappear gradually with improved financial conditions and decreased uncertainty. Investment in machinery and equipment is already showing strength in a number of advanced economies. In addition, deleveraging by nonfinancial firms is already further along than deleveraging by households (Figure 1.10), which reflects a smaller buildup of debt during the previous decade and the strong recovery of profitability and cash flow. This is especially true in the United States, where companies slashed investment and payrolls early in the recession. Strong production through July will likely continue to propel investment while inventory building decelerates.

The latest turbulence has interrupted, but not derailed, the upturn in the credit cycle. Credit growth is rising again in many emerging economies, with the exception of crisis-hit countries in eastern Europe (see Figure 1.5). In key advanced economies, surveys suggest that bank lending has ceased to tighten (see Figure 1.4). Setbacks in the euro area have turned out to be smaller than feared during the market turmoil of the spring, and U.S. banks loosened lending standards during the second quarter. Regulatory changes designed to strengthen capital bases and discourage excessive risk taking are not expected to have major negative effects on lending in the near term.

Commodity prices have stabilized after an initial rally. Fluctuating in a $75 to $80 range, crude oil prices are higher than usual at this stage of a recovery. The same holds for other commodities, notably metals. This is a lingering effect of tight markets before the crisis. However, there is currently plenty of spare capacity in the extractive industries, likely enough to meet demand through 2011 (Appendix 1.1). Consistent with this view, forward markets see broadly unchanged prices for oil and many other commodities over the near term.

Forces holding back a near-term recovery

Although financial market confidence has been returning, the October 2010 GFSR underscores

that high volatility and, notably, sovereign risk, bank funding, and unfinished regulatory reform remain causes for concern. Additional forces weighing on the recovery include weakness in real estate markets, diminishing fiscal stimulus, and high unemployment.

High uncertainty in financial markets

Absent strong, credible, medium-term fiscal consolidation plans, sovereign debt markets continue to pose risks to the recovery. Sovereign debt maturing in vulnerable euro area countries during the remainder of this year and 2011 is large (see Figure 1.6). In refinancing this debt, these countries will face stiff competition, given the large funding needs of other advanced economies. Any renewed turbulence in sovereign debt markets could trigger an adverse feedback loop between sovereign debt markets and the financial sector, inflicting major damage on the recovery.

Banks also face a "wall" of maturing debt, which presents important risks for the normalization of credit conditions. There has been little progress in lengthening the maturity of their funding and, as a result, over $4 trillion in debt is due to be refinanced in the next 24 months. Funding problems could easily arise for specific institutions, prompted by renewed stress in sovereign debt markets, further weakness in real estate markets, or downside surprises to economic activity. Because of complex linkages within and across borders, these problems could quickly become more widespread.

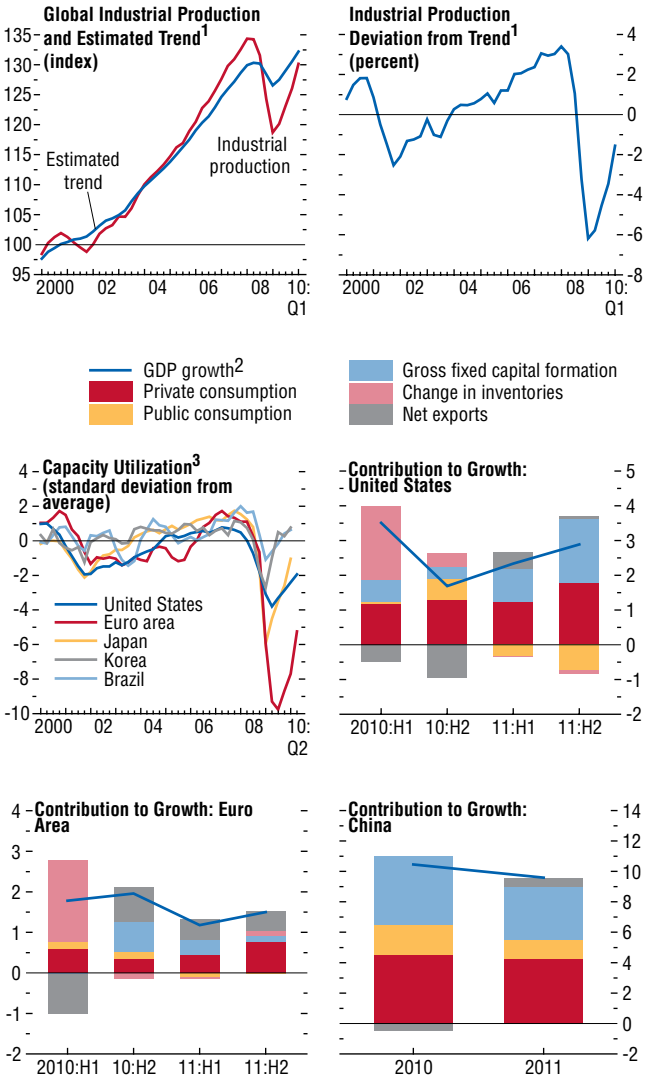
Continued regulatory uncertainty or ill-conceived regulatory action regarding the financial sector could undercut the nascent recovery of credit. Many prudential policy challenges remain to be addressed, and taxation of financial activity may increase—measures that might make the financial system safer and less costly for taxpayers over the long term, but which could weigh down output more than markets expect during the short term.

No upside from real estate

Real estate market quagmires could further undercut household and bank balance sheets. The drop in residential investment has been exceptionally steep

Figure 1.9. Recovery Dynamics

During the crisis, industrial production fell much more sharply than suggested by the trend relationship between output and GDP. This reflects a sharp drop in purchases of "postponable" items. Industrial production will continue to catch up with GDP, but at a diminishing rate. The inventory-driven rebound is largely over; as capacity utilization rates climb, investment should expand further, making a growing contribution to output growth.

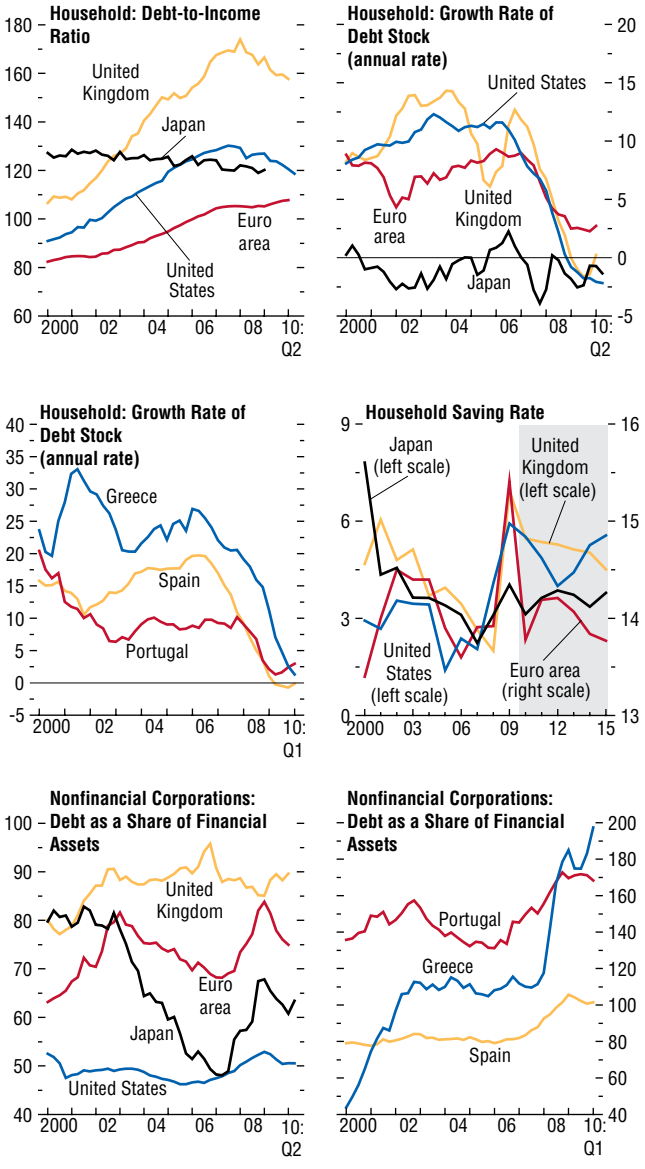


Sources: Haver Analytics; and IMF staff estimates.
[1]Trend estimated using a cointegrating relationship with global GDP.
[2]Annualized percent change over previous half year for the United States and Euro area, and percent change for China.
[3]Data standardized using averages and standard deviations taken from the 10 years before the crisis.

Figure 1.10. Balance Sheets and Saving Rates

(Percent)

Household debt ceased to grow during 2009 in the United States and the United Kingdom. In the euro area, debt continued to grow through 2009, mainly outside Germany. In some vulnerable economies a sharp cut in borrowing is now under way. Deleveraging by nonfinancial firms is already further along than deleveraging by households, except in some vulnerable economies.



Sources: Haver Analytics; and IMF staff estimates.

compared with past recessions. Nonetheless, in many parts of the world real estate prices are still high compared with standard valuation indicators (Box 1.2). In the United States, there remains a large overhang of unsold properties with "underwater" mortgages.[1] Depressed transactions keep inventories high, putting greater downward pressure on prices. In many parts of the world, over the near term real estate will remain a drag on growth, as well as a continued risk to the stability of lending institutions.

Deleveraging by households

Households continue to save more than before the crisis as they repair their balance sheets, although saving rates are on course to moderate soon (see Figure 1.10). Household debt ceased to grow during 2009 in the United States and the United Kingdom. While this has brought about a noticeable decline in ratios of debt to income and debt to financial assets, these ratios remain well above the levels of a decade ago. In the euro area, where the precrisis expansion had been rapid in some economies, debt continued to grow throughout 2009, except in Germany. However, a sharp cut in household borrowing is now under way, and judging from debt ratios, corrections may have some way to go, especially, but not exclusively, in the vulnerable euro area countries. Even so, deleveraging may not require significant additional hikes in household saving rates—WEO projections include no further increases.

Slowing inventory accumulation

In the United States and several advanced Asian economies, inventory rebuilding has been in high gear and is not expected to accelerate further. In the euro area and Japan, inventory drawdowns were more limited during the downturn, possibly reflecting labor hoarding that kept production up. In these economies, too, inventory rebuilding is unlikely to accelerate. Therefore, inventories will turn from being a supportive to a neutral factor in the recovery.

[1] "Underwater" mortgages are loans that exceed the market value of the property. See Box 1.3 of the October 2010 GFSR for a discussion of downside risks to U.S. real estate markets.

Box 1.1. Does Slow Growth in Advanced Economies Necessarily Imply Slow Growth in Emerging Economies?

The world economy has only recently begun to emerge from the deepest recession since World War II. In advanced economies, recovery is predicted to be unusually sluggish compared with recovery following previous recessions, with households and financial institutions seeking to repair balance sheets, credit growth constrained, and persistent demand and employment uncertainty.

What are the prospects for emerging economies? It has long been assumed that the fortunes of emerging economies follow those of advanced economies—when the United States sneezes, it has been said, the rest of the world catches cold. This view would imply that emerging economies are now likely to experience a period of below-average growth.

But is this assumption correct? This box reviews the growth of emerging economies in the aftermath of previous advanced economy recessions. A striking fact becomes clear: emerging economies have performed better after more recent advanced economy recessions than after those in the 1970s and 1980s. This fact holds across different measures of performance. However, emerging economies have also become more highly correlated with advanced economies over time. One explanation that might reconcile these dichotomous trends is improved domestic policies in emerging economies that have increased their resilience to shocks, even while greater integration has made them more correlated with advanced economy business cycles.

The analysis examines four recessions in advanced economies: 1974–75, 1980–83, 1991–93, and 2001. These dates are closely aligned with U.S. recessions identified by the National Bureau of Economic Research (NBER).[1] All were significant downturns at a global level, with the majority of advanced economies experiencing outright recession during the first three episodes.[2]

Tracking emerging economy performance in the wake of major advanced economy recessions requires clear metrics. Real GDP is an obvious measure of macroeconomic performance, but relative to what? One reference point is the economy's own growth rate before the crisis—that is, was the economy able to bounce back with above-average growth in the immediate aftermath of the recession, or did it experience a period of below-average growth? This can be measured by calculating the difference between the economy's average growth rate in the three years after the recession and its average growth rate three years before that recession. These measures are termed "growth differences." Another approach is to gauge how much output was lost as a result of the shock, which is estimated by calculating for each economy the difference between the level of output three years after the recession and the level of output implied by extrapolating a trend based on the seven years of output growth leading in to the recession. These measures are termed "level differences." A third metric is the state of the world economy in the aftermath of the recession—that is, how well did each economy cope with the shock relative to the rest of the world? This involves calculating the difference between the average growth rate during the three years after the recession for a given emerging economy and the average advanced economy growth rates over the same period (weighted by purchasing power parity). These measures are termed "relative growth differences."[3]

These measures are used to examine real GDP data for emerging economies during the aftermath of the four advanced economy recessions considered here. An intriguing pattern emerges: the perfor-

The authors of this box are Jörg Decressin, Alasdair Scott, and Petia Topalova.

[1]The NBER identified separate recessions in 1980 and 1981–1982, but these are collapsed here into a single episode.

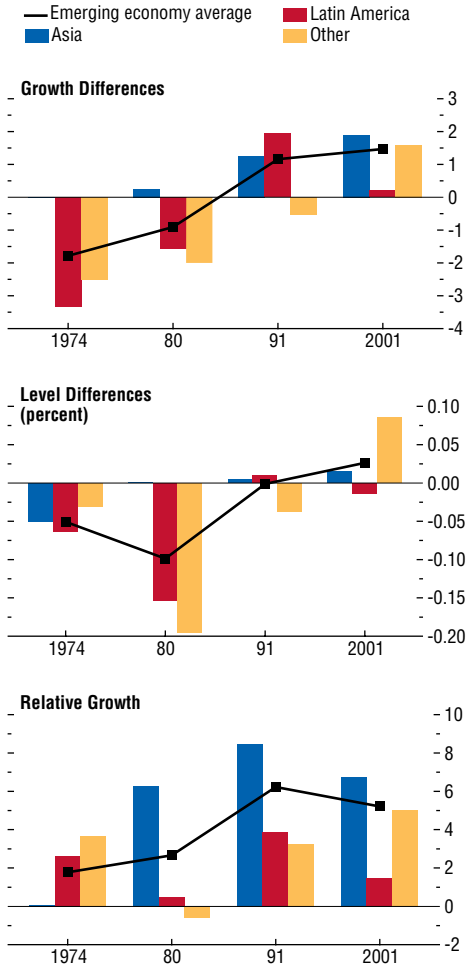
[2]For this reason, we extend the period of the 1991 recession to include 1992 and 1993, during which time many advanced economies were in recession.

[3]The emerging economies are grouped as follows: Asia (China, Hong Kong SAR, India, Indonesia, Korea, Malaysia, Philippines, Singapore, Taiwan Province of China, Thailand); Latin America (Brazil, Chile, Colombia, Mexico, Peru); Others (Czech Republic, Egypt, Hungary, Israel, Morocco, Poland, Russia, Saudi Arabia, South Africa, Turkey). Advanced economies are Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Japan, Luxembourg, Netherlands, New Zealand, Norway, Portugal, Spain, Sweden, Switzerland, United Kingdom, and United States. The

Box 1.1 *(continued)*

Emerging Economies' Performance after Advanced Economy Recessions

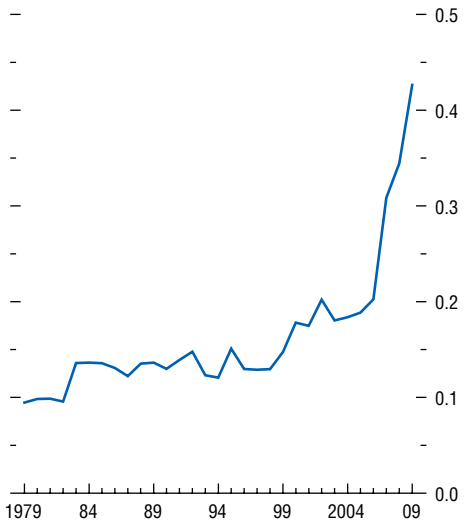
(Percentage points, unless noted otherwise)



Source: IMF staff calculations.

Correlation of Advanced and Emerging Economy Detrended Output

(Rolling correlations, 20-year window, window-end years on x-axis)



Source: IMF staff calculations.

mance of emerging economies has improved after each subsequent advanced economy recession (first figure). For emerging economies as a whole, growth three years after the recessions of 1991–93 and 2001 exceeded growth three years before. In terms of levels of output, emerging economies actually experienced output *gains* relative to their precrisis trends after the 2001 recession. And there was stronger growth in these economies than in advanced economies in the aftermath of the recessions. By contrast, the growth performance of emerging economies was poor after the earlier recessions of 1974–75 and 1980–83, with a substantial implied output loss. In these cases, emerging economies caught pneumonia when advanced economies caught cold. But such vulnerability is much less apparent in recent years.

One argument is that emerging economies have performed better because they have "decoupled."[4] However, many studies point to increasing integra-

set of advanced economies is based on the World Economic Outlook database industrial countries classification as of 1990. The set of emerging economies follows *The Economist* magazine grouping, with the addition of Argentina and Venezuela. Note that some economies that are currently classified as advanced were emerging during the earlier years under study here and are, for comparability, retained in the set of emerging economies (Hong Kong SAR, Korea, Taiwan Province of China). Each group is aggregated using purchasing-power-parity weights.

[4]This view was prominently articulated by Goldman Sachs in the early 2000s.

tion of emerging economies into global trade and capital markets, which seems to contradict the decoupling hypothesis. And a shared theme in the economic histories of many emerging economies is a move away from highly directed, domestically oriented economies and toward increased market liberalization and openness to foreign competition in goods and capital. This pattern is supported by a simple calculation of rolling correlations between the detrended aggregate output of advanced and emerging economies (second figure).[5] These correlations steadily increased over time, accelerating in recent years—if anything, emerging economies are more "coupled" than ever with advanced economies.

How can we reconcile that emerging economies seem to be more dependent on advanced economies but have managed nonetheless to be less affected by their recessions? One possibility is that improved macroeconomic management may have helped insulate emerging economies from the worst effects of recent advanced economy recessions. Empirical evidence suggests that economies with weaker external balances were particularly vulnerable to the recent crisis, and that economies that were particularly dependent on bank lending instead of foreign investment were susceptible to rapid capital outflows.[6] Similarly, analysis of the four episodes considered here shows that the current account balance at the onset of the advanced economy recession is a significant indicator of subsequent performance. Narrative evidence suggests that emerging economies are now more flexible and, as such, have been more resilient to foreign shocks. For example, flexible exchange rates helped to preserve competitiveness and allow trade to bounce back quickly following the downturn in the early 2000s, and capital inflows have been much less affected in recent episodes.

It could also be that the apparent pattern of improved emerging economy performance over time has more to do with the very different shocks that generated the advanced economy recessions than any underlying trend toward greater resilience. Unfortunately, from a statistical point of view, there are too few recession episodes to be able to rigorously test competing explanations such as this. But there are good reasons to think that emerging economies' strong performance may persist.

[5]As is common, the series is detrended using a Hodrick-Prescott (H-P) filter. The filter passes through the variation in the series at business cycle frequencies (and higher) and removes low frequencies (that is, very gradual shifts in underlying trends).

[6]See Milesi-Ferretti and Tille (2010); Berkman and others (2009); Blanchard, Faruqee, and Das (2010); and Claessens and others (2010).

Shifting policy support

While monetary policy will remain accommodative, with increasing effectiveness as financial markets heal, fiscal policy will soon become less stimulative. At the same time, the mix of macroeconomic policies across countries will provide only limited support to global demand rebalancing.

Easy monetary conditions

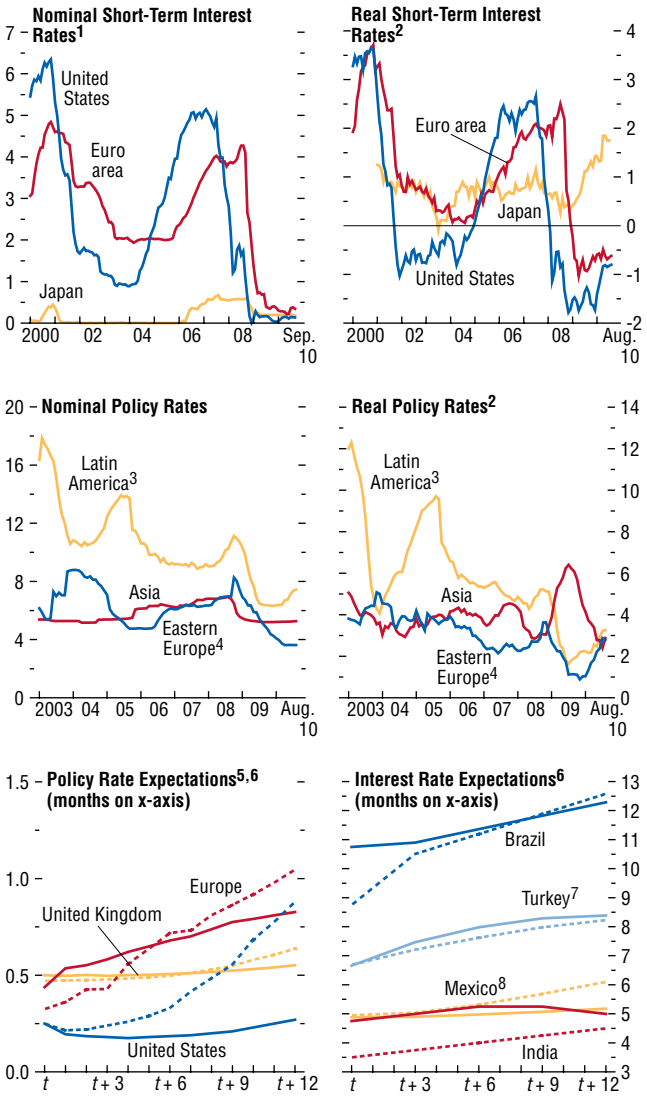
Monetary policy remains appropriately supportive in most economies, and markets are expecting a very gradual return to more normal interest rates (Figure 1.11).

- In advanced economies, the central banks of Australia, Canada, Israel, Korea, New Zealand, Norway, and Sweden have recently raised policy interest rates. However, rates in these economies remain very low by historical standards, except where recovery is already more entrenched. The Federal Reserve, Bank of Japan, ECB, and Bank of England have kept the main policy rate near the zero bound, with the Federal Reserve indicating that conditions likely warrant exceptionally low interest rates for an extended period. The market response to concerns about the sustainability and pace of recovery has been a sharp decline in longer-term government yields. As financial institutions and markets heal, low interest rates should exert stronger stimulus.
- A number of emerging economies have effected monetary tightening, with rate hikes (for exam-

Figure 1.11. Measures of Monetary Policy and Liquidity in Selected Advanced Economies

(Percent, unless noted otherwise)

Monetary policy remains appropriately supportive. Amid rising uncertainty about future prospects, expectations for further rate hikes have been pushed further into the future, mainly in advanced economies.



Sources: Bloomberg Financial Markets; Eurostat; Haver Analytics; and IMF staff calculations.

[1]Three-month treasury bill.

[2]Relative to core inflation.

[3]Argentina, Brazil, Chile, Colombia, Mexico, and Peru.

[4]Bulgaria, Estonia, Hungary, Latvia, Lithuania, and Poland.

[5]Expectations are based on the federal funds rate for the United States, the sterling overnight interbank average rate for the United Kingdom, and the euro interbank offered forward rates for Europe; updated September 23, 2010.

[6]Updated September 23, 2010. Dashed lines are as of April 12, 2010.

[7]Average bid-ask spread of the Turkish lira reference interest rate as of September 23, 2010. Some periods are linearly interpolated.

[8]Based on futures of 28-day interbank rates.

ple, Brazil, India, Malaysia, Peru), increased cash reserve requirements (for example, China, India, Turkey), or direct limits on credit growth (for example, China). The tightening is expected to proceed at a gradual pace, as inflation is generally projected to be contained. The more pressing concern in a few economies is high credit growth for real estate purchases. In various Asian economies, the authorities have successfully intervened to slow such credit growth with prudential regulations. In some economies in emerging Europe, by contrast, central banks have cut rates in response to diminishing price pressures and growing uncertainty in western Europe (for example, Hungary, Romania, Russia).

Central banks had employed unconventional support measures during the crisis to help stabilize banks and markets. Some of these—such as the provision of a large quantity of excess reserves to the banking system—were designed to effect a general easing of credit when short-term interest rates were at the zero floor ("quantitative easing"). Others—such as the purchase of nontraditional financial assets—were designed to foster confidence and liquidity in specific markets that had broken down ("qualitative easing"). Central banks have appropriately terminated many of their unconventional support programs, but there have also been reversals:

- The Federal Reserve has rightly wound down most of its emergency facilities (for example, the Term Asset-Backed Securities Loan Facility expired June 30, 2010) and has also ended an asset purchase program. However, it recently decided to reinvest principal payments on its portfolio of government-sponsored-enterprise (GSE) debt and mortgage-backed securities into longer-term Treasury bills. Although the quantitative impact of this measure is limited, it signals the Federal Reserve's resolve to maintain supportive monetary conditions for an extended period.
- Renewed financial turmoil led the ECB to step into government bond markets with its SMP.[2]

[2]Unlike the purchases of government bonds by the Bank of England, which ended some time ago, the stated objective of the

Purchases under this program, which have reached about €60 billion, helped lower volatility and have now been pared back in response to stabilizing conditions. The ECB has stopped its program of making limited purchases of covered bonds as well as its 12-month long-term refinancing operation. However, many banks remain highly dependent on ECB financing facilities, and moving away from fixed-rate, full-allotment operations and tightening collateral requirements would be risky. This underscores the need to make rapid progress with recapitalization at the national level.

- The Bank of Japan terminated its limited commercial paper and corporate bond purchasing program and expanded a fund-supplying facility aimed at reducing term premiums. However, with the appreciation of the yen and declining equity prices, financial conditions have tightened and deflation remains a threat. Further monetary easing may thus be needed.
- The Bank of England halted its program of reserve-financed government bond purchases in February 2010. This was appropriate, given normalization in many parts of the financial sector, low long-term interest rates on government paper, and continued above-target inflation (due to price-level shocks).[3]
- Other central banks, such as the Reserve Bank of Australia, the Bank of Canada, the Swedish Riksbank, and those in emerging economies, have largely unwound liquidity support measures as their financial markets have healed and their economies have recovered robustly. In fact, a number of emerging economies have tightened prudential policies and practices in response to an upsurge in capital inflows or rapid credit growth.
- Given the sizable U.S. dollar funding needs of many commercial banks outside the United States, the Federal Reserve and the central banks of Canada, the euro area, Japan, Switzerland, and the United Kingdom recently revived their dollar swap facilities as dollar funding strains emerged during the May–June financial turmoil.

Sales of assets, tightening of collateral requirements, or the phasing out of other support for funding should be a gradual process, because market volatility remains high, banks remain vulnerable, various wholesale markets are in disrepair, and many real-estate-related markets are weak.[4] In the meantime, central banks can absorb liquidity in a variety of ways should upside risks to inflation emerge.[5]

Fiscal consolidation

Fiscal policy will tighten during 2011 (Figure 1.12). In advanced economies, fiscal balances fell (that is, deficits increased) by about 5 percent of GDP in 2009, following a 2½ percent fall in 2008. In structural, or cyclically adjusted terms, the decline was about 2½ percent in 2009—the remaining 2½ percent resulted from the automatic effects of the recession on tax revenues and social spending. The balances are now forecast to increase by about ¾ percent in 2010 and a further 1¼ percent of GDP in 2011. This reflects revenue gains and expenditure reductions associated with the recovery and a continued discretionary loosening in 2010—by about ¼ percent of GDP—followed by a 1 percent tightening in 2011.[6] In emerging economies, fiscal balances are forecast to increase by ¾ percent of GDP in 2010 and by a further ¾ percent in 2011, following a loosening of almost 4½ percent of GDP in 2009.

The fiscal policy change will likely prove contractionary for most economies in 2011, although the extent is difficult to determine. Chapter 3 presents an econometric analysis of past consolidation efforts in advanced economies, which reveals that

ECB's intervention is not to lower long-term interest rates but to counter excessive volatility in order to ensure proper functioning of monetary transmission.

[3]Modest purchases of private sector assets have continued but are financed by the issuance of treasury bills or as part of cash management operations.

[4]None of the major central banks have discussed a timetable for selling securities.

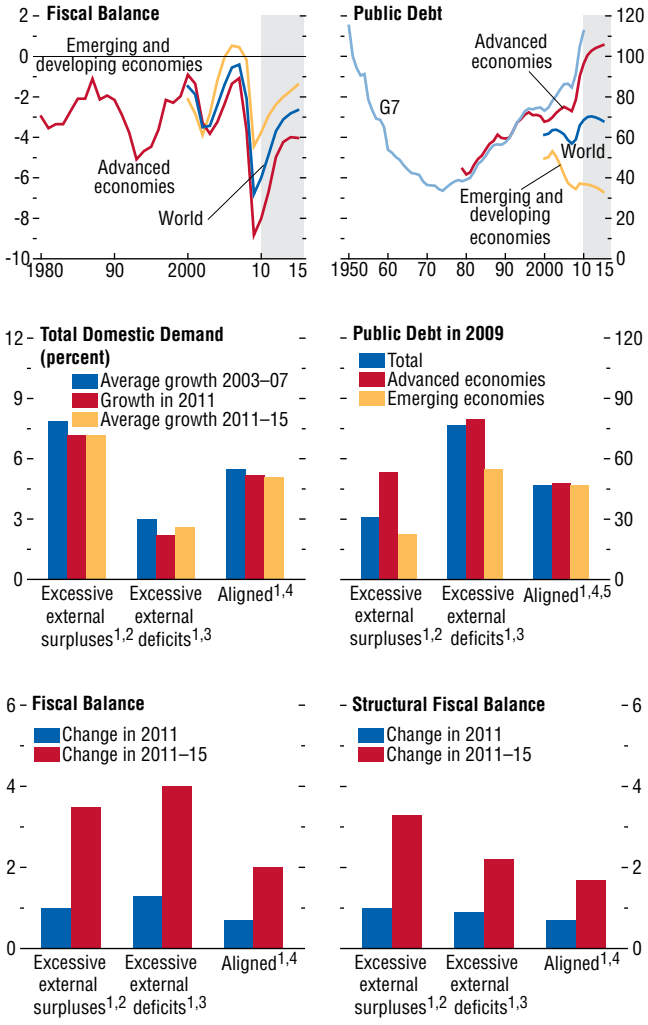
[5]The Federal Reserve recently deployed a Term Deposit Facility and tested reverse repurchase operations to absorb liquidity, if necessary.

[6]This represents consolidation of ¼ percent of GDP more than forecast in the April 2010 *World Economic Outlook* for 2010–11, with about 1 percent of GDP additional tightening in the euro area and ½ percent of GDP less tightening in the United States.

Figure 1.12. General Government Fiscal Balances and Public Debt

(Percent of GDP, unless noted otherwise)

Fiscal policy will become contractionary in 2011, following significant expansion mostly during 2009. Nonetheless, public debt ratios are projected to continue to rise, unless further action is taken. Although fiscal and household consolidation can be expected to lower demand in advanced economies, domestic demand in key emerging economies is not projected to compensate for this. Similarly, the change in fiscal policies in emerging and advanced economies with low debt and external surpluses is not expected to differ much from policy elsewhere.



Source: IMF staff calculations.
[1]Based on the IMF staff's Consultative Group on Exchange Rate Issues (CGER). CGER countries include Argentina, Australia, Brazil, Canada, Chile, China, Colombia, Czech Republic, euro area, Hungary, India, Indonesia, Israel, Japan, Korea, Malaysia, Mexico, Pakistan, Poland, Russia, South Africa, Sweden, Switzerland, Thailand, Turkey, United Kingdom, and United States. For a detailed discussion of the methodology for the calculation of exchange rates' over- or undervaluation, see Lee and others (2008).
[2]These economies account for 19.4 percent of global GDP.
[3]These economies account for 21.6 percent of global GDP.
[4]These economies account for 44.0 percent of global GDP.
[5]Excludes Japan.

fiscal tightening by 1 percent of GDP has typically caused a 1 percent decline in domestic demand after two years—about half the effect on real GDP usually being offset by higher net exports. Past experience may tell little about the likely impact of consolidation under present circumstances, but several considerations point to contractionary effects over the short term, especially in the major advanced economies. The introduction of credible, growth-friendly, medium-term fiscal consolidation plans would have beneficial effects on investment, but such plans are generally not on offer. Also, with many countries poised to adjust at the same time, the export channel will be muted. Furthermore, because markets already expect policy rates in the large advanced economies to remain near zero during the coming year, conventional monetary policy can offer only limited short-term help when demand weakens, unlike during some past consolidation episodes. Relatively little is known about the effectiveness of unconventional monetary easing measures under fiscal tightening.

The forecast for 2010–11

Overall, the recovery is expected to continue broadly in line with earlier forecasts. With negative and positive factors broadly canceling each other out over the next couple of years, WEO projections for 2010 and 2011 foresee little change in global growth. World GDP is forecast to expand by 4.8 percent in 2010 and by 4.2 percent in 2011 (Table 1.1; Figure 1.13). The forecast assumes that the downside risks identified do not materialize: high uncertainty would weigh on private demand but would not forestall a continued recovery of investment, employment, and household consumption. This largely makes up for the diminishing fiscal stimulus, which starts in the second half of 2010.

The stable annual growth rates mask a temporary slowdown in activity. In advanced economies, where GDP growth is estimated at 3½ percent for the first half of 2010, projected growth in the second half is 1¾ percent. Then, in response to expansionary factors, growth rises above 2½ percent during the course of 2011 (see Figure 1.8). These are low growth rates, considering the depth of the recession and the amount of excess capacity, and this means

a very slow decline in high unemployment rates. In emerging and developing economies, generally healthy growth also slows in the second half of 2010, to about 6¼ percent.

Inflation is projected in general to stay low amid continued excess capacity and high unemployment (Figure 1.14). The recovery of commodity prices, however, has raised the level of consumer prices during 2010. Thus, in advanced economies, headline inflation has been running about 1¾ percent for many months but has lately begun to slow to under 1½ percent. Core inflation has been much lower, recently falling below 1 percent. In emerging economies, headline and core rates are about 5¾ percent and 3 percent, respectively. With market indicators suggesting that commodity prices should remain stable and with downward pressure on wages gradually diminishing, headline and core inflation in advanced economies should converge to about 1¼ percent in 2011 and in emerging and developing economies to about 5 percent. Among some major emerging economies, capacity constraints are beginning to boost prices: Brazil, for example, has experienced gradual increases in inflation pressure, while India has seen a sharp rise in inflation.

Risks to activity are mainly to the downside

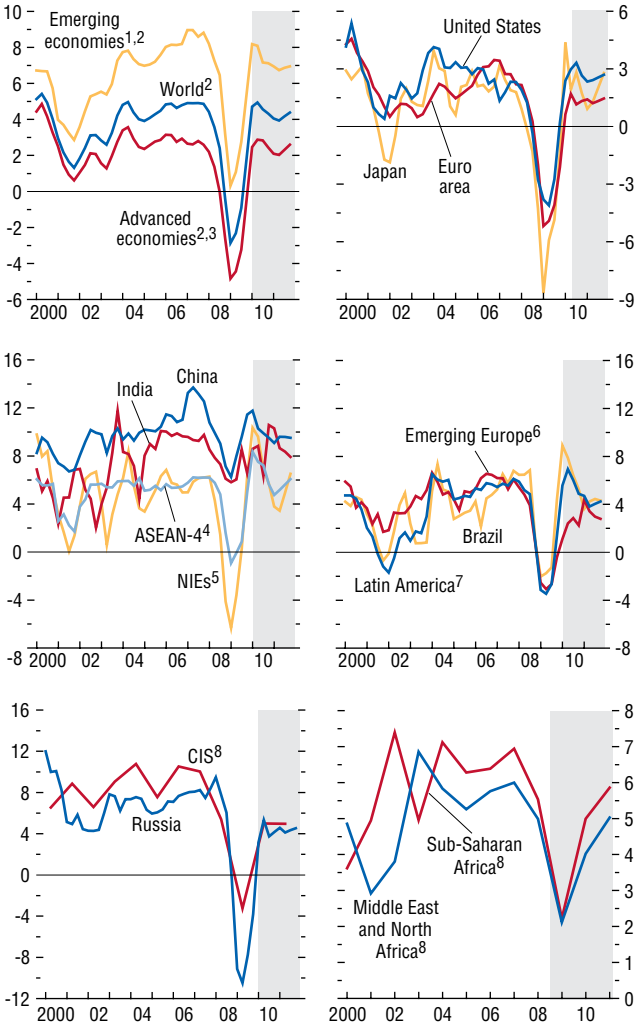
Risks to the growth projections are mainly to the downside. Financial and macroeconomic conditions are likely to remain unsettled for as long as fundamental economic weaknesses persist and the required reforms remain a work in progress. Major risks have already been discussed. Key is that room for policy maneuver in advanced economies has fallen. Refinancing requirements during the last quarter of 2010 and during 2011 will be large. For example, among the major advanced economies, Japan will need to issue a gross volume of government bills and bonds with a value that exceeds 40 percent of GDP; in France, Italy, and the United States, the value exceeds 20 percent of GDP (see Figure 1.6). With such high volume passing through markets, small disturbances may propagate rapidly across sovereign debt markets, prompting changes in investor confidence and stalling the recovery.

In addition, the financial sector remains very fragile. Banks face major funding requirements

Figure 1.13. Global Outlook

(Real GDP; quarterly percent change from one year earlier, unless noted otherwise)

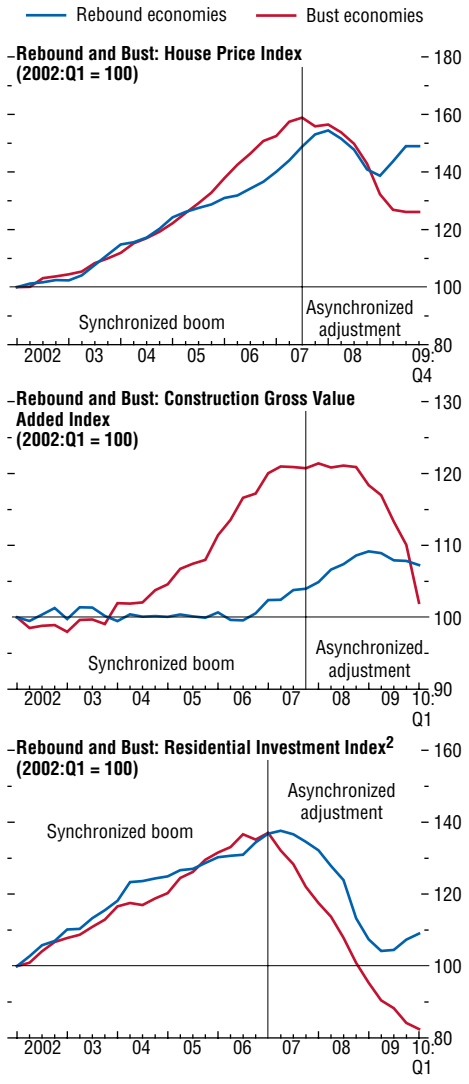
With negative and positive factors broadly canceling each other out over the next couple of years, WEO projections for 2010 and 2011 foresee little change in global growth. In advanced economies, growth rates are forecast to remain low, considering the depth of the recession and the amount of excess capacity. In emerging economies, growth is projected to be robust, compared with the experience following past global recessions, except in a number of economies in emerging Europe and the Commonwealth of Independent States.



Sources: Haver Analytics; and World Economic Outlook database.
[1]Comprises China, India, Russia, South Africa, Turkey, and economies listed in footnotes 4, 6, and 7.
[2]Includes only economies that report quarterly data.
[3]Australia, Canada, Czech Republic, Denmark, euro area, Hong Kong SAR, Israel, Japan, Korea, New Zealand, Norway, Singapore, Sweden, Switzerland, Taiwan Province of China, United Kingdom, and United States.
[4]Indonesia, Malaysia, Philippines, and Thailand.
[5]Newly industrialized Asian economies (NIEs) comprise Hong Kong SAR, Korea, Singapore, and Taiwan Province of China.
[6]Bulgaria, Estonia, Hungary, Latvia, Lithuania, and Poland.
[7]Argentina, Brazil, Chile, Colombia, Mexico, Peru, and Venezuela.
[8]Annual percent change from one year earlier.

Box 1.2. Dismal Prospects for the Real Estate Sector

Asynchronized Adjustment[1]



Sources: National sources; Organization for Economic Cooperation and Development, *Global Property Guide;* and IMF staff calculations.

[1]Rebound economies are Australia, Canada, China, Finland, Hong Kong SAR, New Zealand, Norway, Singapore, and Sweden. Bust economies are Bulgaria, Croatia, Denmark, Estonia, France, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Malta, Netherlands, Philippines, Poland, Russia, Slovak Republic, Slovenia, South Africa, Spain, United Arab Emirates, United Kingdom, and United States. House prices in Germany and Japan have been in decline for an extended period, so these countries are not included here.

[2]Residential investment data are only for advanced economies.

Real estate markets have been a source of strength during past recoveries, but this time is different. In many advanced economies, household sector deleveraging and the process of reallocating resources away from the construction sector will act as a drag on economic activity. In a few countries, these problems are serious enough to raise concerns that there will be a "double dip" in the housing market. In some economies, particularly in the Asia-Pacific region, real estate markets are rebounding, but a fear of overheating is leading to policy responses that are likely to keep these markets from providing a boost to near-term growth.

Recent Developments in Real Estate Markets

The real estate boom between 2002 and 2007 was synchronized, but the subsequent bust was not. Broadly speaking, economies fall into two clusters (first figure):[1]

- *Bust economies:* In the vast majority of economies, house prices are continuing to fall or are gradually stabilizing, which translates into a fall in both residential investment and gross value added (GVA) in the construction sector. In these economies house prices have fallen by over 10 percent a year since 2007, after rising about 8½ percent annually between 2000 and 2007. The cumulative decline in residential investment since 2007 is nearly 30 percent.
- *Rebound economies:* Several economies in the Asia-Pacific region, joined by most Scandinavian countries and Canada, are seeing a rebound in house prices and residential investment and a stabilization in construction GVA.

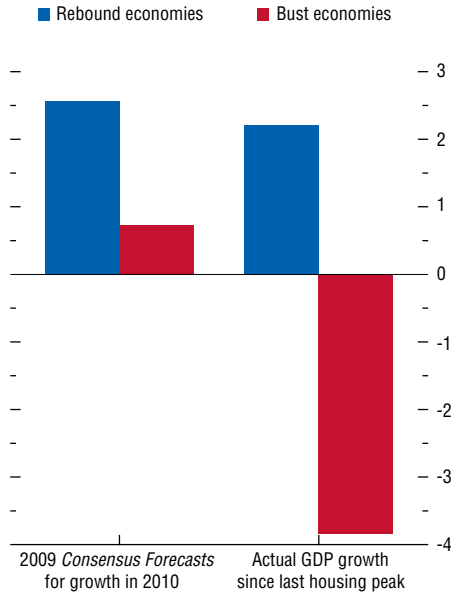
The rebound economies are those with better postcrisis growth prospects and better growth outcomes (second figure). Another factor influencing the cross-country variation in housing market outcomes since 2007 was the extent of the boom

The main authors of this box are Deniz Igan and Prakash Loungani. Philippe Bracke and Jair Rodriguez provided research assistance.

[1]A third group of economies lies in between. In this small group (composed of Austria, Belgium, Colombia, Israel, and Switzerland), house prices have increased modestly—by about 2 percent annually since 2007, compared with a 2½ percent annual increase between 2000 and 2007—and residential investment has been flat.

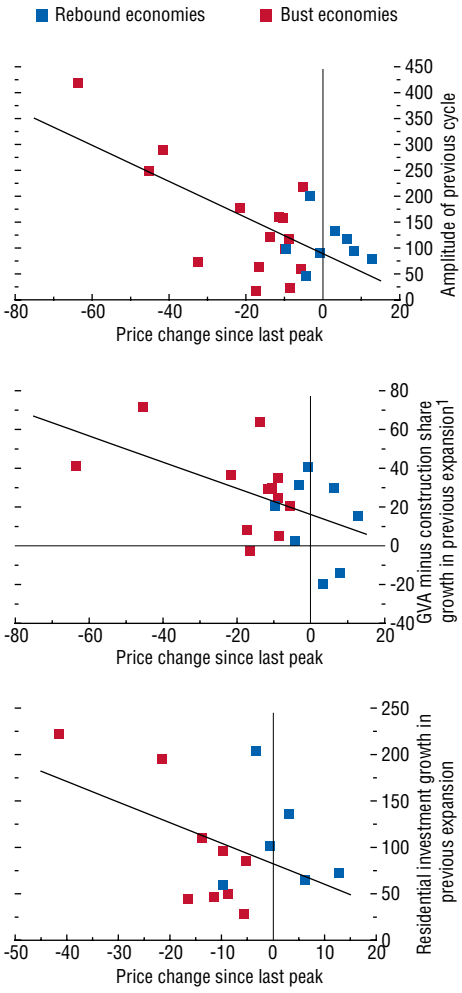
GDP Prospects and Growth: Housing Rebound versus Bust Economies

(Percent)



Sources: *Consensus Forecasts;* and IMF staff calculations.

Cross-Country Differences



Source: IMF staff calculations.
[1]GVA = gross value added.

that preceded the bust. The greater the boom, the greater the subsequent fall (third figure).[2]

Collapse of Residential Investment in Advanced Economies

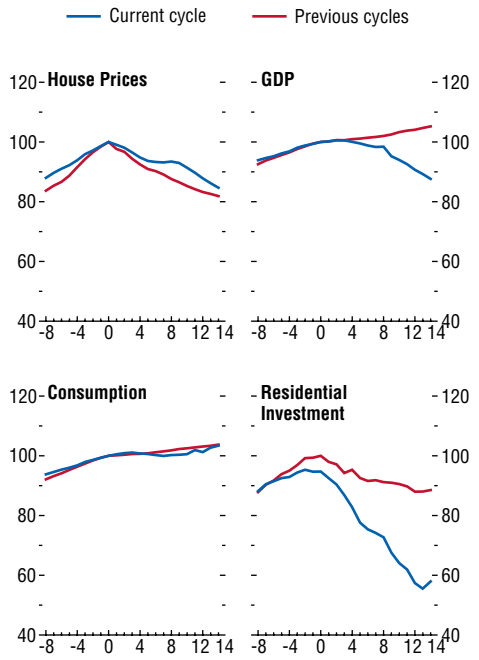
In advanced economies, a feature of the real estate cycle over the past decade that differs sharply from past cycles is enhanced access to credit. Easy monetary conditions and financial innovation gave households greater access to credit and led to a buildup in leverage. The process of deleveraging could make the macroeconomic impact of this housing bust greater than in the past. Moreover, household sector deleveraging proceeds at a much slower pace than corporate or financial sector deleveraging. This is because the largest portion of household balance sheets on both the asset and the liability side tends to be real estate, which is more difficult to sell off in a fire sale than bonds and equities. Therefore, the recovery is likely to be slower than in recessions triggered by problems related to corporate balance sheets.

For countries such as Spain and Ireland there is an additional reason to expect slow recovery. The feedback loop between credit and collateral prices created a construction boom, significantly distorting the allocation of resources. As a result, the construction sector grew disproportionately to other sectors of the economy and became the engine of growth in these economies. The share of construc-

[2]Policy interventions to support recovery in housing, long-term growth prospects, and the debt burden on households are other possible explanations for the cross-country variation in real estate market outcomes.

Box 1.2 *(continued)*

Advanced Economies: Current versus Previous Housing Cycles[1]



Sources: Haver Analytics; Organization for Economic Cooperation and Development; and IMF, *International Financial Statistics*.

[1]House price cycle peaks are dated for each country separately. All series are indexed to equal 100 at the peak date. The series shown under previous cycles is the average index value for all countries around all peaks except the most recent one.

tion in total value added stood at 12 percent in Spain and 10 percent in Ireland by the end of 2006, compared with the euro area average of just under 7 percent. The housing bust thus brought a severe contraction in construction output and employment.[3] The unemployment rate is now three times its 2000–07 average in Ireland and twice its 2000–07 average in Spain, compared with a 20 percent increase on average among euro area countries. Reallocation of labor away from construction is likely to take considerable time, which will keep unemployment rates stubbornly high (Aspachs-Bracons and Rabanal, 2009).

The fourth figure compares the paths of two major household-sector components of GDP, namely, consumption and residential investment, around house price cycle peaks during the current cycle and previous cycles. For advanced economies as a whole, after a sizable initial decline, private consumption reverts to the path evident in previous housing cycles. However, the path for residential investment is starkly different in this cycle than in the past. Residential investment does not appear likely to come back anytime soon, especially given the outlook for house prices. Historically, residential investment has been positively correlated with residential property price appreciation, with a cross-country average correlation coefficient of 0.3. If the gap between current house prices and their fundamental values based on an econometric model were to be corrected over the next five years in all advanced economies, real house prices would fall at an annual rate of between 0.5 percent and 1.5 percent on average between 2010 and 2015.[4] Hence, residential investment could remain depressed for several more years.

Double Dip in U.K. and U.S. Real Estate Markets?

Comparing current and past housing cycles in the United States reinforces these observations (fifth figure). Residential investment remains severely depressed compared with past cycles, which can at least partially be explained by the pattern in house prices and household outstanding debt. The bleak outlook for house prices slows deleveraging for the household sector as mortgages remain underwater (that is, with debt exceeding the market value of the property). The problem is compounded because, in

[3]In general, there appears to be a relationship between precrisis real estate activity levels and postcrisis economic performance: the higher the residential investment as a proportion of GDP in 2006, the larger the peak-to-trough drop in real GDP.

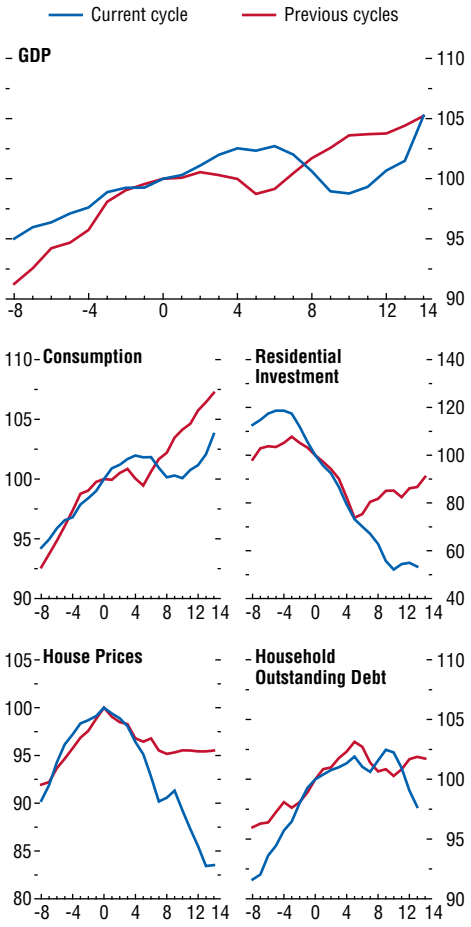
[4]It is hard to predict when the correction in real estate markets will be complete. Historically, downturns last roughly four years, suggesting that the current downturn could be over in the next two years. However, given that the duration of the latest upturn was 2.6 times that of historical upturns, the correction could last for the next eight years. The calculations in the text are based on a middle-ground assumption that the correction will be complete in five years. The econometric model posits real house price growth to be a function of (1) changes in per capita disposable income, working-age population, construction costs, and credit and equity prices; and (2) the level of short- and long-term interest rates.

this recession, U.S. states where the house price bust was more pronounced are also where unemployment has increased the most. This relationship likely reflects the importance of the construction sector in these states' economies as well as lower labor mobility resulting from problems in the housing sector.

In both the United Kingdom and the United States, tax measures temporarily increased activity, but housing demand fell and prices receded after the recent expiration of these incentives (sixth figure).[5] Although this was anticipated, the drop was larger than expected. Especially in the United States, given the limited success of mortgage modification programs and the shadow inventory from foreclosures and delinquencies, this has renewed fears of a double dip in real estate markets.[6] A lot will depend on the path of economic recovery: if employment creation remains low, risks of a double dip in housing naturally increase.

There are other threats to the fragile stabilization. First, delinquency rates on commercial-mortgage-backed securities have recently reached record highs, and considerable amounts of commercial real estate debt will come due over the next few years.[7] Second, resets on adjustable-rate loans are looming on the horizon. Refinancing options are limited, despite historically low mortgage rates, because many of these loans are underwater or have higher-than-original balances due to negative amortization and because borrowers face a depressed labor market.[8] Third, renewed strain on credit conditions may materialize from loan losses due to delinquencies, which still

United States: Current versus Previous Housing Cycles



Sources: Haver Analytics; Organization for Economic Cooperation and Development; and IMF, *International Financial Statistics*

[5]In the United Kingdom, the temporary stamp duty exemption for homes between £125,000 and £175,000 that expired in December 2009 was replaced in March 2010 by a new, two-year exemption on first home purchases up to £250,000. This renewed policy initiative partially explains the relatively better indicators in the U.K. market compared with the U.S. market. What remains worrisome, however, is that house prices are still high based on traditional valuation yardsticks, and policy support may not be enough to prevent further correction.

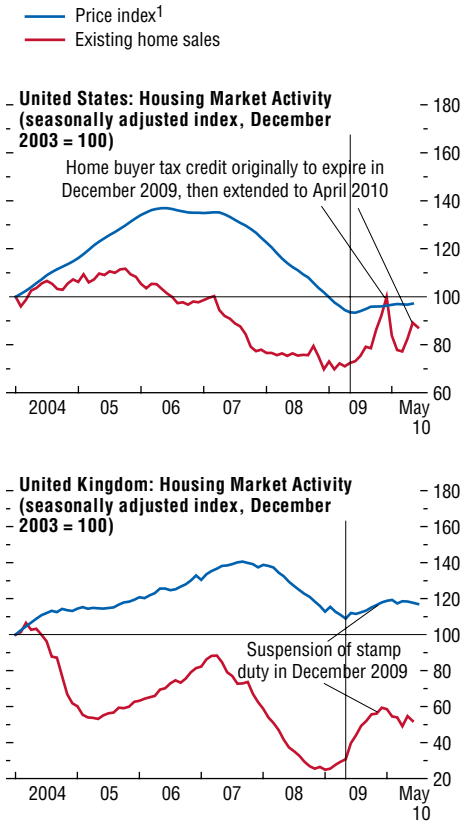
[6]In addition to the 2.3 million homes that are already in foreclosure, an estimated 3.3 million properties are at risk because they have been in default for 60 days or more. This estimate does not include modified loans, for which redefault rates reach 50 percent within a year of modification. On top of that, some of the 5 million now holding underwater mortgages may strategically default if prices do not recover. All in all, the shadow inventory of houses for sale may reach 7 million, against a historical absorption of 700,000 units a year overall in the U.S. housing market.

[7]In the United States, $566 billion in commercial real estate debt, the majority of which was provided by banks, comes due in 2010 and 2011, according to Foresight Analytics, LLC. In the United Kingdom, about £160 billion in commercial property debt will mature over the next five years.

[8]In the United States, the total balance of loans that will experience a payment shock because of interest rate adjustments is expected to peak sometime around mid-2011, reaching $18 billion, according to Amherst Securities.

Box 1.2 *(continued)*

Tax Relief to the Rescue?



Sources: Haver Analytics; Investment Property Databank; Moody's; and IMF staff calculations.
[1]Residential real estate index for the United States is the Case-Shiller index. Residential real estate index for the United Kingdom is the Halifax index.

may have not reached their peak, and higher capital and liquidity requirements in the context of new financial regulations.[9]

Another Bubble in Asia?

Several economies in the Asia-Pacific region, as well as Canada and most Scandinavian countries have experienced a rebound in real estate prices and residential investment since 2009. Will this rebound continue? In many of the economies in this group, current price-to-rent and price-to-income ratios are still above historical averages, and econometric estimates still show a deviation of house prices from fundamental values. For the Asian economies in this group (namely, China, Hong Kong SAR, and Singapore), fundamentals appear to provide more support for the observed price increases, mainly due to strong growth prospects. But the econometric estimates are less reliable for these economies because data are available for only a fairly short period. More anecdotal evidence—reports of speculative activity, rising vacancy rates in commercial property, sizable mortgage credit growth, and massive capital inflows, especially in China—suggest that these real estate markets may be overheating. In China, deviation of house prices from fundamentals is estimated to be higher in Beijing, Nanjing, Shanghai, and Shenzhen than in other cities (Ahuja and Porter, 2010).

In some cases, the rebound may be the result of policy measures put in place to help economic recovery during the crisis. For example, in China, tax incentives for home buyers and encouragement to banks to keep extending credit for real estate purchases coincided with the strong rebound in market activity. More recently, some governments in the region have taken measures to tame real estate markets. The Chinese government deployed a range of regulatory tools in the spring of 2010, including increases in transaction taxes and stricter controls on lending. The government will need to evaluate the impact of these measures over time and to fine-tune them to keep risks in check while avoiding excessive restraint on real estate investment.

To summarize, in contrast to past recoveries, there appears to be little hope for a sustained upside boost to the overall economy from the real estate sector. In economies where real estate markets are still in decline, the drag on real activity will continue. And in economies where house prices and residential investment are rebounding, concern about bubbles is eliciting policy actions that will temper any short-term boost to economic activity.

[9]It should be noted that the United States and the United Kingdom have different housing markets: arrears and repossessions are considerably lower and loan losses due to mortgage delinquencies, arguably, are closer to their peak in the United Kingdom. Last but not least, differences in supply constraints may also lead to a divergence in the probability of a double-dip real estate downturn in these two countries.

in a market that is still very risk averse. As recent experience has shown, funding troubles at individual institutions can have major macroeconomic ramifications. New capital shortfalls that require additional public financial sector support would add to the pressures on public finances, which in turn could further dampen market sentiment.

- In the euro area, as the October 2010 GFSR shows, intensifying funding strains could again stress banking systems. If unaddressed, such funding pressures could reawaken deleveraging pressures and the adverse feedback loop between the euro area banking system and the regional economy.
- In the United States, the real estate sector could well dip again, exposing pockets of vulnerability in the banking system. A stress test of the top 40 U.S. bank holding companies suggests that, under an adverse scenario where residential and commercial real estate prices fall by 6 percent and 9 percent, respectively, and real GDP growth slows to 1.2 percent in 2011, banks would require a total of $57 billion in additional capital in order to maintain a 6 percent Tier 1 common capital/risk-weighted assets ratio. Although the capital of U.S. banks thus appears broadly sufficient, substantially more capital would be needed in the absence of GSE and other government intervention.
- In Japan, a near-term disruption in the government bond market remains unlikely, but the factors currently supporting the Japanese bond market are expected to gradually erode. Also, banks' ever larger holdings of government bonds and the increasing interest rate risk arising from their extension into longer-dated maturities create a potential risk to financial stability if there were a sudden increase in government bond yields.

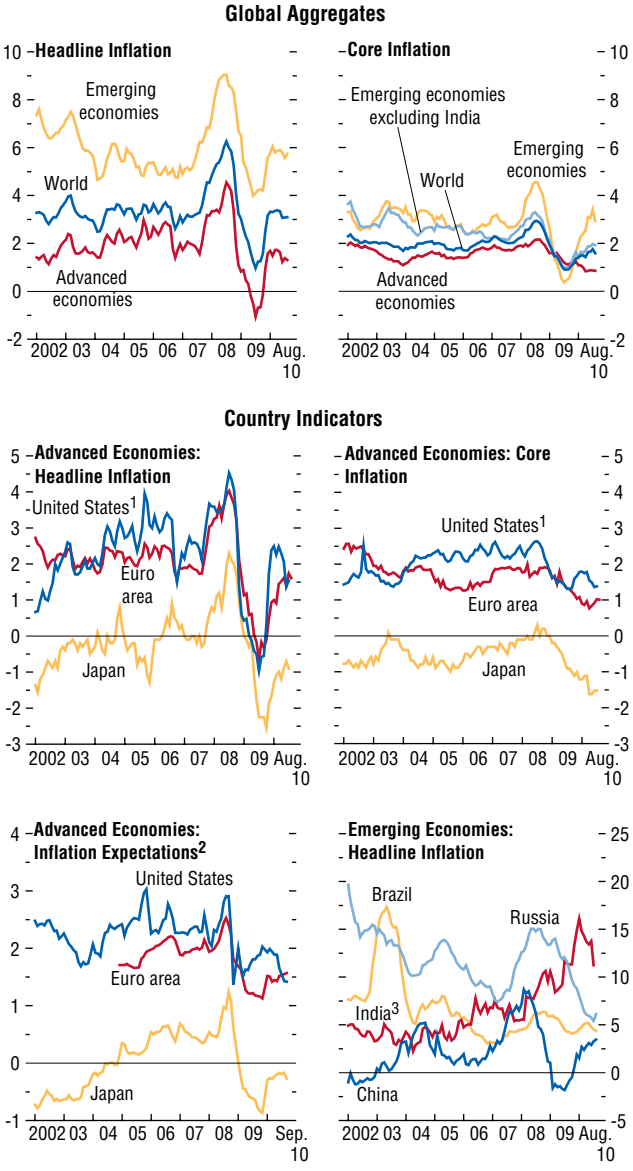
Quantitative risk indicators

The IMF staff's quantitative indicators confirm that risks to activity are still high and to the downside in 2011 (Figure 1.15). Specifically, risks as measured by the dispersion in analysts' forecasts for real GDP growth or inflation, oil price options, and the Chicago Board Options Exchange

Figure 1.14. Global Inflation

(Twelve-month change in the consumer price index, unless noted otherwise)

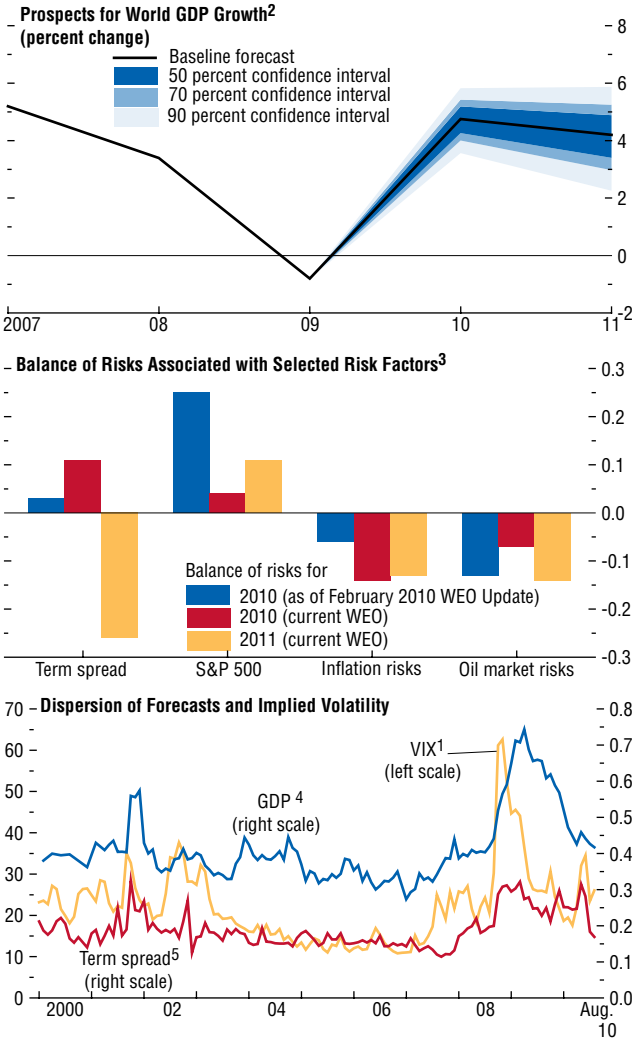
Inflation is projected to stay low amid continued excess capacity and high unemployment. The recovery of commodity prices has raised the level of consumer prices. With market indicators suggesting that commodity prices should remain stable and with downward pressure on wages gradually diminishing, headline and core inflation in advanced economies should converge to about 1¼ percent in 2011, and in emerging economies to about 5 percent. Inflation pressures are more elevated in economies that have had a history of unstable inflation or that are operating closer to capacity.



Sources: Consensus Economics; Haver Analytics; and IMF staff calculations.
[1]Personal consumption expenditure deflator.
[2]One-year-ahead *Consensus Forecasts*. The December values are the average of the surrounding November and January values.
[3]Consumer price index for industrial workers.

Figure 1.15. Risks to the Global Outlook

Risks to the growth projections are mainly to the downside. Financial and macroeconomic conditions are likely to remain unsettled for as long as the fundamental economic weaknesses persist and the required reforms remain a work in progress. The fan chart confirms that risks to activity are still high and to the downside in 2011. Risks as measured by the dispersion in analysts' forecasts for real GDP growth, oil prices, inflation, and the VIX[1] have moved up to varying degrees lately, although they remain appreciably lower than one year ago.



Sources: Bloomberg Financial Markets; Chicago Board Options Exchange; Consensus Economics; and IMF staff estimates.

[1]VIX: Chicago Board Options Exchange Market Volatility Index, a measure of the implied volatility of options on the S&P 500 index.

[2]The fan chart shows the uncertainty around the *World Economic Outlook* (WEO) central forecast with 50, 70, and 90 percent probability 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 in the April 2009 WEO for details.

[3]Bars depict the coefficient of skewness expressed in units of the underlying variables. The values for inflation risks and oil market risks are entered with the opposite sign since they represent downside risks to growth.

[4]The series measures the dispersion of GDP forecasts for the G7 economies (Canada, France, Germany, Italy, Japan, United Kingdom, United States), Brazil, China, India, and Mexico.

[5]The series measures the dispersion of term spreads implicit in interest rate forecasts for Germany, Japan, the United Kingdom, and the United States.

Market Volatility Index (VIX)[7] have moved up to varying degrees lately, although they remain appreciably lower than one year ago. Term spread data point to larger upside risks to growth in 2010 than last April, consistent with upward revisions to WEO growth projections. For 2011, the distribution of forecasts for the slope of the yield curve is tilted downward, pointing to downside risks to activity. Options prices on the S&P 500 indicate smaller upside risks from financial surprises in 2010–11 relative to last April. Options prices for futures on petroleum and other commodities suggest smaller downside risks to growth in 2010 than last April; risks for sharp increases in commodity prices are higher in the medium term, as spare capacity and inventory buffers diminish (see Appendix 1.1).

The fan chart analysis also suggests that risks for a sharp global slowdown, including a "double dip" in advanced economies, over the coming year still appear low (see Figure 1.15). Such a scenario would entail 2 percent or less real GDP growth over the coming year, with zero growth in the advanced economies and about 4 percent growth in the emerging and developing economies. According to the fan chart, the probability of global growth falling below 2 percent is less than 5 percent.

Concerns about high inflation or deflation

Inflation in advanced economies has declined by less than expected, considering the depth of the recession. For example, in the United States, the drop in core inflation from 2008 to 2010 was about 1 percent, whereas the drop during the 1981–83 recession was about 4 percent. The weaker inflation response may reflect a variety of factors, for example, more credible inflation control, intensified losses in productive capacity, and downward wage and price rigidities.

The improved credibility of monetary policy and its exceptionally strong response, together with temporarily low growth in potential output, which has kept output gaps from widening even

[7]The VIX is a popular measure of the implied volatility of options on the Standard & Poor's (S&P) 500 index.

further, may be key explanatory factors. With strong credibility, medium- to long-term inflation expectations are much more stable than the actual inflation rate—overpredicting inflation when it is below the presumed central bank target, and vice versa.

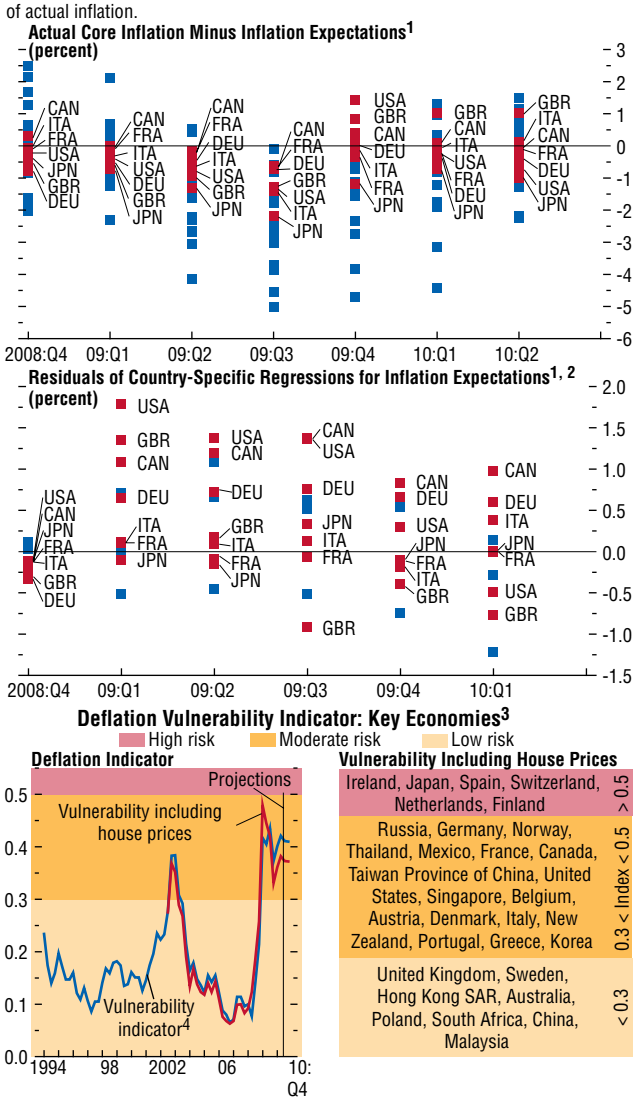
However, recent short-term forecasts from Consensus Economics have also overpredicted the actual outcomes in a large number of countries, sometimes by surprisingly large margins (Figure 1.16). Assuming that these expectations are representative of those in the broader economy, their stickiness may explain part of the stickiness of actual inflation. This raises the question of why short-term expectations have been so high in some countries.[8] Possible explanations could be "turning point" mistakes (misjudging changes in the business cycle); optimistic views about the depth of the recession; fears of high commodity prices; or concerns about growing central bank balance sheets, diminishing central bank independence, or central banks' commitment to low inflation. In fact, concerns about the potential for high inflation in advanced economies in the future have been lingering in the background. Beyond a downside skew to growth from stronger-than-anticipated monetary tightening in the fan chart (see Figure 1.15), such concerns are reflected in record high prices for gold.

These concerns appear excessive for a variety of reasons. Measures of liquidity in advanced economies, such as the growth rate of broad money, show very little dynamism, and central banks have policy tools at their disposal to control liquidity, notwithstanding large balance sheets. Also, with open capital markets, higher inflation targets would quickly feed into higher public debt service. Moreover, risks from commodity prices appear limited over the next couple of years: if, for example, oil prices were to jump unexpectedly, the fact that wages did not rise correspondingly during the 2005–07 oil price spikes is largely reassuring about the prospective behavior of inflation. For high inflation to emerge, there would have to

[8]Short-term inflation expectations have also been higher than suggested by their past relationships with various fundamental variables, such as unemployment rates, commodity prices, capacity indicators, actual inflation, and medium- to long-term inflation expectations.

Figure 1.16. Inflation, Deflation Risk, and Unemployment

Short-term *Consensus Forecasts* inflation expectations have overshot actual inflation by substantial margins. They have also been higher than indicated by past relationships with various fundamental determinants. This is surprising, as IMF staff analysis suggests that deflation rather than high inflation is the more pertinent risk. Assuming that these short-term expectations are representative of those in the broader economy, their stickiness may explain part of the stickiness of actual inflation.



Sources: Bloomberg Financial Markets; Haver Analytics; and IMF staff calculations.

[1]CAN: Canada; FRA: France; DEU: Germany; ITA: Italy; JPN: Japan; GBR: United Kingdom; USA: United States.

[2]The residuals are differences between actual one-year-ahead Consensus inflation expectations and out-of-sample forecasts of these expectations. The forecasts are obtained from regressions of one-year-ahead Consensus inflation expectations on lagged values of these expectations, Consensus expectations for unemployment rates, WEO expectations for output gaps, oil price growth rates, and long-term Consensus expectations for inflation. The regression samples typically cover 1999:Q1 to 2008:Q4. Positive residuals suggest that short-term Consensus expectations have been higher than could have been expected given their past relationship with unemployment rates, output gaps, oil prices, and long-term Consensus expectations.

[3]For details on the construction of this indicator, see Kumar and others (2003) and Decressin and Laxton (2009). The figure also features an expanded indicator, which includes house prices. Vulnerability is as of 2010:Q2.

[4]Major advanced and emerging economies.

be multiple shocks, including a sudden move to financial or trade protectionism that would undo much of the integration of markets that has taken place over recent decades. Such a scenario seems remote.

Under present circumstances, deflation is the more pertinent risk. The reason is that risks to activity are clearly to the downside: households remain saddled with appreciable debt; the financial system remains vulnerable; and expectations could gradually catch up with actual inflation, putting further downward pressure on prices and wages. Judging by the IMF staff's deflation risk indicator, deflation risks have recently risen again to a high level, although they remain below the peaks reached one year ago (see Figure 1.16). How households behave will crucially depend on how policymakers roll back large public deficits. Mistakes could cause a long period of deflation or low inflation and disappointing economic growth.[9]

Questions about Medium-Term Prospects

One year into the recovery is the right time to take stock of some medium-term developments and assess what they portend for growth prospects. These include (1) the apparent worsening of fundamentals in advanced versus emerging economies, which has been amplified by the financial crisis and will delay a robust pickup in private demand, and (2) the limited extent to which emerging economies that have external surpluses can offset lower demand in advanced economies, which indicates that demand rebalancing is stalling. Together, these developments are consistent with a subdued recovery in many parts of the world.

This stocktaking sets the stage for a discussion of some of the key challenges facing advanced and emerging economy policymakers that are discussed in the subsequent section: (1) repair and reform of financial markets, (2) medium-term fiscal consolidation, (3) monetary and exchange rate policies, and (4) policy coordination.

[9]The underlying scenario analysis can be found in Chapter 1 of the April 2010 *World Economic Outlook.*

Deteriorating growth prospects in advanced versus emerging economies

The latest crisis comes on top of an ongoing decline in advanced versus emerging economy growth rates. In advanced economies, this trend is being driven by a variety of fundamental factors, such as falling population growth (Figure 1.17). Developments in emerging economies have been quite different (see Box 1.1). As a group, emerging economies posted a string of impressive growth rates after the turn of the millennium. Looking ahead, advanced economies face appreciably weaker prospects for activity than over the past decade, absent significant reforms. The results of an analysis of potential output developments are sobering (Box 1.3): they point to large and persistent output losses from the recession. This is consistent with other empirical evidence that suggests that a portion of the sharp decline in GDP during the recession should be presumed to be permanent, unless there is significant policy change.[10]

One can best infer the path for potential output, which is by nature an unobservable variable, on the basis of the joint behavior of observable variables that potential output either influences (output growth, inflation, unemployment, capacity utilization) or is influenced by (labor force growth, capital investment, productivity growth). For example, the steep drop in business fixed investment during the recession has reduced manufacturing capacity (see Figure 1.9). This suggests lower potential output and hence a smaller output gap. In the opposite direction, U.S. labor productivity has been very strong until lately.

There are various ways to estimate potential output, each with its strengths and weaknesses. The most credible estimates, given current information, point to a substantial downward shift in the path of potential output for the United States and the euro area. Box 1.3 compares the most recent estimates of potential output growth and output

[10]As outlined in Chapter 4 of the October 2009 *World Economic Outlook,* financial crises have typically been followed by large, permanent losses of output. However, the aftermath shows wide variation, not least because conditions and policy responses differed across countries.

gaps by the Organization for Economic Cooperation and Development, the U.S. Congressional Budget Office, or the European Commission with those obtained with the IMF staff's Global Projection Model and the WEO. These estimates point to three conclusions: (1) a sizable and persistent reduction in potential output relative to the precrisis trend; (2) substantial excess supply—that is, large negative output gaps—for both regions;[11] and (3) considerable imprecision in the estimates, suggesting that the distribution of possible outcomes is a matter of substance for policymakers.

Taken at face value, the lower estimates for trend output levels in advanced economies have significant policy implications. They imply that a large portion of fiscal revenue losses relative to precrisis revenue trends should be presumed permanent. In turn, this means that public expenditure programs would have to be scaled back (or taxes increased), or fiscal deficits and debt will continue to grow rapidly over the medium term. More fundamentally, capital and labor will need to be reallocated from declining to expanding sectors, posing major social challenges. From a global perspective, Chapter 4 makes clear that the demand for imports by advanced economies will be below precrisis trends, in view of the high share of consumer durables and investment goods in trade. Emerging economies that relied heavily on demand from these economies will therefore have to rebalance growth further toward domestic sources to achieve growth rates similar to those before the crisis.

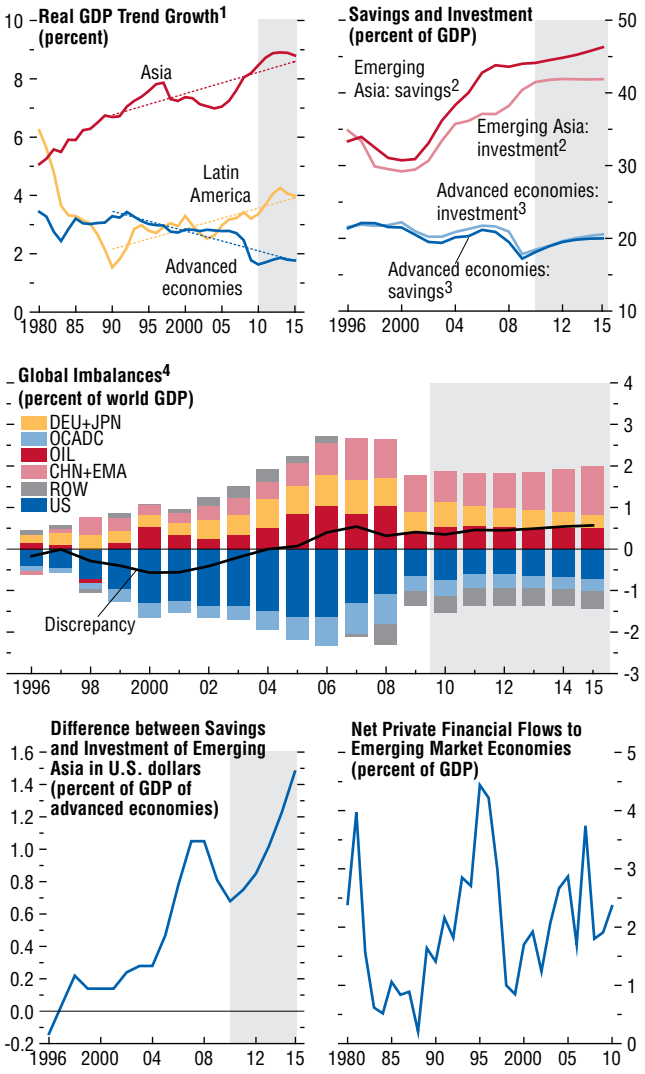
Constraints on raising domestic demand in emerging economies

Notwithstanding a relatively healthy growth outlook, emerging economies are unlikely to fully compensate for the lower demand from advanced economies over the medium term. In particular, recent developments in economies with excessive surpluses do not point to a significant acceleration in domestic demand relative to precrisis growth rates (see Figure 1.12). For developing Asia, WEO

[11]Furthermore, a deeper analysis of labor productivity developments in the United States suggests that its recent increase is at least partly a cyclical phenomenon, reflecting, for example, that the least productive workers are likely to have lost their jobs first.

Figure 1.17. Global Imbalances

The growth performance of emerging economies has been improving, whereas for advanced economies it has been deteriorating over the past couple of decades. This will continue to push capital flows toward emerging economies. Nonetheless, global imbalances are not projected to narrow over the medium term, as these economies are finding it hard to absorb these inflows productively and are building up reserves to protect themselves against flow reversals, which have often occurred in the past. As a result, the savings surplus in Asia will rise relative to the GDP of advanced economies. This will limit the increase in long-term interest rates in response to rising public debt.



Source: IMF staff estimates.
[1]1980–2015 real GDP growth data are de-trended as 10-year backward rolling averages. Dotted lines are trends for each group between 1990 and 2015.
[2]China, India, Indonesia, Malaysia, Pakistan, Philippines, and Thailand.
[3]Australia, Canada, Czech Republic, Denmark, euro area, Hong Kong SAR, Israel, Japan, Korea, New Zealand, Norway, Singapore, Sweden, Switzerland, Taiwan Province of China, United Kingdom, and United States.
[4]CHN+EMA: China, Hong Kong SAR, Indonesia, Korea, Malaysia, Philippines, Singapore, Taiwan Province of China, and Thailand; DEU+JPN: Germany and Japan; OCADC: Bulgaria, Croatia, Czech Republic, Estonia, Greece, Hungary, Ireland, Latvia, Lithuania, Poland, Portugal, Romania, Slovak Republic, Slovenia, Spain, Turkey, and United Kingdom; OIL: Oil exporters; ROW: rest of the world; US: United States.

Box 1.3. Inferring Potential Output from Noisy Data: The Global Projection Model View

The sluggish output growth experienced during the recovery to date has brought increasing attention to whether this is merely demand deficiency—a large, negative output gap—or whether much of it could be because trend output—otherwise known as potential output—has shifted downward.

This question is a perennial one, not the least because estimating potential output is a challenging task; for policy institutions, however, it is critical. The *growth rate* of potential output pins down for fiscal authorities and lawmakers how quickly an economy's tax base is likely to expand. It also establishes a baseline for GDP growth for forecasters and provides a benchmark for market watchers to interpret the flow of data in real time. The *level* of potential output defines the point toward which the economy should be expected to gravitate over the indefinite future and provides an estimate of incipient inflation or deflation pressure. This box reviews some issues associated with the measurement of potential output and outlines one method, among several, that is used by the IMF staff as an input for the *World Economic Outlook* (WEO), as well as for other purposes.

Intrinsically, potential output is unobservable; it must be inferred from the movement of actual output, either on its own or in conjunction with the comovement of associated variables. One popular approach is to use univariate time-series methods, such as split time trends and the Hodrick-Prescott (H-P) filter. These have the advantage of simplicity and replicability, but disadvantages include the limited information that univariate methods employ, the inconsistency of "prefiltered" estimates because they are not estimated jointly with the forecast model in which there are used, and the sensitivity of the estimates to the data at the end of the sample.[1] The end-of-sample sensitivity of many detrending methods is a special case of the broader issue of how alternative methods respond to additions to data sets and revisions to existing data. All else equal, a user would prefer estimates of output gaps that are not significantly revised with the receipt of new data.[2]

The Global Projection Model

The Global Projection Model (GPM), a nonlinear, forward-looking, multicountry model formulated by the IMF's Research Department, includes a block that computes estimates of potential output and the associated output gap. The block is a member of a class of models called "unobserved components models," so called because their task is to split the observable variable output into two unobservables, the output gap and potential output. Potential output, in turn, is driven by permanent shocks to the level of potential output and temporary (but possibly long-lasting) shocks to the growth rate of potential output. The model uses observable measures such as output as well as inflation, long-term inflation expectations, unemployment, and total capacity utilization to infer what potential output is likely to be.

The idea is best illustrated with a concrete example: conventional wisdom says firms respond to short-term fluctuations in sales by adjusting labor input, from which it follows that product market gaps are linked to labor market gaps, a nexus known as Okun's law. It follows that if output is rising and unemployment is falling, firms are facing increasing demand. If, however, output is rising and unemployment is flat or rising, firms are augmenting sales without increasing employment, and thus their costs must be falling, and a supply-side improvement is likely at work. Of course, in practice, matters are not so clear-cut. The relationship between unemployment and output is loose and dynamic. The linkage shows variation over stages of the cycle and over time more broadly. And the interpretation of changes in labor input that emerge from fluctuations in labor force participation and the average workweek can differ from those stemming from changes in employment.

The main author of this box is Robert Tetlow. Petar Manchev provided research assistance.

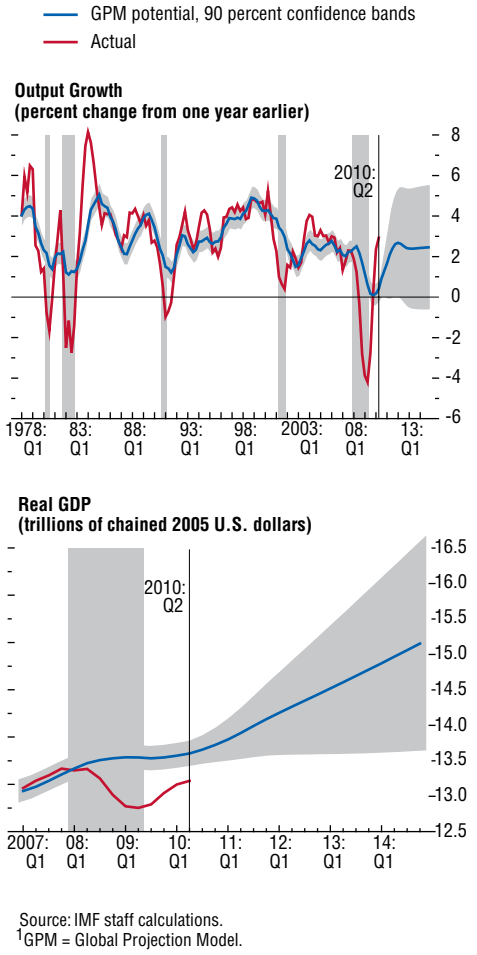
[1]Box 1.3 of the October 2008 *World Economic Outlook* provides some discussion of the end-of-sample problem associated with, in this instance, the H-P filter.

[2]A univariate filter does not recognize a cycle until it is over. With multivariate methods, the more the comovements of associated variables can pick up turning points in the cycle in real time, the less the addition of new observations will change prior estimates.

For this reason, the GPM's estimates of potential output are conditioned on three variables, other than on output itself. The first of these is unemployment operating through Okun's law, as just discussed. A second source of information is capacity utilization. If output is down because of a negative demand shock, production falls much more than industrial capacity, opening a substantial capacity-utilization gap. But if the shock is to productivity, the desired capital stock would fall and, accordingly, capital investment would also fall, reducing business capacity. Thus, a capacity-utilization gap that is disproportionately small given the observed decline in output signals a negative supply shock. In short, the model reads observations in total capacity utilization and infers from prediction errors in this and other series whether utilization has changed because of a demand shock, or whether equilibrium capacity itself has changed. It does this by choosing the characterization of shocks that minimizes prediction errors. The third indicator is inflation. At the crux of the Phillips curve is the notion that for inflation to be stable over time, there must be neither excess demand nor excess supply. As it happens, the influence of excess demand on inflation is a weak one, with a variety of other forces also at work, and thus inflation's role in pinning down potential output in the GPM is often dominated by other factors.

The virtue of this system is its consistency, flexibility, and ability to render not just estimates of unobservables but measures of uncertainty around those estimates. But it is not a panacea. Consider the first figure, which shows 90 percent confidence intervals for both year-over-year growth and the level of potential output in the United States. The red line in the bottom panel showing the actual data is well outside the confidence interval, indicating that it is statistically safe to conclude that the current output gap is negative, an inference that is often difficult to make in more normal times. More generally, the figure exhibits noteworthy in-sample precision, but the bands widen substantially during the forecast period.[3] Indeed, while we can say that it is likely that the level of potential output in the United States will be higher in the future than it is currently, we cannot say much more than that

GPM Estimates of Potential Output in the United States with 90 Percent Confidence Bands[1]

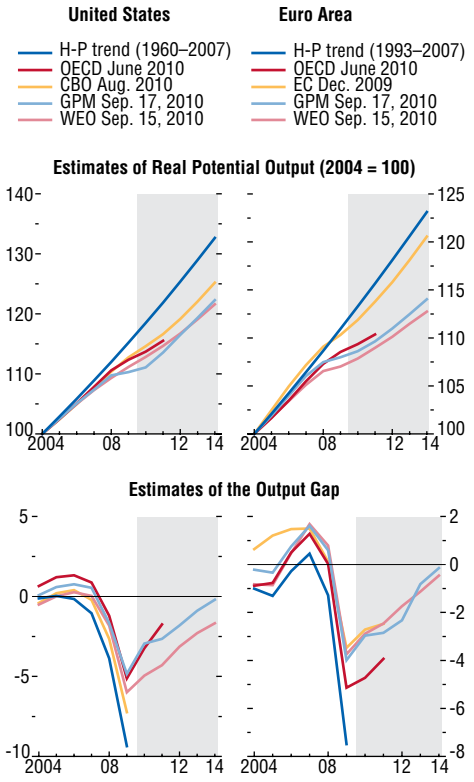


Source: IMF staff calculations.
[1]GPM = Global Projection Model.

[3]The block is estimated using a systems approach with Bayesian methods and the Kalman filter. This allows for potential output to be estimated simultaneously with two other unobservables, the nonaccelerating inflation rate of unemployment, and the equilibrium capacity-utilization rate. In the figures, the path for potential growth is the two-sided estimate from the Kalman smoother. In-sample confidence intervals are asymptotic estimates computed from the inverse of the model's Hessian matrix.

Box 1.3 *(continued)*

Estimates of Real Potential Output and Output Gap



Sources: European Commission (EC); Organization of Economic Cooperation and Development (OECD); U.S. Congressional Budget Office (CBO); and IMF staff calculations.

with great confidence. Clearly, even in this instance where we are taking the model of potential output as given, there is a lot of uncertainty and considerable room for debate regarding the "best" projection for potential.

Models as Characterizations of the Data

The evolution over time of estimates of potential output expresses how the user sees the incidence of shocks: smooth, deterministic time trends suggest that the user believes supply shocks are rare and easily identifiable in real time. A volatile, stochastic process signals a view that supply shocks are an important source of business cycle fluctuations.[4] It is in this context that the way the recent financial crisis is interpreted is important. The smooth-trends view represents the belief that the precrisis trend is sustainable and points directly to demand management policies to move actual output to that trend. The stochastic view entertains the notion that the crisis and its aftermath may have shifted potential downward, which would call for somewhat less activist policies on the demand side but perhaps more policy actions to boost aggregate supply.[5]

The top panel of the second figure illustrates the issue for the United States and the euro area. In both panels, the dark-blue line captures the precrisis view of the (indexed) level of trend output as measured by an H-P filter to 2007 and then projected forward.[6] The other lines show estimates from the Organization for Economic Cooperation and Development (OECD), the WEO, and either the U.S. Congressional Budget Office (CBO) or the European Commission (EC), as applicable. The light-blue line is from the GPM. As is the case for the CBO and OECD estimates, the GPM says potential output has fallen significantly below what the precrisis estimate would have been. At the same time, the GPM projections show some tendency to revert to a higher level; indeed, although it is not apparent from the chart, the GPM path implies a lasting effect on the level of potential output from the crisis, but no permanent effect on the growth rate. The output gaps that are implied by these estimates of potential are shown in the bottom panel. Taken together, these estimates suggest that the data had a substantial influence on estimates of

[4]Two opposing cases are represented by a simple time trend representing the highly Keynesian view that supply shocks play no significant role in the business cycle and a view that all fluctuations in output are equilibrium phenomena, encompassing the real business cycle view that all shocks are supply shocks.

[5]Cerra and Saxena (2008) and Reinhart and Rogoff (2009) provide evidence to suggest that financial crises may produce highly persistent reductions in output. See also Chapter 4 of the October 2009 *World Economic Outlook*.

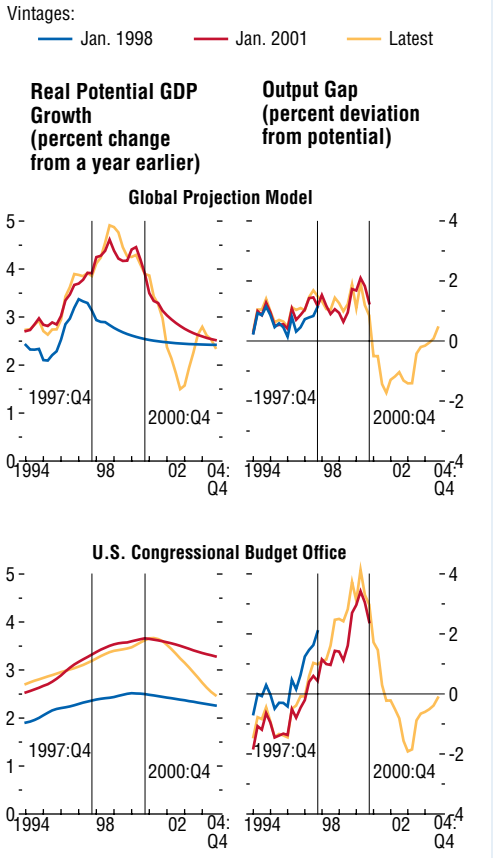
[6]Precrisis historical estimates and forecasts from the OECD, WEO, CBO and EC are similar to the applicable H-P trend line path shown in dark blue in the figure.

potential and the ensuing output gaps regardless of the model, as indicated by the substantial vertical distance between the dark blue line and the other lines in both figures. At the same time, all three estimates currently show substantial excess supply—that is, large negative output gaps—for both the United States and the euro area.

These estimates are snapshots taken at a given point in time; it is also interesting to examine how estimates change with the receipt of new data. The third figure shows the evolution of estimates of potential output growth and the output gap during the late 1990s boom in the United States as measured by the GPM and the CBO.[7] What makes this an interesting period to study is that, in hindsight, we know that the boom was driven by persistent shocks to productivity.[8] Three vintages are shown, one before the boom was manifest, one as the boom crested, and the latest vintage.[9]

A tenet of monetary economics is that central banks should work against demand shocks and accommodate supply shocks. How did the two models assess the incoming data? Were there substantial revisions to the historical record? As might be expected, there were significant upward revisions to the estimates of potential growth for both models. However, the CBO (bottom left panel) tended to shift potential growth more or less uniformly; that is, revisions affected both forecast and backcast growth. In contrast, the GPM revisions (top-left panel) varied more from date to date and affected forecast growth more than backcast growth. The implications of this for real-time output gaps (right-hand panels) show that the GPM estimates of the output gap changed only modestly with the receipt of new data, whereas the CBO gaps changed substantially, with revisions going back several years. To the extent that policy design

Evolution of Real-Time Estimates of Potential Output in the United States during the Late 1990s



Sources: U.S. Congressional Budget Office; and IMF staff calculations.

[7]At the risk of oversimplification, the CBO's methods for measuring potential output can reasonably be described as falling into the filtering range of methodologies except they are applied to the constituent parts of potential output and then built up. See Arnold (2009) and references therein for details.

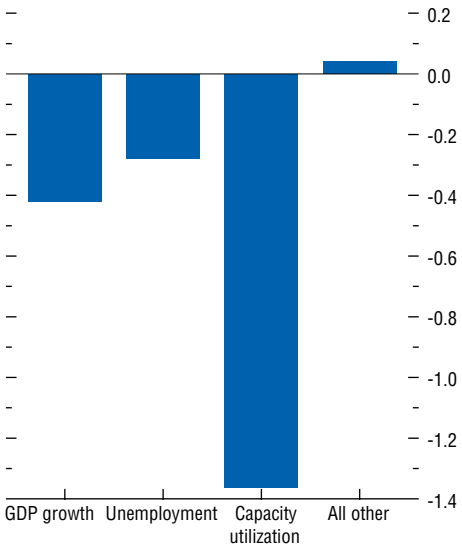
[8]Tetlow and Ironside (2007) document the difficulties the U.S. Federal Reserve Board staff had in tracking potential output growth in the late 1990s. Other forecasters found the period similarly challenging.

[9]The end of the vintage sample period is shown by the appropriate vertical line. In fact, the GPM has been in service only a few months. To construct these real-time GPM estimates for the figures in this box, we downloaded real-time data sets from the Federal Reserve Bank of St. Louis ALFRED database and estimated the model for each vintage of data. It is always possible that the model we would have used in the past might have differed from the one we use now. The CBO estimates are genuine real-time estimates using whatever methodology the CBO used at the time.

Box 1.3 *(continued)*

Decomposition of Revisions to U.S. Real Potential GDP Growth, as of 2010:Q2

(Percent, year over year; latest GPM versus 2007:Q3)



Source: IMF staff calculations.

depends on reliable real-time estimates of excess demand, this is a noteworthy observation.[10]

[10]The literature on the pitfalls of the use of unreliable real-time estimates of the output gap is huge. See, for example, Orphanides (1999).

We have already noted the substantial changes in estimated potential growth since the onset of the financial crisis. The fourth figure decomposes the contributions to the change for 2010:Q2, relative to before the crisis in 2007:Q2. Not surprisingly, potential output growth has shifted downward, and a contributor to the change in view was the collapse in GDP growth. The data on unemployment actually reduce potential output, and thus shrink the absolute output gap slightly, because the decline in unemployment from its peak earlier in the year is seen as being early; the model therefore infers that more of the decline in output must originate from the supply side. With some manipulation, the first two bars of the chart can be used to tease out the contribution of output per worker, a calculation of some interest given the strong growth in output per worker in 2009. The GDP growth contribution and (un)employment contribution approximately cancel each other out, which amounts to saying that the model sees output per worker in 2009 as a cyclical phenomenon.[11] More intriguing, perhaps, given its small share of U.S. GDP, is the very large subtraction from potential growth—making the output gap less negative than otherwise—coming from capacity utilization. The mechanism here is as described above: the financial crisis reduced business fixed investment, and hence total industrial capacity, such that capacity utilization was not as low as would be expected if the shock were entirely a demand disturbance.

[11]As it happens, in recent quarters, growth in output per worker in the United States has declined substantially.

projections suggest that saving rates will rise from about 44½ percent of GDP in 2010 to close to 45½ percent in 2012–15, while the investment ratio moves sideways.[12] Thus, global imbalances are not projected to narrow further. This reflects primarily four factors:

- Structural constraints: Some two-thirds of gross national saving in the region has been by China in the recent past. Even in a best-case scenario, however, China will provide only a partial offset to the weaker demand from advanced economies, given the relatively small size of both overall Chinese consumption and Chinese imports of consumer goods.[13] Also, in many emerging Asian economies, investment in the services sector is

[12]In the other region with high saving rates—the Middle East—the savings ratio is also projected to rise during 2009–15. In this case, it is a reflection of a modest correction from a large oil-price and fiscal-stimulus related fall during 2008–09.

[13]See IMF (2010). IMF (2009) finds that despite above-average import growth rates over the past 15 years, China's imports

low, with India a notable exception. Policy efforts have been directed at allowing greater competition in infrastructure-related services, further opening the retail and financial sectors, and lifting restrictions on entry into social services, such as health and education. However, these will take time to bear fruit.

- Restrictions on capital inflows: Here it is useful to distinguish between restrictions from the period before the latest crisis and recovery and restrictions imposed recently in response to capital inflows. The former can have large effects on inflows but can be reduced only very gradually, in tandem with reforms to goods and services markets, financial systems, and prudential policies and practices. Controls imposed recently are reviewed in more detail in Chapter 2. Again, two types can be distinguished: (1) those that affect both domestic residents and foreign investors (macroprudential measures)—most of the measures adopted in emerging Asia fall into this category; and (2) those that target foreign investors specifically (classic capital controls)—these have been the main focus of some countries in Latin America (Brazil). Given the nature of measures adopted recently, their medium-term effects on global demand rebalancing are probably not large.
- Concerns about destabilizing currency appreciations and related losses of competitiveness: These have led key emerging economies to mainly accumulate reserves rather than to allow the nominal exchange rate to appreciate in response to trade surpluses and capital inflows (see Figure 1.7). While offering insurance against sudden stops, accumulating reserves to mitigate currency appreciation pressures in response to sustained current account surpluses is likely to slow domestic demand and to gradually raise inflation. And it puts a burden on the budgets of emerging economies, given the difference between domestic and reserve-asset interest rates.
- Fiscal policy stances: Almost all major emerging market economies are consolidating, with only a few keeping support broadly unchanged (for example, Brazil, Indonesia). The difference in the pace of consolidation during 2011 between economies with excessive external surpluses and deficits is modest (see Figure 1.12). Medium-term projections reinforce this point.

of consumer goods still accounted for only 3 percent of global imports in 2008.

More Proactive Policies Are Needed

To sum up, short- and medium-term prospects continue to point to the slow, sluggish recovery anticipated earlier, and it remains subject mainly to downside risks. Policies need to accelerate the rebalancing of demand from public to private sources in advanced economies and from economies with external deficits to those with external surpluses. In many advanced economies, the financial sector remains the Achilles' heel of recovery prospects for private demand. Insufficient progress with repair and reform is weighing on credit and slowing the normalization of monetary and fiscal policies, with adverse spillovers for emerging economies. Accelerated financial restructuring and reform should thus be top priorities. So far, progress has been painfully slow. Fiscal consolidation needs to start in 2011. Government budgetary policies are in the process of moving from short-term stimulus to medium-term consolidation. However, fiscal policymakers urgently need to legislate measures that lower deficits over the medium term. This is necessary not only to halt and ultimately reverse the large rise in public debt ratios, but also to help create more room for policy maneuver in the short term. In addition, fiscal adjustment needs to be supported with structural reform. Policies that eliminate distortions to domestic demand in key emerging economies would strengthen prospects for global demand rebalancing and thereby support a more robust recovery in both emerging and advanced economies. However, there are many constraints on what can be achieved over the medium term, and policymakers would be well advised to base their plans on prudent growth projections.

More Progress Is Needed in Repairing and Reforming the Financial Sector

Financial sector policies are critical for sustaining a healthy recovery. Apparently isolated difficulties in

a few spots can have large spillover effects via complex financial linkages and deterioration of fragile confidence. Failure to rapidly resolve, restructure, or consolidate weak banks and repair wholesale markets raises the need for further fiscal backstopping and low interest rates to support recovery, which can cause other problems, including spillovers to emerging economies. More progress with financial sector repair and reform should thus be a top priority for advanced economies.

As the October 2010 GFSR explains, insufficient progress in addressing the legacy problems of the crisis has left the system vulnerable to funding shocks and a loss of market confidence. Progress in addressing weak banks is urgently needed:

- U.S. banks have made considerable progress in recognizing losses and rebuilding capital. However, important risks continue to revolve around exposure to real estate, especially by small and midsize banks, which are major providers of credit to small and medium-size enterprises (SMEs). These account for a large part of total employment in the economy. In addition, continuing weakness in private-label securitization markets is limiting the ability of banks to offload risk from their balance sheets. Reforms to the housing finance system are crucial but remain unfinished.
- European banks face challenges from fragile funding and profitability, sovereign debt exposure, and real estate lending. Decisive actions are being undertaken in some countries (for example, Ireland, Spain, United Kingdom), but much remains to be done to put bank balance sheets on a sustainable footing. In other countries (for example, Germany) long-standing problems have yet to be addressed. A range of measures should be considered, including forcing weak banks to raise additional capital, secure stable funding, and more decisively clean up their balance sheets. In cases when viable business models cannot be established, regulators should have the power to restructure or resolve quickly.

In the meantime, the public sector will remain heavily involved in financial intermediation. In the United States, for example, mortgage lending is being propped up by the government's purchase of GSE obligations. In Europe, a number of banks remain reliant on ECB financing facilities or on various forms of government support. Moreover, as underscored in the October 2010 GFSR, usage of governments' recapitalization and debt guarantee programs remains substantial in advanced economies, even if demand for these programs has declined. In fact, while programs were closed in some advanced economies, they had to be extended in many European economies. Given the "wall" of maturing bank debt, governments and central banks may need to continue to provide funding guarantees and extraordinary liquidity facilities (or ensure that they will have the ability to provide liquidity insurance via other means if necessary) until banks clearly demonstrate their ability to self-fund unaided.

Beyond addressing the legacy problems, authorities face the challenge of putting in place prudential frameworks that deliver a safer and stronger global financial system. Regulatory reforms have focused primarily on improving the prospects of individual institutions and sectors and now need to adopt a more global view. Thus, the focus should be not just on enhancing microprudential regulation but also on developing a more macroprudential approach to limit systemic risks emanating from too-big-to-fail institutions, which are now recognized to include nonbanks.

In this context, the recent proposals of the Basel Committee on Banking Supervision (BCBS) are welcome, representing a substantial improvement in the quality and quantity of capital in comparison with the precrisis situation. In particular, common equity will represent a higher proportion of capital and thus allow for greater loss absorption. Also, the amount of intangibles and qualified assets will be limited to 15 percent.[14] Phase-in arrangements have been developed to allow banks to move to these higher standards mainly through retention of earnings. As the global financial system stabilizes and the world economic recovery is firmly entrenched, completely phasing out intangibles and scaling back the transition period should be considered. This will

[14]These include deferred tax assets, mortgage servicing rights, significant investments in common shares of financial institutions, and other intangible assets.

further raise banking sector resilience to absorb any future shocks. Under the baseline scenario, shorter phase-in periods would not have placed undue pressure on the banking system and the economy. In fact, the longer financial institutions remain with lower buffers, the higher the risk of emerging vulnerabilities and the greater the burden on supervisors.

A major challenge is removing the ability of significant financial enterprises in the public or private sector to leverage (implicitly or explicitly) taxpayer-subsidized borrowing. This applies to a broad range of enterprises, such as the GSEs, many public sector banks in Germany and elsewhere, and many "too-important-to-fail" entities. Excessive risk taking in the financial system also needs to be mitigated by ensuring strong capitalization and risk management at significant nonbank institutions and by removing tax breaks for personal or corporate debt financing. Other policy challenges range from reforms to over-the-counter derivative exposures, to more effective cross-border resolution frameworks, and from better compensation practices, to improved accounting standards.

The potential effects of the full set of reforms on credit and growth are hard to determine. Much will depend on their design and how they are phased in—they will likely detract from activity in the short term but will bring benefits in the long term. Model-based assessments by the Basel Committee on Banking Supervision suggest that tighter capital regulation will affect macroeconomic activity, primarily through an increase in the cost of bank credit.[15] The new regulation is expected to reduce macroeconomic volatility by reducing bank vulnerability during crises and limiting credit expansion in upturns. However, the effectiveness of these bank-centric measures will depend critically on the rigor of implementation and the potential for the shift of ctivities toward less regulated, nonbank financial intermediaries or markets.[16]

Requirements differ in emerging economies. Many avoided financial excesses ahead of the crisis by adopting prudential policies and practices that were more stringent than those in the major financial centers, an approach that has been vindicated. The challenge facing these economies is to further deepen financial intermediation, with a view to fostering sound lending to households and SMEs. In some cases, this will require broader reform of legal frameworks, including bankruptcy codes. At the same time, prudential policies and practices will have to stay one step ahead of the development of national financial systems.

"Growth-Friendly" Plans for Medium-Term Fiscal Consolidation Are Still Missing

Fiscal consolidation needs to start in earnest in 2011. Of utmost importance are firm commitments to ambitious and credible strategies to lower fiscal deficits over the medium term, preferably with legislated tax and expenditure reforms that become effective in the future and support investment and labor supply over the medium term. This task is now more urgent than it was six months ago, as further fiscal accommodation could be needed in the short term if global activity slows appreciably more than projected. Absent credible plans to lower deficits over the medium term, however, such support could cause renewed turbulence in sovereign debt markets that could undermine the effectiveness of any support measures.

Plans should emphasize policy measures that reform major, rapidly growing spending programs, such as pension entitlements and public health care systems, and make permanent reductions in nonentitlement spending.[17] There is also wide scope to improve tax structures, for example, by shifting the tax burden from earnings to consumption spending or property. Well-designed spending

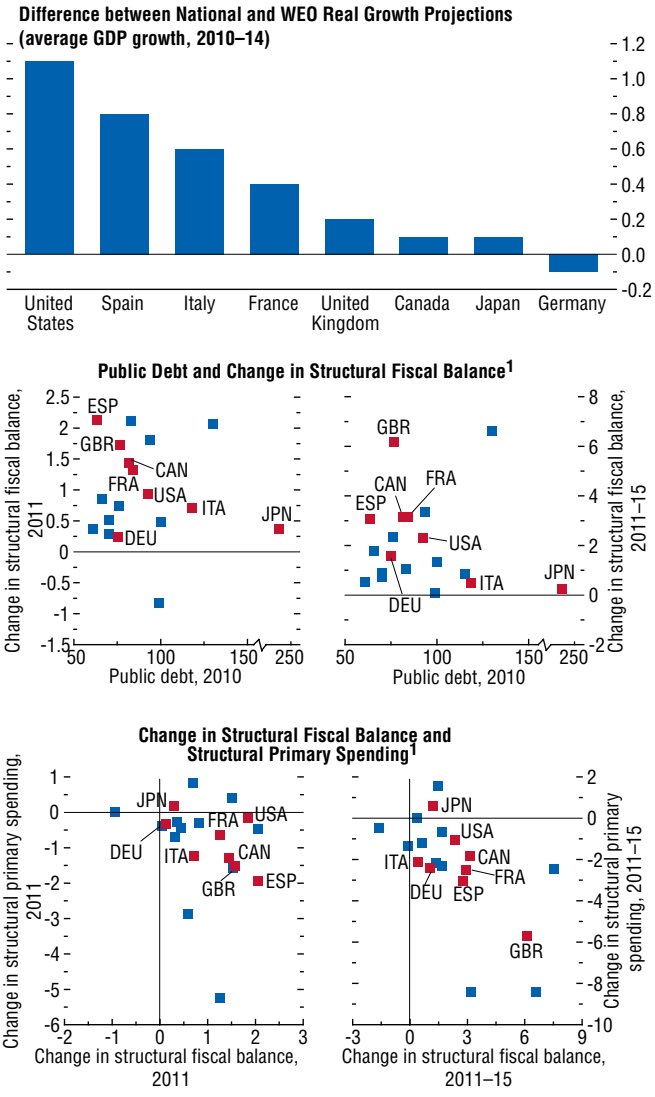
[15]Available estimates suggest that in the steady state, a 2 percentage point increase in required bank capital will permanently reduce the level of output by about 0.2 to 0.3 percentage point. However, model risks surrounding the estimate are skewed toward a more significant impact of up to 0.7 percentage point of output in some specifications. In any case, the calibration will have to be revisited in light of the latest capital adequacy and liquidity proposals. For further discussion, see BCBS (2010) and MAC and BCBS (2010).

[16]See also Chapter 3 of the April 2009 GFSR; Claessens and others (2010); and Viñals and Fiechter (2010).

[17]The net present value of future increases in health care and pension spending is many times larger than the increase in public debt due to the crisis.

Figure 1.18. Medium-Term Fiscal Policies

Some economies' medium-term economic growth projections appear optimistic, posing risks to their consolidation plans. These plans often emphasize expenditure cuts. However, WEO projections suggest that not all countries will achieve an expenditure ratio appreciably lower than before the crisis, suggesting that room for further cuts remains.



Source: IMF staff estimates.
[1]Percent of GDP, except structural fiscal balance, which is in percent of potential GDP. All advanced economies with 2010 public debt greater than 60 percent of GDP. CAN: Canada; FRA: France; DEU: Germany; ITA: Italy; JPN: Japan; ESP: Spain; GBR: United Kingdom; USA: United States.

and tax reforms can help rebuild confidence by reducing the fiscal burden for the future and by boosting the economy's supply potential. Plans could also include legislation to strengthen fiscal institutions and to introduce binding multiyear targets. Measures that improve prospects for faster growth in incomes for the foreseeable future may also mitigate the adverse short-term effects that fiscal consolidation has commonly caused in the past. At the same time, governments should try to extend the average maturity of their debt, proactively reducing refinancing risk.

In the near term, the extent and type of fiscal adjustment should depend on country circumstances, particularly the pace of recovery and the risk of a loss of fiscal credibility.

- Considering the widespread absence of strong, credible plans for medium-term consolidation and the latest turbulence in sovereign debt markets, fiscal consolidation plans for 2011 strike a broadly appropriate balance between progress toward stabilizing public debt and continued support for recovery (Figure 1.18). Countries facing severe foreign funding pressures have already had to retrench; in these economies, strong signals of commitment remain necessary.
- In economies with excessive external surpluses and relatively low public debt, fiscal tightening should take a backseat to monetary tightening and exchange rate adjustment. This would help support domestic demand as foreign demand temporarily weakens. In other emerging economies, fiscal tightening can start immediately because recovery is already well under way. Fiscal tightening should be a top priority in emerging economies that have relatively high public debt and are struggling to absorb large capital inflows productively.
- If activity threatens to weaken appreciably more than projected, countries with fiscal room should allow automatic stabilizers to play fully; in some countries with small stabilizers, temporary support through extended unemployment benefits or wage subsidies could be continued. In addition, if needed for the recovery to continue, some of the consolidation planned for 2011 may also have to be postponed.

Looking further ahead, advanced economy governments need to begin legislating the consolidation measures they intend to implement in the future to achieve their medium-term fiscal objectives. Most advanced economy governments aim to stabilize or lower debt-to-GDP ratios sometime before or during 2015—objectives beyond 2015 have typically not been spelled out.[18] WEO projections suggest that many will achieve this objective, although typically one or two years later than planned. Their governments should adopt additional measures soon to reduce the likelihood of slippage. Among the major advanced economies with high or rapidly rising debt, Spain and the United States would fail to stabilize debt by 2015. A major reason for the projected overshooting is that real GDP growth projections of the authorities are noticeably higher than those of the WEO.[19] These governments too should soon specify significant adjustment measures to achieve debt stabilization by 2015. Japan is planning to reduce its public-debt-to-GDP ratio starting in FY2021; the authorities should outline the key revenue and expenditure measures of their strategy in order to strengthen its credibility.

As discussed, the fiscal adjustment that is shaping up is likely to detract from demand. Present fiscal plans for 2011 and beyond do not point to major differentiation across countries according to their external and public debt positions (see Figure 1.12). Chapter 3 suggests that such synchronized adjustment will make consolidation more painful. Encouragingly, however, some two-thirds of the planned adjustment is taking place on the expenditure side (notably lowering spending on wages, pensions, and public administration), which seems to depress output by less than revenue increases, according to Chapter 3. Also, indirect rather than direct taxes contribute mainly to revenue-raising measures, which should limit distortions to labor supply and investment and accelerate output gains over the long term.

Additional efforts could usefully focus on lowering spending and eliminating many tax exemptions and subsidies, notably those that favor debt over equity financing, and, in some economies, raising taxes on property.[20] Moreover, more could be done to secure long-term fiscal sustainability. This can help build confidence in public finances without necessarily detracting from demand today. Examples of such measures include linking statutory retirement ages to life expectancy and improving the efficiency of health care spending. Thus far, only a few governments have recently take steps in this direction. While rolling back deficits, governments will need to protect the most vulnerable segments of society.[21]

Fiscal consolidation should alleviate any undue pressure for longer-term interest rates to rise as the global economy approaches full potential output. Existing empirical evidence suggests that a lower debt ratio in advanced economies, equivalent to 10 percentage points of GDP, might lower equilibrium interest rates by at least 30 basis points over the long term, with a few estimates going as high as 100 basis points. The IMF staff estimates in Chapter 3 are close to the lower bound of this range. With plenty of excess capacity, real interest rates are currently not a relevant constraint on private investment. However, this may change, although a case for major, public-debt-driven increases in rates

[18]The IMF's forthcoming November 2010 *Fiscal Monitor* will provide a detailed assessment of fiscal policy challenges and objectives. Ideally, high-debt countries should try to reduce debt ratios back to the precrisis median of 60 percent of GDP: doing so by 2030 would require improvements in structural primary balances of advanced economies by over 8 percentage points of GDP from the 2010 level. For emerging economies, using a similar methodology but assuming a lower debt target (40 percent, a threshold beyond which fiscal risk is often considered to rise in emerging economies), the adjustment averages less than 3 percentage points of GDP.

[19]This reflects the WEO's larger estimated reduction in potential output relative to precrisis trends as the major financial and real-estate-related shocks continue to reverberate for some time.

[20]Expenditure ratios in a number of advanced economies with high debt are not projected to fall much below precrisis levels, and thus there still appears to be further room to lower spending. Revenue measures to consider include improving the performance of the value-added tax (VAT)—for example, by eliminating exemptions and reduced rates; in some countries, raising tobacco and alcohol excises to the advanced G20 average; and increasing property taxes in European countries to the level in other advanced economies. For the United States and Japan, introducing a VAT and raising the rate, respectively, could become significant sources of additional revenue.

[21]For details on measures to support the unemployed, including their reintegration into labor markets, see Chapter 3 of the April 2010 *World Economic Outlook.*

beyond precrisis averages is far from evident considering the following:[22]

- In many advanced economies, absent major policy initiatives to raise potential output, household saving rates are likely to be higher than before the crisis and investment lower, in line with potential output.
- In key emerging economies, savings surpluses are forecast to continue to rise (see Figure 1.17). The gap between saving and investment in emerging Asia, following a recent contraction, would widen to above precrisis levels, if measured as a share of advanced economies' GDP.

Thus, to some extent, features of the precrisis "savings glut" are going to remain in place. However, this should not induce advanced economies to postpone the adoption of measures that reduce fiscal deficits over the medium term. Postponing fiscal consolidation in advanced economies until emerging economies have boosted internal demand increases downside risks, as the IMF's Global Integrated Monetary and Fiscal Model illustrates (see Box 1.4).

Monetary Policy Should Stay Accommodative in Many Economies

Given subdued inflation and prospects for fiscal consolidation, monetary conditions should remain highly accommodative for the foreseeable future in most advanced economies. If downside risks to growth materialize, monetary policy should be the first line of defense. At present, because of near-zero policy rates, central banks in key advanced economies would again have to rely on balance sheet expansion or changes in balance sheet composition to ease financial conditions. Although difficult to predict with great confidence, qualitative easing measures are likely to be more effective than quantitative easing measures, given the still-weak state of banks, the disrepair in some financial markets, and generally elevated volatility. To put it differently, risk premiums across markets should probably be of greater concern to policymakers than levels of long-term government bond rates. Central banks in emerging economies have more room for interest rate cuts, if needed.

Looking further ahead, monetary policy will have to carefully consider the implications of fiscal consolidation and key financial sector trends for inflation. A number of governments are planning revenue increases, notably from indirect taxes. Past experience in advanced economies suggests that central banks typically were less accommodative of revenue than of expenditure measures to cut deficits (see Chapter 3). In the face of weak labor markets in advanced economies, a long-term trend toward more job-friendly wage setting, and some labor market reforms, significant inflationary effects of sales tax hikes on wages appear unlikely in the current economic environment, and thus central banks can afford a more accommodative response. At the same time, risk premiums and financial intermediation costs can be expected to stay more elevated after the crisis. All else equal, both trends would call for greater monetary accommodation.

Monetary policy requirements are diverse for emerging and developing economies. Some of the larger, fast-growing emerging economies, faced with rising inflation or asset price pressures, have appropriately tightened monetary conditions, and markets are pricing in some further moves (see Figure 1.11). Central banks in emerging and developing economies must be alert to second-round effects on wages from higher food prices or upside surprises to energy prices. Risks are more elevated in economies that have had a history of unstable inflation or that are operating closer to capacity. By the same token, if downside risks to global growth materialize, there may need to be a swift policy reversal. Looking further ahead, falling risk premiums would call for tighter monetary policy stances, all else remaining unchanged.

Exchange Rate Policies Should Support the Rebalancing of Global Demand

In emerging economies with excessive external surpluses, monetary tightening should be supported with currency appreciation as excess demand pressures build. In this regard, exchange

[22]Measuring real interest rates raises a number of problems. IMF staff estimates suggest that long-term real interest rates were somewhat below the long-term historical average—commonly estimated at about 2½ percent—during the decade before the crisis.

Box 1.4. Uncoordinated Rebalancing

The downside scenario in this box is based on simulations using the IMF's Global Integrated Monetary and Fiscal Model (GIMF), a multiregional dynamic general equilibrium model.[1] The scenario starts in 2011 and illustrates that postponing fiscal consolidation in advanced economies until emerging economies have boosted internal demand increases downside risks in the form of an unfavorable market reaction that raises advanced economies' sovereign and corporate spreads. This in turn forces these economies into large, frontloaded, and ill-targeted fiscal consolidation that takes many years to become credible and to bring spreads back down. Throughout, interest rates are assumed constant for two years in the advanced economies and for one year elsewhere, with emerging Asia following a flexible exchange rate regime. The figure shows WEO baselines in light blue (or, when gray-shaded, it shows deviations from WEO baselines).

The first part of the scenario (orange lines) assumes that emerging Asia uses fiscal and structural policies to stimulate internal demand. It assumes increases of 2 percentage points of baseline GDP in both government investment and transfers targeted to individuals with a high propensity to consume, financed in equal parts by increases in the deficit and in consumption taxes. Domestic structural policies in the region produce an additional 1 percent gain in GDP relative to the baseline by 2014. The combined policies lead to a cumulative domestic output expansion of 2 percent by 2015. They also generate positive trade spillovers, particularly for strong exporters such as Japan and Germany.

Under regular circumstances, this would be only partly offset by higher policy interest rates in advanced economies in response to demand-driven inflation pressures. But because the policies reduce emerging Asia's external surpluses, they also reduce the region's demand for government debt from the advanced economies (emerging Asia has been a particularly heavy investor in U.S. debt). Particularly if accompanied by investor perceptions that advanced economies do not have in place credible medium-term consolidation plans, such a portfolio shock could lead to an increase in sovereign and corporate spreads (blue lines), especially for the United States. We assume a 225-basis-point increase in the sovereign spread on impact (which retreats to 175 basis points permanently after five years), with a 150-basis-point additional and temporary increase for the corporate sector. The increase in spreads is roughly half the size for the other advanced economies. This leads to an output decline of about 3 percent in the United States, with a very slow recovery thereafter, and of about 0.5 percent in other advanced economies.

The increase in borrowing spreads forces large, earlier-than-planned, and highly contractionary fiscal consolidation in the advanced economies starting in 2012. Consolidations equal 2 percentage points of GDP in the United States and half as much in other advanced economies (red lines). Negative multiplier effects, including spillovers to regions that do not undertake fiscal consolidation, are large for two reasons. First, the cuts are assumed to be chosen on the basis of implementation speed rather than likely impact on output, with 40 percent accounted for by higher labor income taxes, 40 percent by cuts in transfers targeted to individuals with a high propensity to consume, and 20 percent by cuts in government investment. Second, the sudden, forced consolidations are assumed to become credible only in 2014, so that their beneficial effects on risk premiums are quite gradual. By 2015 most regions are on their way to a full recovery. The exception is the United States, which takes several additional years to recover.

Maximum output losses relative to baseline under this scenario equal almost 4 percent in the United States and about 1 percent in other advanced economies, with emerging Asia experiencing only very small output losses in 2011 and 2012. The current account imbalance between

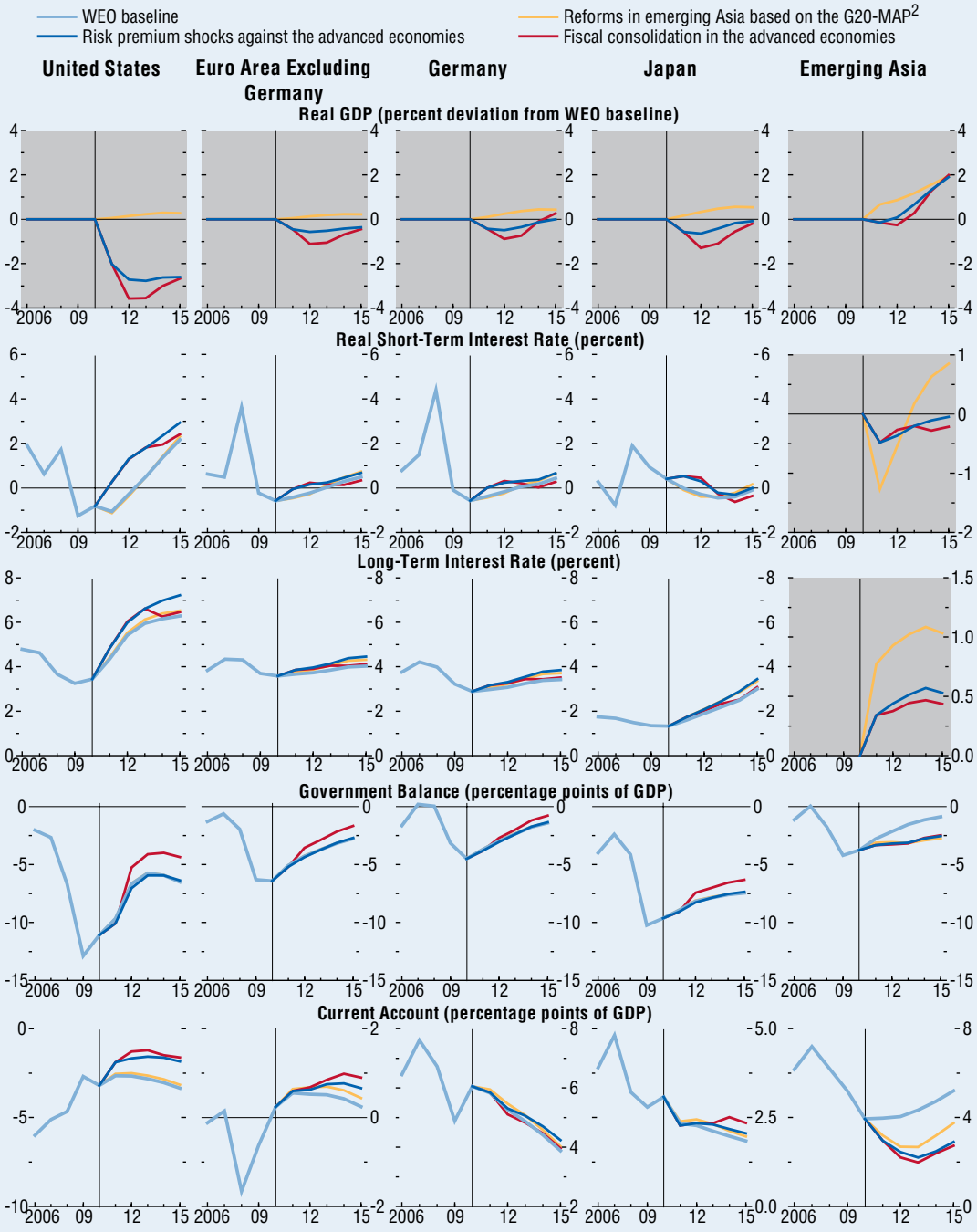
The main author of this box is Michael Kumhof.

[1]The GIMF divides the world economy into six regions, as shown in the figure: the United States, the euro area excluding Germany, Germany, Japan, emerging Asia, and remaining countries (the remaining countries region is not shown in the figure here).

Box 1.4 *(continued)*

Uncoordinated Rebalancing[1]

(Years on x-axis)



Source: Global Integrated Monetary and Fiscal Model simulations.

[1]Panels with a gray background depict the deviation of the series from the WEO baseline; panels with a blue background depict levels of the series as found in the baseline and alternative scenarios.

[2]G20 Mutual Assessment Process (G20, 2010b).

the United States and emerging Asia improves significantly.

These results are of course sensitive to our assumptions about the size of shocks. Although there is reasonable agreement on the likely magnitude and effects of fiscal measures, the likely magnitude of spread-related shocks is subject to considerable uncertainty. But it seems clear that the negative growth effects of a generalized increase in risk premiums in all advanced economies should be larger than the positive growth effects of higher demand from emerging Asia, except of course for emerging Asia itself. The reason is that the advanced economies account for a very large share of the world economy. For the United States, the difference between the two effects is even larger, given the limited export flows from the United States to emerging Asia.

The policy conclusion from this analysis is that rebalancing from public to private demand in advanced economies and rebalancing from external to domestic demand in key emerging economies are closely related and that a robust recovery requires that they move ahead together.

rate instability and overshooting remain important concerns for many emerging economies. However, improvements in fundamentals in many of these economies relative to those of advanced economies are consistent with a long-term appreciation of their currencies.

The challenge for emerging economies is to determine the extent to which changes in exchange rates bring them in line with fundamentals. Such an assessment would have to be made on a case-by-case basis.

- If exchange rate overshooting and falling competitiveness become concerns, countries should consider reducing fiscal deficits to ease pressure on interest rates, some building up of reserves, and possibly imposing some restrictions on capital inflows or removing controls on outflows. As discussed in more detail in Chapter 2, some countries in Latin America fall into this category. However, the restrictions on capital inflows appear to be second-best responses, and it will be important to deploy suitable regulatory and supervisory responses, as is being done in some countries, to obtain more durable protection against speculative excesses.
- If exchange rates are undervalued from a medium-term perspective, then nominal appreciation should be part of the policy response to inflows. This applies to a number of countries in emerging Asia (discussed further in Chapter 2) and, in some respects, presents a problem that might best be addressed by collective action taken in a coordinated manner. Nonetheless, where inflows are associated with sector-specific overheating, targeted macroprudential measures to address the specific risks can play a useful supplementary role.

Taking a medium-term perspective, economies should continue to strengthen their prudential frameworks and open up sectors to domestic and foreign direct investment, with a view to creating opportunities for productive use of incoming capital. This will help fight speculative excesses and reduce the need for macroprudential interventions, including restrictions on capital inflows. As far as the latter are concerned, their objective should be to ensure a productive use of capital. However, determining what is productive and what is not can be a challenge. Also, relatively little is known about the effectiveness and efficiency of macroprudential measures and capital controls beyond the very short term.

Structural Reforms Are Needed to Support Growth and Rebalancing

Structural policies to develop productive potential and support global demand rebalancing are essential to forging a sustainable recovery. A detailed discussion of the challenges, which are very com-

plex, is beyond the scope of this report.[23] Requirements will vary both across and within the groups of advanced and emerging economies.

High and persistent unemployment poses a major policy challenge in many advanced economies. Accommodative macroeconomic policies and financial sector repair (to facilitate access to credit by SMEs, which account for most employment) are essential to raise employment. In addition, labor and product market policies could enhance growth and job creation and reduce high unemployment over the medium term. Labor market reforms that could increase employment include (1) measures that eliminate two-tier labor markets by lowering protection afforded to workers on permanent contracts, while raising protection available to those with temporary contracts; (2) measures to facilitate job searching, skills matching, and labor mobility; (3) better access to training and education to support ongoing sectoral changes; (4) well-designed employment subsidies for vulnerable groups (the long-term unemployed or the young) to help accelerate their reintegration into the labor market. Complementary product market reforms could strengthen the employment effects by boosting labor demand and real wages through greater competition and lower markups on prices.

Many emerging and developing economies have successfully concluded first-generation reforms that improved macroeconomic policy frameworks, strengthening their resilience to macroeconomic shocks. However, to further raise potential growth and employment, efforts could usefully focus on simplifying product and services market regulation, raising human capital, and building critical infrastructure.

In key emerging Asian economies, the removal of distortions that drive high household or corporate saving rates and deter investment in nontradables sectors could boost domestically led growth, as demand from major advanced economies stays below precrisis trends. This could be helped with further deregulation and reform of financial sectors and corporate governance, as well as stronger social safety nets. Even with the rapid progress under way, however, such reforms will take some time to yield major gains.[24]

Developing Economies Need Help in Coping with Potentially Tighter Financing Constraints

Thanks to stronger policy frameworks, growth in the world's poorer economies is projected to return to about 6 percent during 2010–11, which is appreciably higher than during the 1990s. Encouragingly, foreign investors have not taken wholesale flight from developing economies, as evidenced, for example, by recovering equity markets, sovereign spreads that returned close to precrisis levels, and successful bond issuances (for example, by Senegal in December 2009).

However, some developing economies could face the prospect of scarcer and costlier capital. With tighter capital markets, these economies will need to increasingly rely on domestic sources of funding. This puts a premium on financial development. In addition, there is a need for supplementing traditional financing with innovative forms of finance such as risk-mitigation guarantees, public-private partnerships, and South-South investments.[25] Moreover, initiatives should be taken to improve poor countries' market access—for example, extending 100 percent duty-free and quota-free access to the least developed countries, with liberal rules of origin. Improved market access for low-income countries would have to be complemented with stronger trade facilitation and aid-for-trade programs to enhance these countries' trade capacity.

Policy Coordination Brings Major Benefits

Much progress has been made through coordination in alleviating liquidity strains and rebuilding confidence. Key actions—large interest rates cuts and unconventional monetary measures, financial support from the IMF and other international

[23]For further discussion, see, for example, OECD (2010) or World Bank (2010a and earlier years).

[24]For further information, see the IMF's April 2010 *Regional Economic Outlook* for Asia; or, for China specifically, see IMF Country Report No. 10/238.

[25]See World Bank (2010b).

financial institutions, and global fiscal stimulus—have all involved international policy coordination.

The quality of coordination will now have to change. Accommodative macroeconomic policies and support for the financial sector were necessary to avoid costly, chaotic adjustments in response to structural shocks that, ultimately, will need to be met with fundamental reforms. The challenge ahead is to put in place these fundamental reforms in a coordinated manner. Unlike during the height of the crisis, the measures that are required now differ across countries. They will need to encourage less public demand in the advanced economies, more domestic demand in key emerging economies, and further financial sector repair and reform. A separate IMF report for the G20 Mutual Assessment Program finds that the adoption of growth-friendly medium-term fiscal consolidation programs by advanced economies, policies to rebalance demand in emerging economies, and structural reforms to boost potential output everywhere would raise global GDP by 2½ percent over the medium term.[26] Hence, policy coordination can have major benefits, as it did at the height of the crisis.

Appendix 1.1. Commodity Market Developments and Prospects

The authors of this appendix are Thomas Helbling, Shaun Roache, Nese Erbil, and Marina Rousset.

After rising through early May 2010, commodity prices generally declined during the remainder of the second quarter, following increased financial market volatility on concerns about vulnerable euro area economies (Figure 1.19, top panel). Prices have since recovered much of their second-quarter losses, but only the prices of food commodities, beverages, and agricultural commodities have risen beyond early May peaks. The overperformance of the latter largely reflects downgraded harvest expectations resulting from poor weather conditions. The downgrading was particularly large for wheat, reflecting drought conditions and wildfires in Russia and some other major exporters, and wheat prices surged in July and August. Overall, in August the IMF commodity price index was about 6 percent above its December 2009 level.

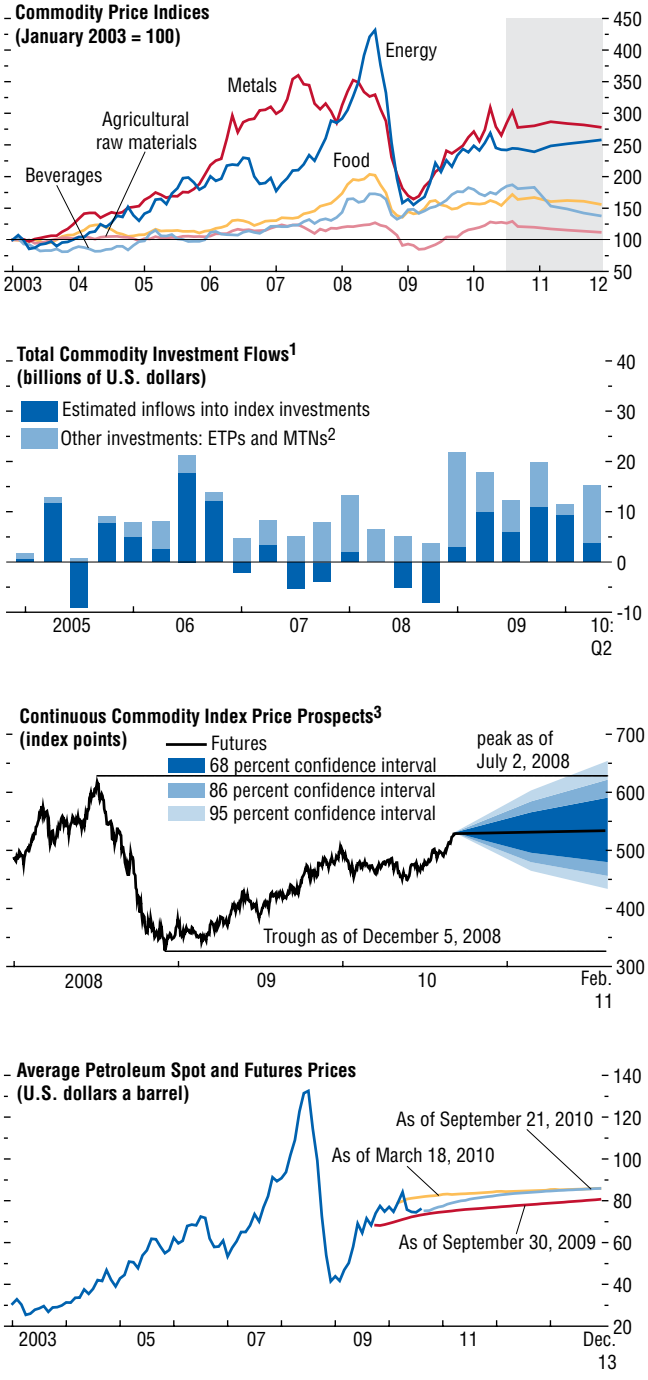
The recovery in global commodity markets continued through August, notwithstanding price fluctuations due to changes in expectations about near-term global economic prospects. Incoming commodity market data have corroborated expectations of robust or improving demand, given forecasts for global growth. The peaking of excess inventories for many cyclical commodities was another sign of normalization.

Recent commodity price developments were a reminder of the marked effects that broad financial market volatility has had on commodity prices during the global financial crisis and the early recovery. Such volatility spillovers from broader financial markets to commodity markets are not unusual, although their strength has varied depending on the underlying factors. When driven by rapidly changing expectations about future global economic prospects, as in May and June of this year, strong volatility spillovers are to be expected, given that commodities are both goods and real assets and that inventory demand is forward looking. Similarly, higher currency market volatility often leads to increased commodity price volatility.

In recent weeks, global financial market conditions have stabilized, as tail risks have been reduced by policy adjustment. Demand should continue to support commodity prices as the global recovery progresses under the baseline projections in this *World Economic Outlook*. In many cases, however, further upward price pressures will likely remain moderate and will be balanced by other forces. Demand growth should slow for some of the more cyclically sensitive commodities, notably metals, as the boost to global manufacturing activity from the inventory cycle wanes. Within the broad global context, prospects for activity in China are particularly important for many commodities, given the rapid increase in that economy's share of global commodity demand over the past decade. Moderating growth in China will thus likely be a force in restraining commodity demand expansion. On the supply side, there are still considerable capacity and inventory buffers. The commodity-specific impact of these broad forces

[26]See G20 (2010b).

Figure 1.19. Commodity and Petroleum Prices



Sources: Barclays Capital; Bloomberg Financial Markets; and IMF staff estimates.
[1]Data are estimates provided by Barclays Capital.
[2]Inflows into exchange-trade products (ETPs) and medium-term notes (MTNs).
[3]The Continuous Commodity Index is a futures contract on a composite of 17 commodity futures prices (equally weighted), which is traded at the New York Board of Trade. Price prospects are based on prices of futures options as of September 21, 2010.

will vary, depending on factors such as exposure to demand in China, sensitivity to global manufacturing activity, and the elasticity of supply to price and demand signals.

The recent wheat price surge has not altered this relatively benign near-term outlook. The surge has led to upward revisions in the wheat price projections through 2011, but with larger global wheat inventories now than during 2006–07, the market should be in a better position to absorb this temporary supply shock. Against this backdrop, price spillovers to other major food crops—through substitution linkages on the consumption and supply sides—have been limited so far.

Market expectations mirror the favorable near-term prospects for commodity markets. The probability distributions of future spot prices derived from options contracts suggest that risks remain tilted to the upside, although the probability of another broad-based commodity price spiking close to or above 2008 peaks continues to be limited in the near term (Figure 1.19, third panel). The risks for extreme price spikes are related primarily to major disruptions to supply, including for geopolitical and weather-related reasons. Other risk factors include unexpected changes in the pace of the global economic recovery, as well as renewed financial market stress and volatility. Within this broad picture, the vulnerability of wheat markets to further supply disruptions has increased with the supply shocks of this summer, and any further significant shock through the remainder of this harvest year would likely also lead to large spillovers to other major crop prices.

While the near-term commodity market outlook is benign given global cyclical conditions, commodity prices are projected to remain high by historical standards over the medium term, with risks tilted to the upside. The upward shift in commodity demand growth that started some 10 years ago is expected to be sustained as global growth continues to be driven by emerging and developing economies. A sustained upward shift in commodity demand can lead to long periods of trend increases in real commodity prices because of sluggish supply responses, given long lags for exploration and investment. As discussed in Box 1.5, there is evidence that base metals

are in the midst of such a trend upswing after 20 years of trend declines.

Oil and Other Energy Markets

The spot price of one barrel of crude oil in the world market has remained broadly in the $70 to $80 range that began to emerge in fall 2009, although there has been occasional trading above and below the band. Within the anchor provided by the band, price volatility has remained relatively elevated since concerns over fiscal positions and competitiveness in vulnerable euro area economies intensified in May.

The normalization in physical spot oil markets has continued since the release of the April 2010 *World Economic Outlook*. Oil demand strengthened more than expected in the first half of 2010, primarily reflecting stronger-than-projected global activity and an increase in Chinese oil demand above what would have been expected on the basis of activity. Current data indicate that global oil demand rose by 2.7 percent on an annual basis in the first half of the year, the strongest year-over-year increase since 2004 (Table 1.2). While demand has risen more than expected in advanced as well as emerging and developing economies, the latter still account for virtually all the growth in demand (Figure 1.20, top left panel). In particular, oil demand in China increased by 14 percent in the first half of the year, exceeding real GDP growth by some 3 percentage points. Such divergences between oil demand and broad activity growth in China were observed in the past, notably in early 2004, but they seemed to reflect special factors and remained short-lived. Nevertheless, compared with other cyclically sensitive commodities, notably base metals, advanced economies still account for a relatively larger share of final oil consumption.

Oil production edged up during the first half of 2010, almost matching the rise in demand. About half the supply increase is attributable to rises in total production outside the Organization of Petroleum Exporting Countries (OPEC), notwithstanding production declines in the North Sea and Mexico (middle left panel). The turnaround in overall non-OPEC production reflected widespread gains, partly due to the incentives from high prices to ramp up production, including through greater use of enhanced recovery techniques where feasible. Still-favorable cost conditions on the oil services side have reinforced these incentives.

Increases in OPEC production of natural gas liquids, which are not subject to production quotas, also account for a substantial share of the production increases in 2010 (top right panel). OPEC crude oil production in contrast has risen only marginally despite low capacity utilization in some major producers, highlighting the continued need for production curbs to keep prices in the $70–$80 range.

Overall, however, oil markets have not yet reached a state of full cyclical normalization. With the broadly balanced expansion of demand and supply, the correction of excess cyclical inventories—those above seasonal five-year average levels—in the Organization for Economic Cooperation and Development countries has remained partial (middle right panel). And OPEC spare capacity buffers remain high despite some rise in crude oil production because capacity has increased even more. The continued upward slope in the oil futures curve ("contango") is another reflection of incomplete normalization in oil markets.

Oil demand will continue to rise as the global recovery progresses, with the buoyancy determined in part by the strength of the expansion in activity. Based on previous patterns in the early stages of expansion after global recessions, some of the recent buildup of oil demand momentum in emerging and developing economies is likely to carry into 2011. While the momentum will put upward pressure on prices, oil futures data suggest that the extent of price pressure will remain limited (see Figure 1.19, bottom panel). On the demand side, despite the likely rapid demand expansion in emerging and developing economies, global oil demand growth is expected to be moderated by stagnation or subdued increases in advanced economies. Such expectations are consistent both with recent fuel efficiency trends and the estimated relationship between oil demand, activity growth, and real oil prices in advanced economies. Second, information on upstream

Table 1.2. Global Oil Demand and Production by Region

(Millions of barrels a day)

						Year-over-Year Percent Change							
	2008	2009	2010 Proj.	2009 H2	2010 H1	2003–05 Avg.	2006	2007	2008	2009	2010 Proj.	2009 H2	2010 H1
Demand													
Advanced Economies	46.8	44.8	45.0	44.8	45.1	1.2	–0.6	–0.4	–3.5	–4.1	0.4	–2.7	0.4
Of Which:													
United States	19.8	19.1	19.3	19.1	19.3	1.7	–0.5	–0.1	–5.9	–3.7	1.1	–1.4	1.6
Euro Area	11.2	10.5	10.4	10.4	10.3	0.5	–0.3	–1.5	–0.6	–6.0	–1.2	–7.5	–2.7
Japan	4.8	4.4	4.3	4.4	4.4	0.1	–2.4	–3.1	–4.9	–8.8	–1.4	–4.0	0.5
Newly Industrialized Asian Economies	4.5	4.5	4.7	4.6	4.7	1.0	2.1	4.5	–1.3	1.9	3.3	5.5	4.2
Emerging and Developing Economies	39.2	39.9	41.6	40.6	41.3	4.1	3.7	4.2	3.0	1.8	4.2	3.6	5.4
Of Which:													
Commonwealth of Independent States	4.2	4.0	4.2	4.1	4.2	0.9	3.3	2.5	2.6	–5.5	4.7	–5.0	5.9
Developing Asia	22.3	23.5	24.5	23.7	24.7	5.1	4.4	5.1	1.8	5.2	4.2	8.7	5.8
China	7.7	8.4	9.1	8.7	9.1	10.3	7.6	4.4	2.5	8.0	9.0	13.3	14.5
India	3.1	3.3	3.3	3.2	3.4	2.4	8.3	6.5	4.0	5.7	2.5	6.1	2.6
Middle East and North Africa	8.3	8.5	8.8	8.7	8.7	5.1	3.5	3.6	5.1	3.5	3.4	4.0	4.0
Western Hemisphere	5.6	5.6	5.8	5.7	5.8	2.5	3.8	5.7	5.4	0.0	4.2	0.7	4.4
World	86.0	84.7	86.6	85.4	86.4	2.4	1.2	1.6	–0.6	–1.4	2.2	0.2	2.7
Production													
OPEC (current composition)[1,2]	35.6	33.3	34.0	33.6	34.0	6.2	0.8	–1.0	2.9	–6.4	2.0	–5.3	2.8
Of Which:													
Saudi Arabia	10.4	9.3	. . .	9.3	9.4	7.5	–1.2	–4.7	4.2	–10.6	. . .	–10.6	0.8
Nigeria	2.1	2.1	. . .	2.2	2.3	6.0	–4.4	–4.7	–8.2	–0.4	. . .	2.9	16.3
Venezuela	2.6	2.4	. . .	2.4	2.4	1.6	–5.8	–7.8	–2.0	–7.8	. . .	–5.9	4.7
Iraq	2.4	2.5	. . .	2.5	2.4	2.5	4.9	9.9	14.3	2.5	. . .	6.1	–0.3
Non-OPEC	50.9	51.7	52.6	52.0	52.6	1.0	1.0	0.8	0.0	1.6	1.7	2.7	2.4
Of Which:													
North America	13.3	13.6	13.8	13.7	14.0	–1.1	0.4	–0.5	–3.8	2.2	. . .	5.0	3.6
North Sea	4.3	4.1	3.9	4.0	4.0	–5.7	–7.6	–5.0	–5.1	–4.5	. . .	–6.1	–7.2
Russia	10.0	10.2	10.5	10.3	10.4	7.7	2.2	2.4	–0.7	2.0	. . .	2.8	3.0
Other Former Soviet Union[3]	2.8	3.1	3.2	3.1	3.1	7.6	11.2	11.5	3.2	9.2	. . .	15.2	2.4
Other Non-OPEC	20.4	20.6	21.3	20.8	21.2	1.2	2.0	1.0	3.8	1.3	. . .	1.4	3.3
World	86.5	85.1	. . .	85.6	86.7	3.0	0.9	0.1	1.2	–1.7	. . .	–0.6	2.6
Net Demand[4]	**–0.6**	**–0.3**	**. . .**	**–0.2**	**–0.3**	**–0.5**	**–0.4**	**1.2**	**–0.6**	**–0.4**	**. . .**	**–0.2**	**–0.4**

Sources: International Energy Agency, *Oil Market Report*, September 2010; and IMF staff calculations.

[1]OPEC = Organization of Petroleum Exporting Countries. Includes Angola (subject to quotas since January 2007) and Ecuador, which rejoined OPEC in November 2007 after suspending its membership from December 1992 to October 2007.

[2]Totals refer to a total of crude oil, condensates, natural gas liquids, and oil from nonconventional sources.

[3]Other Former Soviet Union comprises Azerbaijan, Belarus, Georgia, Kazakhstan, Kyrgyz Republic, Tajikistan, Turkmenistan, Ukraine, and Uzbekistan.

[4]Difference between demand and production. In the percent change columns, figures are percent of world demand.

investment projects analyzed by the International Energy Agency suggests that, under current execution plans, these projects will provide for a continued expansion in upstream production on the order of 1 percent per year. Though moderate, this pace of expansion can accommodate rapid demand growth in emerging and developing economies without substantial draws on OPEC spare capacity for much of the potential range of demand outcomes (Figure 1.20, bottom left panel).

Under such relatively benign supply conditions, OPEC production policies would continue to remain an important factor in determining prices. In particular, the price path will depend on (1) the target price at which OPEC members will accommodate an increasing call on their spare capacity, (2) the reservation price at which additional supply would be reduced, and (3) quota discipline among members.

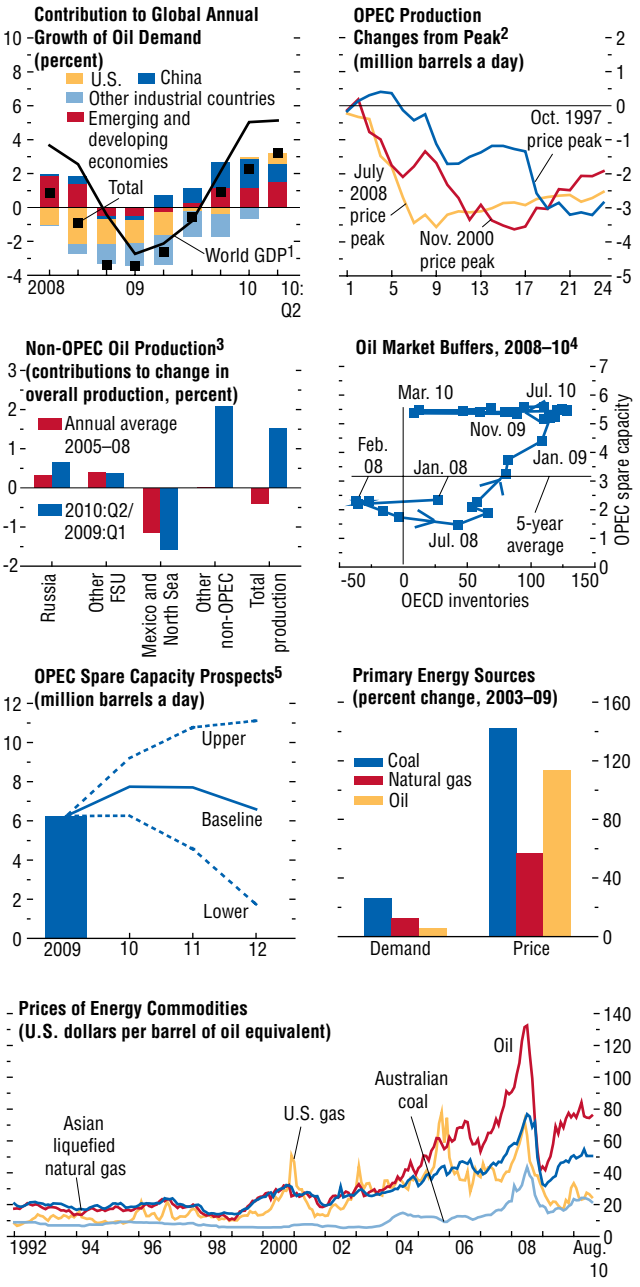
The main upside risks to this baseline picture of relative stability in the oil market come from the supply side, whereas on the demand side they seem limited to large upward surprises. On the downside, demand risks related to risks to the global recovery remain important. In terms of the distribution of risks, oil futures market participants see relatively large price spikes to be more likely than large price drops, although such events remain tail risks.[27]

Supply risk factors with the potential for a sustained impact are likely to come from obstacles to investment projects, for both new and replacement projects, although some geopolitical risks may also have a longer-lasting price impact. High oil prices and lower costs have helped keep capital expenditure at robust levels, supporting an unexpected increase in non-OPEC production despite ongoing declines in the North Sea and Mexico. But the oil spill in the Gulf of Mexico has illustrated the risks involved in projects at the technological frontier. The production effects of the moratorium on new deepwater drilling in the U.S. part of the Gulf will be small from a global perspective, as deep sea exploration and development elsewhere have continued. Nevertheless, expansion of this segment of unconventional oil production faces risks that extend beyond U.S. borders and safety-related government intervention.

Price differentiation has remained a hallmark of broad fuel market developments (Figure 1.20, bottom panel). In particular, natural gas prices in the North American market have remained relatively

[27]Futures options prices as of September 20, 2010, suggest a price level of $123.90 per barrel at the upper 95 percent of the expected distribution for end-June 2011(a 95 percent difference from the first-month future price on that day) and a price of $47.10 at the lower 5 percent of the expected distribution (a 38 percent difference).

Figure 1.20. World Energy Market Developments



Sources: IMF Primary Commodity Price System; International Energy Agency, *Oil Market Report* September 2010; and IMF staff calculations.

[1]Annual change, in percent.

[2]Organization of Petroleum Exporting Countries (OPEC) membership as of the first month of each episode. Months from oil price peak on x-axis.

[3]North Sea: Norway and United Kingdom. Other FSU: other former Soviet Union.

[4]Organization for Economic Cooperation and Development (OECD) stocks — deviations from five-year average (million barrels) on x-axis, OPEC effective spare capacity (million barrels a day) on y-axis.

[5]The chart shows the expected spare capacity based on supply forecasts by the International Energy Agency and stochastic simulations of regional oil demand equations (estimated over 1981–2008) around the WEO GDP forecasts. The lines labeled "lower" and "upper" show the 14 and 86 percentiles implied by stochastic simulations.

low, reflecting weak demand, given the still large output gap in the region and the shale gas "revolution" (the promise of unlocking large quantities of natural gas from shale deposits through advances in hydraulic fracturing). With the implied shift in relative energy prices, natural gas has recouped some of its previous loss of competitiveness as a primary energy input, including in the power sector. The improvement in long-term U.S. gas supply prospects has also had reverberations in gas markets in other regions. One transmission channel has been the redirection of liquefied natural gas (LNG) shipments away from the United States in the context of an improved global distribution infrastructure. This redirection has introduced some price arbitrage between markets and changes in pricing regimes in European gas markets, notably with respect to the indexing of gas contract prices to oil markets. How lasting the pricing regime changes and the pressure for further narrowing of the large price differentials across regions will be depends on a number of factors. The most important ones are prospects for developing shale gas production on other continents and the prices at which shale gas production can be expanded on a sustained basis. The same factors will also determine whether natural gas will experience sustained global market share increases as a source of primary energy.

Metal Market Developments

Metal prices have responded strongly so far to changing expectations about prospects for the global economic recovery. Following a sharp rise through May, due largely to a faster pace of recovery than expected, metal prices declined as turbulence in financial markets cast a cloud over the prospects for growth (Figure 1.21, top left panel). Reflecting the influence of common macroeconomic factors, metal prices have moved in tandem with broader financial conditions since the intensification of the crisis in the third quarter of 2008, notably with global equity markets (top right panel). Metal-specific supply developments have played some part in price behavior, but the relatively low dispersion of price changes so far in 2010 highlights the importance of common factors (middle left panel).

The outlook for metal demand depends importantly on growth prospects in China, given the rapid rise of this economy's share in global demand over the past decade (middle right panel). Following a strong rise in 2009, related to significant macroeconomic policy stimulus—directed, in large part, toward infrastructure investment—China's metal demand has now stabilized at a high level, and two developments are likely to restrain demand growth in the quarters ahead. First, the pace of growth in China should continue to moderate as the effects of stimulus wane and efforts to slow credit growth affect investment. Second, end users may choose to run down the inventories that built up rapidly during 2009 to support increased investment activities. Base metal stocks held in warehouses monitored by the Shanghai Futures Exchange have only just begun to decline from their recent cyclical peaks, with destocking in copper most advanced. Renewed appreciation of the Chinese renminbi may partially offset these factors by increasing the purchasing power of domestic metal consumers. There have been signs of recovering metal demand from advanced economies during early 2010, but the gradual pace of expansion anticipated for these economies suggests that emerging economies will remain the engine of demand growth (bottom left panel). On balance, this suggests that metal prices should increase modestly through the end of 2011.

Supply issues have not played a major role in price changes in recent months. The exception is iron ore, for which a shift from contract to spot pricing affected the price formation process and may explain some of the recent rise in prices. However, over the medium term, constraints on the growth of supply may become more important in determining market balances and prices (Box 1.5). Deteriorating mine productivity (copper and tin) and the impact of policies targeted at reducing the impact of metal smelting on the environment (lead) are among the most important constraints on supply. Inventory-to-use ratios increased during the recession and provide some buffer for shocks; however, they have begun to decline and would experience sustained falls in the event of physical market deficits (bottom right panel). The medium-

Box 1.5. Have Metals Become More Scarce, and What Does Scarcity Mean for Prices?

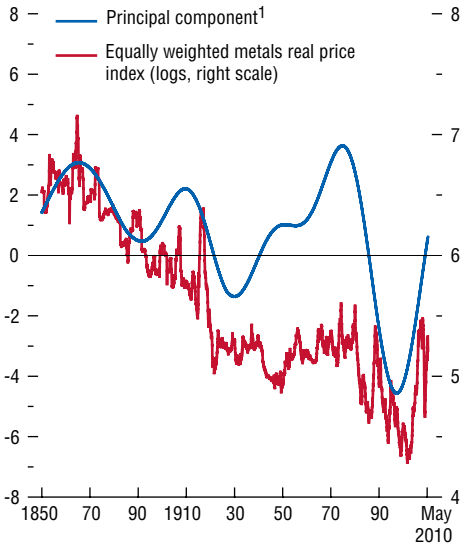
Emerging economies have been an engine of growth during the current global economic recovery, and they are likely to continue to lead growth in the years ahead. Because their growth is more commodity-intensive than that of advanced economies, the rapid increase in demand for commodities over the past decade is set to continue. Will supply keep pace with demand growth at prices close to today's levels, or will increasing commodity scarcity require that prices keep rising over the long term? This box addresses that question for base metals by assessing a commonly accepted indicator of scarcity, the long-term behavior of real prices.

What does economic theory predict for long-term commodity price behavior? Hotelling (1931) showed that the price of a nonrenewable resource should reflect the marginal cost of extraction and the in situ value; that is, the marginal value of keeping reserves in the ground. This theory famously predicts that the resource price should increase at the rate of interest if marginal extraction costs remain unchanged. In equilibrium, the return from keeping reserves in the ground is just equal to what could be earned in interest, keeping the resource owner indifferent to extracting one more unit of the commodity. The increase in prices can then be interpreted as a "scarcity rent," and the price can be expected to continue rising until demand is choked off and the resource is effectively exhausted.

Changes in scarcity can mean that prices do not follow this rule in practice. Prices may rise faster than the rate of interest, reflecting permanent shifts in demand that cannot be met by a compensating change in supply due to physical or technological constraints (for example, the finite availability of reserves or deteriorating ore quality). Prices may also remain broadly unchanged or even decline in the event that marginal extraction costs fall (and supply increases) or end users find lower-cost substitutes, both the result of new technology. This suggests that the long-term behavior of commodity prices can provide useful information for assessing how the nature of scarcity is changing.

The author of this box is Shaun Roache.

Low-Pass-Filtered Metal Prices: First Principal Component



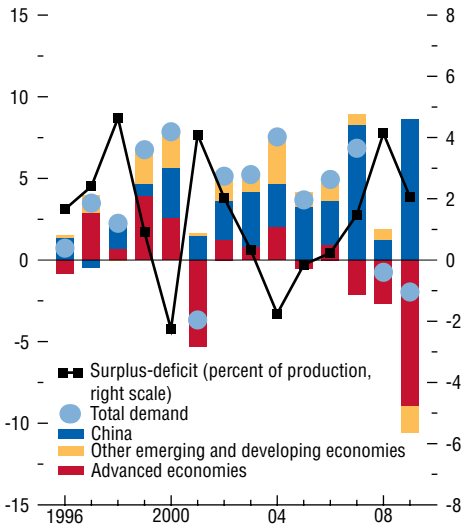
Sources: Bloomberg Financial Markets; London Metal Exchange; and IMF staff calculations.
[1]Spliced principal component incorporating the largest number of metals at each date based on data availability.

The behavior of a real base metals price index going back to 1850 suggests that metal supply became more abundant during the 19th century as real prices declined, with somewhat more balanced supply and demand growth since 1900 leading to broadly constant real prices (first figure). Hotelling's prediction of lower prices stemming from a drop in marginal costs has come about largely because of technological innovation, which has allowed for a combination of lower extraction costs and new ore deposit discoveries. These developments over the very long term have been punctuated by upswings and downswings that have sometimes persisted for decades. One way to analyze time variation in long-term price behavior is to examine the so-called low-frequency component in these series. This component can be extracted with a low-pass filter, which removes the influence of fluctuations at seasonal or business cycle frequencies that play an influential role in commodity price behavior

Box 1.5 *(continued)*

Demand Growth Contributions and Market Balances

(Annual percent change, unless noted otherwise)



Sources: World Bureau of Metal Statistics; and IMF staff calculations.

(Cashin, McDermott, and Scott, 2002). For commodities, in contrast to many macroeconomic variables, it may also be appropriate to filter out even longer periodic fluctuations that are unrelated to long-term scarcity.

Some previous studies have suggested the possibility of "super cycles" for commodity prices (Cuddington and Jerrett, 2008), and this is supported by the empirical evidence. For example, a significant contribution to the total variation in real prices comes from slow-moving (or low-frequency) components, which include the effects of long-term scarcity but also the existence of medium-term super cycles.[1] The underlying causes of these super cycles are the long implementation lags for discovery, exploration, and capital investment in minerals industries, rather than true long-term scarcity. For example, for base and precious metals, the average time needed to confirm a discovery following initial exploration can be as long as 20 years, with the average time from discovery to production estimated at about nine years (Sillitoe, 2000). The sluggish supply response to shifts in demand can then give rise to price cycles with a longer duration than the typical two- to eight-year business cycle (Slade, 1982).

For the purpose of this box, measures of the long-term component in real base metal prices were thus extracted with a low-pass filter that excludes all fluctuations with a cycle frequency of less than 30 years (including business and super cycles).[2] To distill the common factor in the long-term price measures for individual metals, the first principal component was computed for different groups among them, based on when price data first become available. The first principal component accounted for between 70 percent and 80 percent of total variance in all cases, depending on which metals were included.

These measures show very similar behavior in the long-term component of real prices for base metals. They bottomed out between 1996 (aluminum) and 2000 (zinc) and have risen for all metals since then. This followed a period lasting about 25 years, during which the trend component in real prices declined significantly. The measure of the common factor in long-term real base metal prices reached a trough in December 1998 and subsequently experienced its largest rise for at least a century over the past 12 years (see first figure). The rise has not been interrupted by the global financial crisis or the Great Recession. The decline and recovery of metal prices observed since 2007 is instead largely explained by fluctuations in the business cycle component in prices.

What explains this evidence for increased long-term scarcity of base metals? The most important explanation is increasing commodity demand by emerging economies, particularly China, together with a relatively sluggish supply response (second

[1]For most of the metals considered in this analysis, periodograms, which decompose the variance in real prices into cycles of different frequencies, show that cycles with durations significantly longer than the business cycle account for a particularly large share of the variation.

[2]This analysis uses U.S. dollar price indices deflated by the U.S. consumer price index and a Christiano-Fitzgerald asymmetric filter, with adjustments for I(1) series including aluminum, copper, iron ore, and lead.

figure). During 1998–2009, global base metal demand grew by about 4 percent on an annual average basis, slightly exceeding the growth of primary production.[3] As a result, most metal markets have moved into, or very close to, deficit, as measured by the difference between primary production and consumption. Deficits have been filled by running down inventories or using scrap, but these resources remain limited.

Supply has shown some signs of responding to higher prices, and global primary production grew at its fastest annual rate in at least 10 years in 2007; however, even in the aftermath of the Great Recession, concern has continued to build about the ability of supply to keep pace with future consumption growth. This is only partly related to a lack of capital investment. For some metals, technological and geological constraints have led to declining mine productivity—particularly for copper and tin. For other metals, constraints on current production technologies imposed by environmental policies may also curtail supply—especially for lead and, to a lesser extent, aluminum.

[3]Measured as the IMF-index-weighted average of aluminum, copper, iron ore, lead, nickel, tin, and zinc.

Does the evidence of increased scarcity mean that demand-supply balance will require even higher prices in the future? The measure of scarcity used in this analysis suggests that base metal prices are only about halfway through the current period of trend price increases. On average since 1850, the common factor in the long-term component of metal prices has taken about 20 years to move from trough to peak, although the duration of these upturns varies and depends on the pace of technological innovation.[4]

Until now, there have been few convincing signs of a persistent increase in the growth of metal supply, and an ongoing global recovery will preclude a strong offset from cyclical factors. This would mean that, if demand continues to grow at the rates observed over the past decade, the current era of higher scarcity, rising metal price trends, and a balance of price risks tilted toward the upside may continue for some time.

[4]Based on the Bry-Boschan methodology for identifying turning points. The average length of low-frequency cycles—a peak-to-peak cycle—using the low-pass filter is about 35 years.

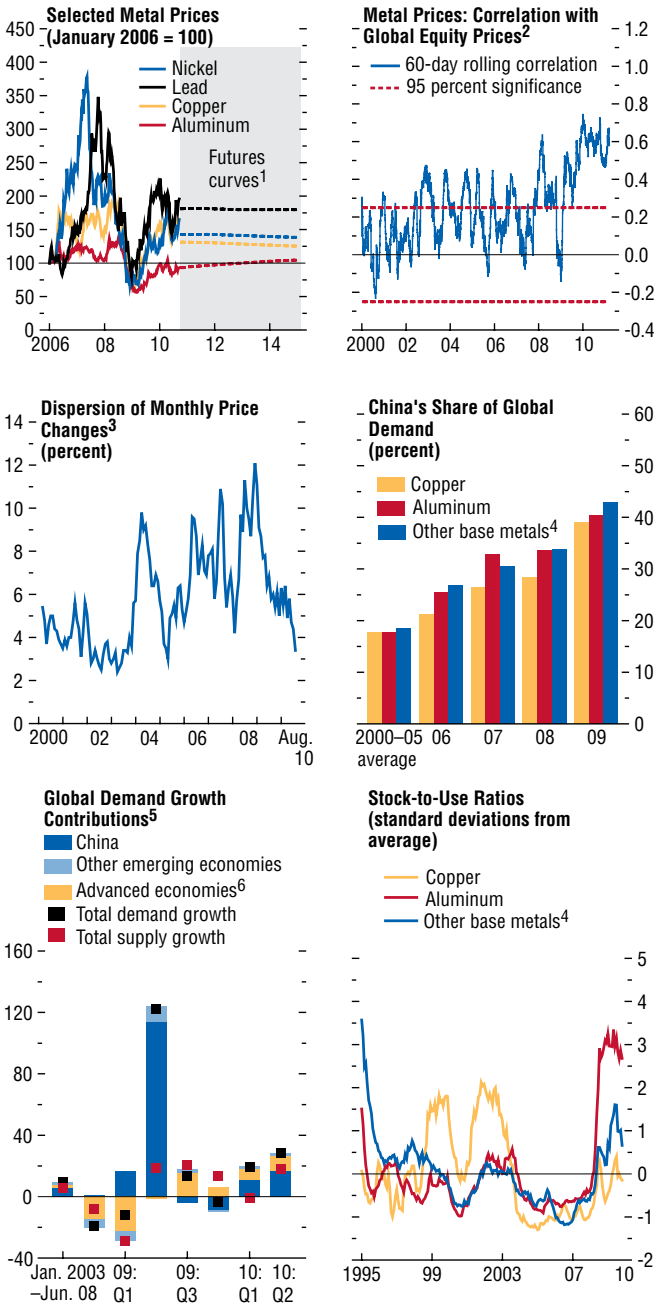
term balance of risks for prices should thus remain tilted toward the upside, particularly for copper.

Food Market Developments

Food prices broadly declined during the first two quarters of 2010 but have since recovered to leave the IMF food and beverage price index about 20 percent higher for the year to date (Figure 1.22, top left panel). Price volatility has picked up somewhat in recent months, but it still remains considerably below the elevated levels of the 2008–09 period, and the probability of future extreme price movements—implied from options prices—has fallen modestly (top right panel). In contrast to other commodities, including base metals and energy, food prices have shown little sensitivity in recent months to changing expectations of global growth or to changing global financial market conditions. Reflecting a return to more normal conditions, the correlation of food prices with other commodities has been steadily declining since peaking in early 2009, and comovement is now approaching the levels that characterized food markets before the 2008–09 boom and bust (middle left panel).

The normalization is due largely to the again-dominant influence of commodity-specific supply developments for major food crops. In particular, during the early part of 2010, as other commodity prices were rising on improving prospects for the global economy, food prices were drifting lower as demand projections remained relatively stable and global supply expectations were revised higher (middle right panel). The expansion of global acreage in

Figure 1.21. Developments in Base Metal Markets



Sources: Bloomberg Financial Markets; London Metal Exchange; Thomson Datastream; World Bureau of Metal Statistics; and IMF staff calculations.
[1]Prices as of September 22, 2010.
[2]Correlation of log price change.
[3]Three-month average of the standard deviation of the cross section of monthly log changes in the prices of aluminium, copper, lead, nickel, tin, and zinc.
[4]IMF index-weighted average of nickel, tin, zinc, and lead.
[5]Percent change from one quarter to the next, annualized.
[6]Excluding newly industrialized Asian economies (Hong Kong SAR, Korea, Singapore, and Taiwan Province of China).

response to higher prices during 2005–08 contributed to the rise in supply, along with robust yields, in part due to favorable weather patterns in key producing areas. In recent months, global supply estimates for the major crops in 2010 have begun to be downgraded. The sharpest downgrade has been for the 2010 wheat harvest due to adverse weather conditions in Russia, Ukraine, and to a lesser extent North America. Spillovers from these supply shocks to other food prices have so far been limited, in part reflecting the temporary nature of the shocks, relatively ample wheat inventories. Harvest expectations for other major crops have been revised modestly lower, with the early effects of the La Niña weather pattern contributing to lower output in Asia. Notwithstanding these revisions, prospects remain for relatively buoyant supply this year from possible wheat substitutes, including corn and rice, and crops that may be more indirectly affected by higher wheat prices, including soybeans.

The relatively low cyclical sensitivity of food demand means that actual and anticipated demand growth has remained modest. Emerging economies should continue to account for much of the growth in demand for major crops during 2010–12, with demand in advanced economies remaining relatively sluggish, continuing the pattern of recent years (bottom left panel). One factor that has restrained demand growth is the slowdown in the growth of biofuel production, as lower fuel prices led to a decline in the energy-to-food price ratio and thereby reduced the incentives for biofuel use. This slowdown may be temporary, however, as energy prices have recovered faster than corn prices (bottom right panel). A number of large U.S. ethanol producers have now emerged from bankruptcy or have restarted idled production facilities, and the share of the U.S. corn crop used for ethanol production is expected to increase modestly to 35 percent in 2010. The prospects for a further increase in biofuel demand will also depend on public policies. Examples include changes in usage mandates and ceilings, including the outcome of the current review of the amount of ethanol in gasoline sold in the United States, and other forms of government support, such as subsidies.

Overall, food prices remain high in real terms compared with averages over the past few decades and, at this level, are expected to provide for a broadly balanced expansion of demand and supply. In the near term, with the exception of wheat, stock-to-use ratios could even increase, as markets for major crops may be in surplus in 2010 and 2011. Nevertheless, stock-to-use ratios are unlikely to return to long-term averages.[28] The capacity of some major food commodity markets to absorb supply shocks therefore may be relatively limited, suggesting that food prices will remain subject to upside risks over the medium term.

Appendix 1.2. Indicators for Tracking Growth

The author of this appendix is Troy Matheson, with research assistance from David Reichsfeld.

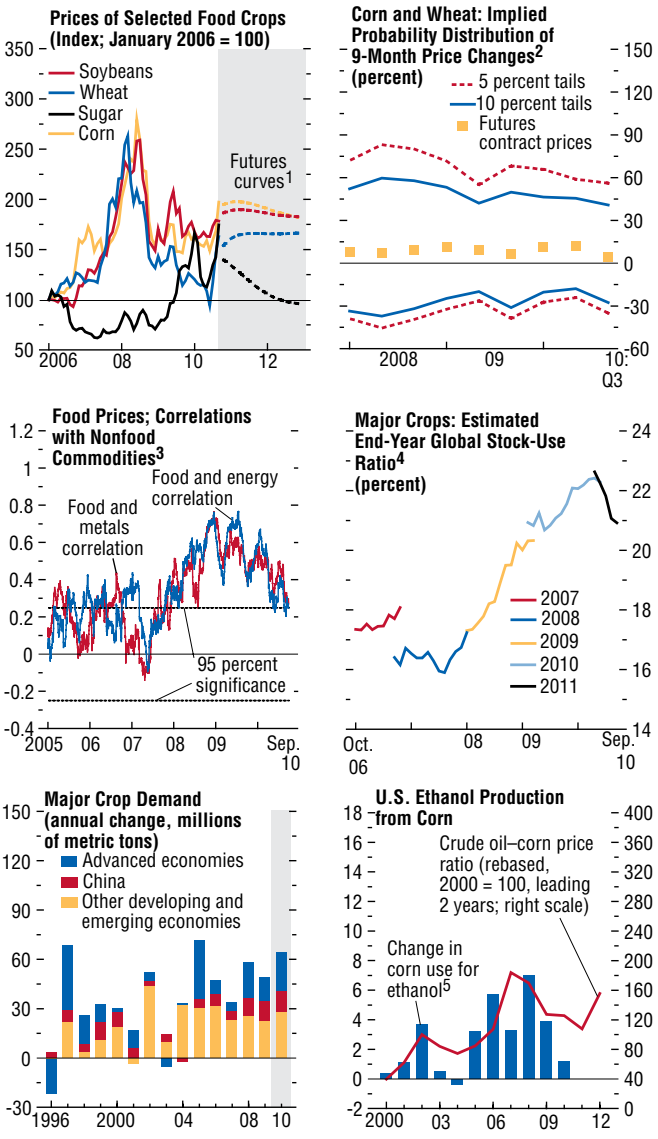
Growth indicators have recently been developed that utilize a wide range of economic data. This appendix discusses the methodology underlying the growth indicators and provides some details on the data used to compute the indicator for each country. Also discussed is how well the growth indicators fit the past behavior of quarterly real GDP growth and how well they forecast relative to a simple time-series benchmark.

The colors in the growth tracker heat map (Figure 1.23) are based on the behavior of the new growth indicators over time. Figure 1.24 shows a stylized example of how to interpret what each color in the heat map means: orange indicates growth below trend and falling; red and pink indicate contraction at increasing and moderating rates, respectively; the two lightest shades of blue represent rising growth rates, with the lightest blue indicating that growth is below potential; and the darkest blue indicates that growth is moderating but remains above potential.

As background, it is important to understand that economic data are often very noisy and available only with a substantial lag. Determining the underlying state of an economy is thus very difficult in practice, requiring a mix of information gleaned

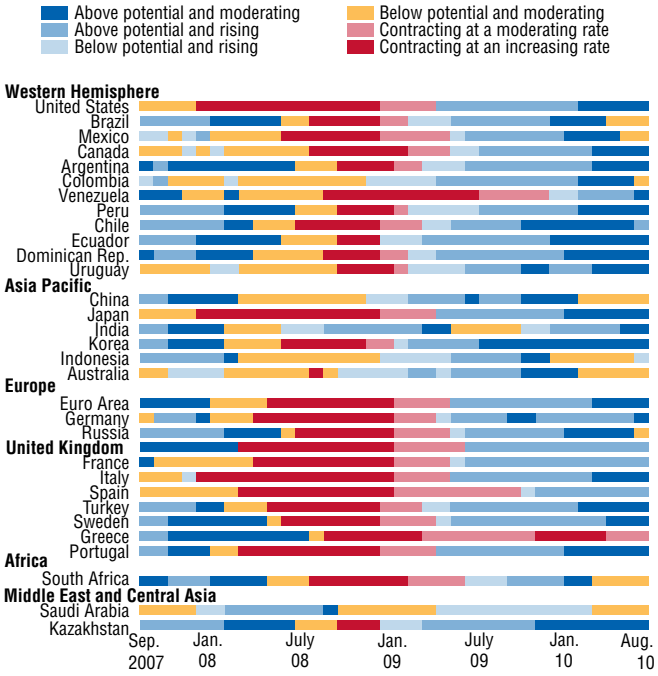
[28]See Chapter 1 of the April 2010 *World Economic Outlook*, pp. 40–41.

Figure 1.22. Recent Developments in Markets for Major Food Crops



Sources: Bloomberg Financial Markets; U.S. Department of Agriculture estimates; Datastream; and IMF staff calculations.
[1]Prices as of September 22, 2010.
[2]Implied from nine-month maturity option contracts and measured as the unweighted average of corn and wheat percent difference from current spot prices.
[3]Rolling 60-day correlation of log price changes between the IMF food index and the IMF metals and energy indices.
[4]Monthly unweighted average for corn, rice, soybeans, and wheat.
[5]Change in proportion of U.S. corn harvest used for ethanol, percentage points.

Figure 1.23. Growth Tracker



Sources: Haver Analytics; and IMF staff calculations.

Note: The growth trackers are constructed using a large number of daily, monthly, and quarterly indicators and a dynamic factor model that incorporates all available data. The trackers are estimated and forecast at a monthly frequency. The classifications represented in the table are based on the behavior of a centered seven-month moving average. The most recent estimates implicitly include forecasts and can change with the arrival of more data. The trend is the growth rate of potential output in the WEO projections. Within regions, countries are listed by economic size.

from economic and statistical models and, perhaps most important, economic judgment. Against this backdrop, the growth indicators should be viewed as a useful addition to the toolkit for assessing the current state of economic activity.

The Dynamic Factor Model

The growth indicators are estimated using a dynamic factor model (DFM).[29] The DFM is particularly useful in this context, because it can utilize a large number of economic time series in a timely fashion and can produce reasonable short-term forecasts.

The DFM assumes that real GDP growth y_t can be decomposed into a common component χ_t and an idiosyncratic component ε_t. The common component captures the bulk of the covariation between growth and a wide range of economic indicators, while the idiosyncratic component is assumed mainly to affect only growth:

$$y_t = \mu + \chi_t + \varepsilon_t, \text{ where } \varepsilon_t \sim N(0, \psi), \qquad \text{(A.1.2.1)}$$

where μ is a constant and $\chi_t = \Lambda F_t$, with $F_t = (F_{1t}, \ldots, F_{rt})'$ and $\Lambda = (\lambda_1, \ldots, \lambda_r)$. The common component is thus related to growth through a linear combination of a small handful of r common factors F_t. The common factors themselves are, in turn, estimated using information from a potentially large set of economic indicators. For each country, it is the common component of growth that is used as the growth indicator.

The dynamics of the common factors are captured by the following vector autoregressive process:

$$F_t = \sum_{i=1}^{p} \beta_i F_{t-i} + B\nu_t, \text{ where } \nu_t \sim N(0, I_q), \quad \text{(A.1.2.2)}$$

where the β_is are $r \times r$ matrices, p is the lag length of the process, B is an $r \times q$ matrix, and q is the number of underlying common shocks driving the economy. The number of static factors r is generally assumed to be large relative to the number of common shocks in order to capture the dynamic relationships in the economy. See Giannone, Reich-

[29]See Giannone, Reichlin, and Small (2008); Matheson (2010, forthcoming); and Liu, Romeu, and Matheson (forthcoming).

lin, and Sala (2005) for the detailed assumptions underlying the model.

For the growth indicators, the number of common factors r is chosen for each country and at each point in time using a simple rule that aims to avoid overfitting: the number of factors is chosen to minimize Schwarz's Bayesian information criterion (SBC) in regressions of quarterly real GDP growth on the common factors. The number of common shocks q is then chosen using information criteria described in Bai and Ng (2007). The number of lags of the factors p included in the model is determined using the SBC.

One of the key advantages of this framework is that common components of growth can be estimated when some indicators have missing values at the end of the sample due to publication lags. This allows all available information to be utilized in a timely fashion.

Data Selection

Data selection is a crucial step in developing the indicators. Choosing series that are too focused on particular sectors of the economy will bias the estimates, reducing the effectiveness of the DFM in estimating the underlying factors driving growth.

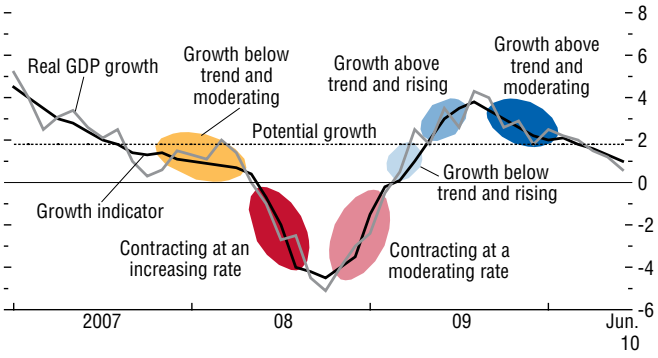
For each country, close attention has been paid to choosing data from a broad cross section of the economy. Given poor data quality, particularly for some emerging economies, a multistep procedure has been employed to clean from data of outliers and missing observations. The vast majority of the series are measured at a monthly frequency, with the remaining series measured at daily and quarterly frequencies. All series are converted to a monthly frequency, and where required, they have been transformed to be devoid of long-term trends (nonstationarity) prior to estimation of the DFM.[30]

Broadly speaking, the data were chosen to cover the following categories (with representative types of data listed):

[30]The quarterly series are interpolated, while the daily series are converted to monthly averages. Natural logarithms are taken of the series that cannot take negative values or are measured in percentages, and quarterly differences are taken of the nonstationary series. The remaining data are not transformed.

Figure 1.24. Stylized Example Illustrating Heat Map Colors

(Percent; month over month, annualized)



Sources: Haver Analytics; and IMF staff calculations.

Table 1.3. Data Summary and Model Evaluation

(Number of series in each category)

Country	Sample Begins	Activity (surveys)	Activity (hard data)	Trade	Financial Conditions	Employment and Income	Prices and Costs	Total	R^2 (%)[1]	Forecasts Begin	Relative RMSE
Argentina	2003:M01	0	16	46	16	10	15	103	83	2008:M01	0.89
Austria	1994:M01	32	37	42	8	20	32	171	55	2000:M01	1.20
Brazil	1996:M01	17	31	56	22	10	12	148	59	2001:M01	0.76
Canada	1994:M01	19	57	38	12	17	18	161	73	2000:M01	0.87
Chile	2000:M01	9	29	53	30	12	17	150	47	2005:M01	0.82
China	2000:M01	23	82	29	7	34	17	192	42	2006:M01	0.80
Colombia	2000:M01	0	44	39	19	21	18	141	61	2005:M01	0.68
Dominican Republic	2000:M01	0	1	96	11	30	11	149	52	2005:M01	0.83
Ecuador	2000:M01	0	31	56	1	2	20	110	31	2005:M01	0.84
Euro Area	1994:M01	20	27	17	17	6	29	116	91	2000:M01	0.72
France	1994:M01	60	28	20	17	24	39	188	80	2000:M01	0.80
Germany	1994:M01	58	31	39	18	26	15	187	84	2000:M01	0.88
Greece	2000:M01	33	41	26	19	19	32	170	46	2005:M01	0.97
India	2000:M01	32	25	36	18	4	12	127	66	2007:M01	1.44
Indonesia	2004:M01	3	24	41	12	3	24	107	45	2008:M01	0.68
Italy	1994:M01	55	32	23	22	12	30	174	80	2000:M01	0.71
Japan	1994:M01	30	39	22	9	7	6	113	65	2000:M01	0.84
Kazakhstan	2000:M01	0	10	51	12	5	19	97	58	2005:M01	0.87
Korea	2000:M01	37	49	42	20	20	30	198	89	2005:M01	0.48
Mexico	2000:M01	20	33	33	10	17	16	129	67	2005:M01	0.69
Peru	2000:M01	0	48	24	18	14	20	124	68	2005:M01	0.91
Portugal	2000:M01	26	44	37	26	30	38	201	78	2005:M01	0.88
Russia	2000:M01	32	40	31	17	17	39	176	86	2005:M01	0.45
Saudi Arabia	2000:M01	0	2	28	121	0	27	178	47	2005:M01	0.99
South Africa	1994:M01	24	58	45	23	14	29	193	65	2000:M01	0.88
Spain	1994:M01	44	68	33	17	41	59	262	87	2000:M01	0.92
Sweden	1994:M01	59	60	66	14	42	49	290	58	2000:M01	0.78
Turkey	2002:M01	52	46	38	17	15	19	187	73	2007:M01	0.82
United Kingdom	1994:M01	63	58	34	22	29	36	242	88	2000:M01	0.90
United States	1994:M01	15	41	15	15	21	24	131	72	2000:M01	0.64
Uruguay	2001:M01	0	22	39	9	29	35	134	62	2006:M01	0.74
Venezuela	2004:M01	0	26	22	41	3	28	120	72	2008:M01	0.47

[1] R^2 between quarterly real GDP growth and the dynamic factor model (DFM) estimate of the common component of growth over the entire sample. "Forecasts Begin" is the beginning of the out-of-sample evaluation period. Relative root mean square error (RMSE) is the RMSE in forecasting the next quarterly real GDP release relative to the RMSE from an autoregressive (AR) model. The DFM forecasts are made with the data that would have been available at the beginning of the third month of each quarter.

- Activity (surveys)—purchasing managers indices, consumer and business confidence indicators;
- Activity (hard data)—retail sales, industrial production;
- Trade—exports, imports, exchange rates;
- Financial conditions—interest rates, equity prices, credit conditions;
- Employment and income—employment, wages; and
- Prices and costs—producer price and consumer price indices, inflation expectations.

Some information about the series used and their classifications can be found in Table 1.3. For most of the advanced economies, the sample period begins in 1994; the samples for many of the emerging market economies begin later due to a lack of available data and the presence of structural breaks. The number of series used also varies across countries depending on available data, ranging from 97 series for Kazakhstan to 290 for Sweden.

Evaluating the Growth Indicators

To get an idea of the quality of the growth indicators in describing the past behavior of real quarterly GDP growth, the percentage of the variance of growth explained by the indicators, R^2, was computed. These statistics are displayed in Table 1.3. The indicators generally explain a sizable portion of growth for the majority of countries, particularly for advanced economies. Because the growth indicators are estimates of the underlying,

pervasive component of growth, their explanatory power tends not to be as great for emerging economies, where growth tends to be more volatile and subject to larger idiosyncratic shocks.

Assessing the underlying state of the economy is contingent on the behavior of the data at hand and the model used to analyze the data. As such, to the extent new data differ from previous estimates produced by the indicators, they can be revised over both the historical period and the forecast period. This may cause the indicators to produce some false signals in real time. Thus, to evaluate how well the indicators perform in real time, a simulated real-time forecasting experiment was conducted.

Specifically, over a forecast evaluation period, the indicators were estimated once every quarter using all data that would have been available at the beginning of the third month of each quarter.[31] Using the latest available data for real quarterly GDP growth as the target for the forecasts, root mean squared errors (RMSEs) for the indicators in predicting the next observation of quarterly real GDP growth were computed. For the purposes of comparison, RMSEs for simple autoregressive (AR) models are also calculated.[32] The ratios of the RMSEs of the growth indicators relative to those of the AR model are displayed in Table 1.3, where ratios less than 1 show that the growth indicator outperforms the AR model.

For almost all countries, the growth indicators outperform the AR in forecasting, with India and Australia the only exceptions. The relatively good forecasting performance of the growth indicators is confirmed in Matheson (2010), who uses comparisons with forecasts from a range of more sophisticated models than reported here.

References

Ahuja, Ashvin, and Nathan Porter, forthcoming, "Are House Prices Rising Too Fast in China?" IMF Working Paper (Washington: International Monetary Fund).

Arnold, Robert, 2009, "The Challenges of Estimating Potential Output in Real Time," *Federal Reserve Bank of St. Louis Review*, Vol. 4, pp. 271–90.

Aspachs-Bracons, Oriol, and Pau Rabanal, 2009, "Drivers of Housing Cycles in Spain," IMF Working Paper No. 09/203 (Washington: International Monetary Fund). Available at www.imf.org/external/pubs/ft/wp/2009/wp09203.pdf.

Bai, Jushan, and Serena Ng, 2007, "Determining the Number of Primitive Shocks in Factor Models," *Journal of Business and Economic Statistics*, Vol. 25, No. 1, pp. 52–60.

Basel Committee on Banking Supervision (BCBS), 2010, "An Assessment of the Long-Term Economic Impact of the New Regulatory Framework" (Basel: Bank for International Settlements). Available at www.bis.org/publ/bcbs173.pdf.

Berkman, Pelin, Gaston Gelos, Robert Rennhack, and James Walsh, 2009, "The Global Financial Crisis: Explaining Cross-Country Differences in the Output Impact," IMF Working Paper No. 09/280 (Washington: International Monetary Fund). Available at www.imf.org/external/pubs/ft/wp/2009/wp09280.pdf.

Blanchard, Olivier, Hamid Faruqee, and Udabir Das, 2010, "The Stockholm Principles: Guiding Principles for Managing Sovereign Risk and High Levels of Public Debt" (Washington: International Monetary Fund).

Cashin, Paul C., John McDermott, and Alasdair Scott, 2002, "Booms and Slumps in World Commodity Prices," *Journal of Development Economics,* Vol. 69 (October 1), pp. 277–96.

Cerra, Valerie, and Sweta Saxena, 2008, "Growth Dynamics: The Myth of Economic Recovery," American Economic Review, Vol. 98, No. 1, pp. 439–57.

Claessens, Stijn, Giovanni Dell'Ariccia, Deniz Igan, and Luc Laeven, 2010, "Lessons and Policy Implications from the Global Financial Crisis," IMF Working Paper No. 10/44 (Washington: International Monetary Fund). Available at www.imf.org/external/pubs/ft/wp/2010/wp1044.pdf.

Cuddington, John T., and Daniel Jerrett, 2008, "Super Cycles in Real Metals Prices?" *IMF Staff Papers,* Vol. 55, No. 4, pp. 541–65.

Decressin, Jörg, and Douglas Laxton, 2009, "Gauging Risks for Deflation," IMF Staff Position Note 09/01 (Washington: International Monetary Fund). Available at www.imf.org/external/pubs/ft/spn/2009/spn0901.pdf.

Giannone, Domenico, Lucrezia Reichlin, and Luca Sala, 2005, "Monetary Policy in Real Time," in *NBER Macroeconomics Annual 2004,* ed. by Mark Gertler and Kenneth Rogoff (Cambridge, Massachusetts: MIT Press), pp. 161–200.

Giannone, Domenico, Lucrezia Reichlin, and David Small, 2008, "Nowcasting: The Real-Time Informational Content of Macroeconomic Data," *Journal of Monetary Economics*, Vol. 55, No. 4, pp. 665–76.

[31]Due to a lack of available data, real-time data vintages are not used. Instead, we use the most recent vintage of data to simulate the data available each time a forecast is made.

[32]The number of lags is selected using Schwarz's Bayesian information criterion.

Group of Twenty (G20), 2010a, "G20 and Global Development," Report Prepared by Staff of the World Bank for the G20 Mutual Assessment Process, G20 Toronto Summit, Toronto, Canada, June 26–27, 2010 (Washington: World Bank). Available at http://siteresources.worldbank.org/DEC/Resources/G20Framework&MAP-WBReport-TorontoSummit-2.pdf.

———, 2010b, "G20 Mutual Assessment Process—Alternative Policy Scenarios," Report Prepared by Staff of the International Monetary Fund for the G20 Mutual Assessment Process, G-20 Toronto Summit, Toronto, Canada, June 26–27, 2010 (Washington: International Monetary Fund). Available at www.imf.org/external/np/g20/pdf/062710a.pdf.

Hotelling, Harold, 1931, "The Economics of Exhaustible Resources," *The Journal of Political Economy,* Vol. 39, No. 2, pp. 137–75.

International Monetary Fund (IMF), 2009, People's Republic of China—Hong Kong Special Administrative Region: 2009 Article IV Consultation—Staff Report; Staff Statement; Public Information Notice on the Executive Board Discussion, IMF Staff Country Report No. 09/321 (Washington). Available at http://www.imf.org/external/pubs/ft/scr/2009/cr09321.pdf.

———, 2010, People's Republic of China: 2010 Article IV Consultation—Staff Report; Staff Statement; Public Information Notice on the Executive Board Discussion, IMF Staff Country Report No. 10/238 (Washington). Available at www.imf.org/external/pubs/ft/scr/2010/cr10238.pdf.

Kumar, Manmohan, Taimur Baig, Jörg Decressin, Chris Faulkner-MacDonagh, and Tarhan Feyzioglu, 2003, *Deflation: Determinants, Risks, and Policy Options,* IMF Occasional Paper 221 (Washington: International Monetary Fund).

Lee, Jaewoo, Gian Maria Milesi-Ferretti, Jonathan Ostry, Alessandra Prati, and Luca Antionio Ricci, 2008, *Exchange Rate Assessments: CGER Methodologies,* IMF Occasional Paper No. 261 (Washington: International Monetary Fund).

Liu, Philip, Rafael Romeu, and Troy D. Matheson, forthcoming, "Real-Time Forecasts of Economic Activity for Latin American Countries," IMF Working Paper (Washington: International Monetary Fund).

Macroeconomic Assessment Group (MAC), 2010, "Interim Report: Assessing the Macroeconomic Impact of the Transition to Stronger Capital and Liquidity Requirements," (Basel: Financial Stability Board, and Basel Committee on Banking Supervision). Available at www.bis.org/publ/othp10.pdf.

Matheson, Troy D., 2010, "An Analysis of the Informational Content of New Zealand Data Releases: The Importance of Business Opinion Surveys," *Economic Modellin*g, Vol. 27, No. 1, pp. 304–14.

_____, forthcoming, "New Indicators for Tracking Growth in Real Time," IMF Working Paper (Washington: International Monetary Fund).

Milesi-Ferretti, Gian-Maria, and Cédric Tille, 2010, "The Great Retrenchment: International Capital Flows during the Global Financial Crisis," unpublished.

Organization for Economic Cooperation and Development (OECD), 2010, "Economic Policy Reforms: Going for Growth 2010" (Paris).

Orphanides, Athanasios, 1999, "Monetary Policy Rules Based on Real-Time Data," *American Economic Review*, Vol. 91, No. 4, pp. 964–85.

Reinhart, Carmen M., and Kenneth S. Rogoff, 2009, *This Time is Different: Eight Centuries of Financial Folly* (Princeton, New Jersey: Princeton University Press).

Sillitoe, Richard H., 2000, "Exploration and Discovery of Base- and Precious-Metal Deposits in the Circum-Pacific Region—A Late 1990s Update," *Resource Geology Special Issue* No. 21.

Slade, Margaret E., 1982, "Cycles in Natural-Resource Commodity Prices: An Analysis of the Frequency Domain," *Journal of Environmental Economics and Management*, Vol. 9, No. 2, pp. 138–48.

Tetlow, Robert J., and Brian Ironside, 2007, "Real-Time Model Uncertainty in the United States: The Fed, 1996–2003," *Journal of Money, Credit and Banking*, Vol. 39, No. 7, pp. 1533–67.

Viñals, José, and Jonathan Fiechter, 2010, "The Making of Good Supervision: Learning to Say 'No,' " IMF Staff Position Note 10/08 (Washington: International Monetary Fund). Available at www.imf.org/external/pubs/ft/spn/2010/spn1008.pdf.

World Bank, 2010a, *World Development Report 2010* (Washington).