CHAPTER 1

# GLOBAL PROSPECTS AND POLICIES

*After a deep global recession, economic growth has turned positive, as wide-ranging public intervention has supported demand and lowered uncertainty and systemic risk in financial markets. Nonetheless, the recovery is expected to be slow, as financial systems remain impaired, support from public policies will gradually have to be withdrawn, and households in economies that suffered asset price busts will continue to rebuild savings. Risks to the outlook remain on the downside. Premature exit from accommodative monetary and fiscal policies is a particular concern because the policy-induced rebound might be mistaken for the beginning of a strong recovery. The key requirement remains to restore financial sector health while maintaining supportive macroeconomic policies until the recovery is on a firm footing. At the same time, policymakers need to begin preparing for an orderly unwinding of extraordinary levels of public intervention. Policies also need to facilitate a rebalancing of global demand, because economies that experienced asset price busts will need to raise saving rates, and there is a need to bolster potential growth in advanced economies, which has suffered as a result of the major financial shocks. Rising unemployment and setbacks to progress in poverty reduction pose social challenges that also must be addressed.*

## The Global Recession Is Ending

The global economy appears to be expanding again, pulled up by the strong performance of Asian economies and stabilization or modest recovery elsewhere (Figure 1.1). Nonetheless, the pace of recovery is slow, and activity remains far below precrisis levels. Growth is being led by a rebound in manufacturing and a turn in the inventory cycle, and there are some signs of gradually stabilizing retail sales, returning consumer confidence, and firmer housing markets. As prospects have improved, commodity prices have staged a comeback from lows reached earlier this year, and world trade is beginning to pick up.

The triggers for this rebound are strong public policies across advanced and many emerging economies that have supported demand and all but eliminated fears of a global depression. These fears had contributed to the steepest drop in global activity and trade since World War II (Figure 1.2; Box 1.1). Central banks reacted quickly with exceptionally large interest rate cuts as well as unconventional measures to inject liquidity and sustain credit. Governments launched major fiscal stimulus programs, while supporting banks with guarantees and capital injections. Together, these measures reduced uncertainty and increased confidence, fostering an improvement in financial conditions.

The key question is, how far will this initial rebound go? Specifically, is it a harbinger of a strong recovery? Or is a renewed recession in the offing over the next year as expansionary monetary and fiscal policies lose impetus and private demand fails to gain momentum in the face of limited credit? The projections in this *World Economic Outlook* (WEO) describe an intermediate path: there is a recovery, but it will be weak by historical standards.

According to these forecasts, the current rebound will be sluggish, credit constrained, and, for quite some time, jobless. Global growth is projected to reach about 3 percent in 2010, following a contraction in activity of about 1 percent in 2009 (Table 1.1). During 2010–14, global growth is forecast to average just above 4 percent, appreciably less than the 5 percent growth rates in the years just ahead of the crisis. Financial and corporate restructuring will continue to exert considerable downward pressure on activity, and wide output gaps will help keep inflation at low levels. Demand is likely to be dampened by the need in many advanced economies to rebuild savings. Downside risks to growth are receding gradually but remain a concern.

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

*(Percent change unless otherwise noted)*

| | Year over Year | | | | | | Q4 over Q4 | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | Projections | | Difference from July 2009 WEO projections | | Estimates | Projections | |
| | 2007 | 2008 | 2009 | 2010 | 2009 | 2010 | 2008 | 2009 | 2010 |
| **World output**[1] | **5.2** | **3.0** | **–1.1** | **3.1** | **0.3** | **0.6** | **–0.1** | **0.8** | **3.2** |
| Advanced economies | 2.7 | 0.6 | –3.4 | 1.3 | 0.4 | 0.7 | –2.2 | –1.3 | 1.7 |
| United States | 2.1 | 0.4 | –2.7 | 1.5 | –0.1 | 0.7 | –1.9 | –1.1 | 1.9 |
| Euro area | 2.7 | 0.7 | –4.2 | 0.3 | 0.6 | 0.6 | –1.7 | –2.5 | 0.9 |
| Germany | 2.5 | 1.2 | –5.3 | 0.3 | 0.9 | 0.9 | –1.8 | –2.9 | 0.8 |
| France | 2.3 | 0.3 | –2.4 | 0.9 | 0.6 | 0.5 | –1.6 | –0.9 | 1.4 |
| Italy | 1.6 | –1.0 | –5.1 | 0.2 | 0.0 | 0.3 | –2.9 | –3.2 | 0.8 |
| Spain | 3.6 | 0.9 | –3.8 | –0.7 | 0.2 | 0.1 | –1.2 | –3.5 | 0.5 |
| Japan | 2.3 | –0.7 | –5.4 | 1.7 | 0.6 | 0.0 | –4.5 | –1.3 | 1.4 |
| United Kingdom | 2.6 | 0.7 | –4.4 | 0.9 | –0.2 | 0.7 | –1.8 | –2.5 | 1.3 |
| Canada | 2.5 | 0.4 | –2.5 | 2.1 | –0.2 | 0.5 | –1.0 | –1.5 | 3.0 |
| Other advanced economies | 4.7 | 1.6 | –2.1 | 2.6 | 1.8 | 1.6 | –2.7 | 1.8 | 2.6 |
| Newly industrialized Asian economies | 5.7 | 1.5 | –2.4 | 3.6 | 2.8 | 2.2 | –4.7 | 3.9 | 2.8 |
| Emerging and developing economies[2] | 8.3 | 6.0 | 1.7 | 5.1 | 0.2 | 0.4 | 3.3 | 3.8 | 5.5 |
| Africa | 6.3 | 5.2 | 1.7 | 4.0 | –0.1 | –0.1 | . . . | . . . | . . . |
| Sub-Sahara | 7.0 | 5.5 | 1.3 | 4.1 | –0.2 | 0.0 | . . . | . . . | . . . |
| Central and eastern Europe | 5.5 | 3.0 | –5.0 | 1.8 | 0.0 | 0.8 | –2.3 | –1.4 | 2.4 |
| Commonwealth of Independent States | 8.6 | 5.5 | –6.7 | 2.1 | –0.9 | 0.1 | . . . | . . . | . . . |
| Russia | 8.1 | 5.6 | –7.5 | 1.5 | –1.0 | 0.0 | 1.1 | –2.7 | –0.9 |
| Excluding Russia | 9.9 | 5.4 | –4.7 | 3.6 | –0.8 | 0.4 | . . . | . . . | . . . |
| Developing Asia | 10.6 | 7.6 | 6.2 | 7.3 | 0.7 | 0.3 | 5.5 | 7.7 | 7.8 |
| China | 13.0 | 9.0 | 8.5 | 9.0 | 1.0 | 0.5 | 6.9 | 10.1 | 9.2 |
| India | 9.4 | 7.3 | 5.4 | 6.4 | 0.0 | –0.1 | 4.8 | 5.1 | 7.0 |
| ASEAN–5[3] | 6.3 | 4.8 | 0.7 | 4.0 | 1.0 | 0.3 | 1.9 | 2.8 | 3.8 |
| Middle East | 6.2 | 5.4 | 2.0 | 4.2 | 0.0 | 0.5 | . . . | . . . | . . . |
| Western Hemisphere | 5.7 | 4.2 | –2.5 | 2.9 | 0.1 | 0.6 | . . . | . . . | . . . |
| Brazil | 5.7 | 5.1 | –0.7 | 3.5 | 0.6 | 1.0 | 1.2 | 2.2 | 3.5 |
| Mexico | 3.3 | 1.3 | –7.3 | 3.3 | 0.0 | 0.3 | –1.7 | –4.1 | 3.4 |
| *Memorandum* | | | | | | | | | |
| European Union | 3.1 | 1.0 | –4.2 | 0.5 | 0.5 | 0.6 | –1.6 | –2.5 | 1.1 |
| World growth based on market exchange rates | 3.8 | 1.8 | –2.3 | 2.3 | 0.3 | 0.6 | . . . | . . . | . . . |
| **World trade volume (goods and services)** | **7.3** | **3.0** | **–11.9** | **2.5** | **0.3** | **1.5** | . . . | . . . | . . . |
| Imports | | | | | | | | | |
| Advanced economies | 4.7 | 0.5 | –13.7 | 1.2 | –0.1 | 0.6 | . . . | . . . | . . . |
| Emerging and developing economies | 13.8 | 9.4 | –9.5 | 4.6 | 0.1 | 3.8 | . . . | . . . | . . . |
| Exports | | | | | | | | | |
| Advanced economies | 6.3 | 1.9 | –13.6 | 2.0 | 1.4 | 0.7 | . . . | . . . | . . . |
| Emerging and developing economies | 9.8 | 4.6 | –7.2 | 3.6 | –0.7 | 2.2 | . . . | . . . | . . . |
| **Commodity prices (U.S. dollars)** | | | | | | | | | |
| Oil[4] | 10.7 | 36.4 | –36.6 | 24.3 | 1.0 | 1.2 | . . . | . . . | . . . |
| Nonfuel (average based on world commodity export weights) | 14.1 | 7.5 | –20.3 | 2.4 | 3.5 | 0.2 | . . . | . . . | . . . |
| **Consumer prices** | | | | | | | | | |
| Advanced economies | 2.2 | 3.4 | 0.1 | 1.1 | 0.0 | 0.2 | 2.1 | 0.6 | 0.9 |
| Emerging and developing economies[2] | 6.4 | 9.3 | 5.5 | 4.9 | 0.2 | 0.3 | 7.7 | 4.5 | 4.3 |
| **London interbank offered rate (percent)**[5] | | | | | | | | | |
| On U.S. dollar deposits | 5.3 | 3.0 | 1.2 | 1.4 | 0.0 | 0.0 | . . . | . . . | . . . |
| On euro deposits | 4.3 | 4.6 | 1.2 | 1.6 | –0.2 | –0.2 | . . . | . . . | . . . |
| On Japanese yen deposits | 0.9 | 1.0 | 0.7 | 0.6 | –0.2 | 0.2 | . . . | . . . | . . . |

Note: Real effective exchange rates are assumed to remain constant at the levels prevailing during July 30–August 27, 2009. Country weights used to construct aggregate growth rates for groups of countries were revised. When economies are not listed alphabetically, they are ordered on the basis of economic size.

[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 77 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 $97.03 in 2008; the assumed price based on future markets is $61.53 in 2009 and $76.50 in 2010.

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

The remainder of this chapter discusses global economic developments and policy challenges in more depth. The next section reviews the forces of contraction and expansion that will determine the shape of the recovery over the short term. This is followed by a discussion of medium-term prospects for potential output growth and a rebalancing of global demand. The subsequent sections discuss the risks to recovery and the macroeconomic, financial, and structural policy priorities for bringing the global economy back onto a healthy growth trajectory. Chapter 2 explores these themes from a regional perspective.

## Deleveraging and Slow Job Growth Ahead

Recent data suggest that the world economy has begun to enter recovery. Global activity is estimated to have risen by about 3 percent during the second quarter of 2009, following a 6½ percent contraction in the first quarter, and high-frequency indicators point to stronger growth in the second half of the year. Nonetheless, firms are still going bankrupt at a high rate, employment continues to drop, and private consumption and investment remain anemic as households struggle with income and wealth losses, firms operate with large excess capacity, and lending conditions remain tight. History suggests that these forces tend to be long lasting following financial crises, entailing sluggish recoveries after periods of sharply contracting activity (see Chapter 3 of the October 2008 *World Economic Outlook*). Policies have helped cushion the impact of these forces on growth, but policy stimulus will diminish in the future.

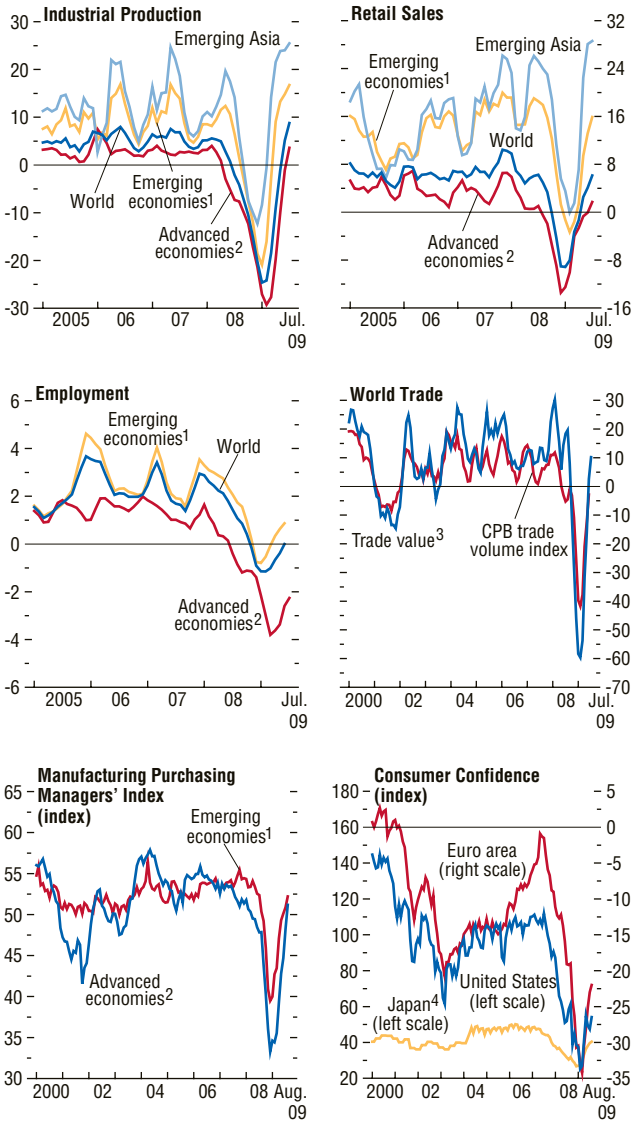
## Improving, but Still Difficult, Financial Conditions

The nascent recovery is most evident in financial markets, although conditions are still very difficult for many borrowers. Public intervention, low policy interest rates, and expectations for recovery have spurred strong rallies in many

### Figure 1.1. Current and Forward-Looking Indicators

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

Strong public policies have fostered a rebound of industrial production, world trade, and retail sales, following steep falls at the turn of the year. The rebound in activity is led by Asia.




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

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

[2]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.

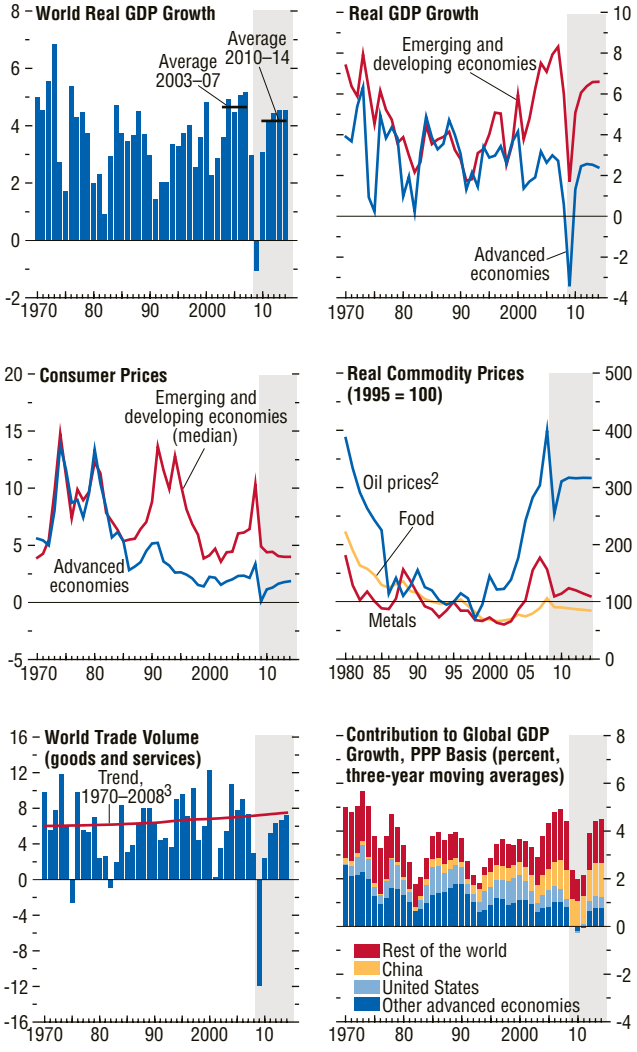
[3]In SDR terms.

[4]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 otherwise noted)*

The financial crisis triggered the largest contraction in activity since World War II. The recovery is projected to be modest by past standards.




Source: IMF staff estimates.

[1]Shaded areas indicate IMF staff projections. Aggregates are computed on the basis of purchasing-power-parity (PPP) weights unless otherwise noted.

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

[3]Average growth rates for individual countries, aggregated using PPP weights; the aggregates shift over time in favor of faster-growing economies, giving the line an upward trend.

markets as well as a rebound in international capital flows (Figure 1.3). Initially, the main driver was public policy, including guarantees for financial institutions, capital injections, provision of ample liquidity, and intervention in credit markets. Now, improving growth prospects are beginning to feed back into financial conditions, with declining risk aversion adding further momentum. However, the environment remains very challenging for lower-tier borrowers, notably small and medium-size enterprises and many households, as emphasized in the October 2009 *Global Financial Stability Report* (GFSR). Securitization markets are still heavily impaired, which severely limits banks' capacity to originate (and distribute) credit. More generally, the risk of a reversal is a significant market concern, and a number of financial stress indicators remain elevated.

Since the first quarter of 2009, equity markets have posted strong gains, corporate risk spreads have declined, and spreads in interbank markets have fallen to levels fairly close to those prevailing before the bankruptcy of Lehman Brothers in September 2008. Investors are allocating an increasing amount of funds away from government bonds in search of higher yields. Confidence in advanced economy banking systems has received a fillip from better-than-expected earnings results and a series of successful bank capital raisings. In addition, stress-testing exercises, completed and published in the United States and ongoing in various other countries, are helping to rebuild trust in banks. Still, questions remain about the sustainability of bank earnings and the implications of elevated credit risks, with loan delinquencies continuing to increase and delays by banks in recognizing loan losses.

International capital flows have recovered, including to emerging markets (Figure 1.4). Since the beginning of the year, sovereign spreads are down and sovereign issues are up for both advanced and emerging economies, consistent with a noticeable pickup in portfolio flows. The recovery in activity has been better than expected, which has buoyed market sentiment,

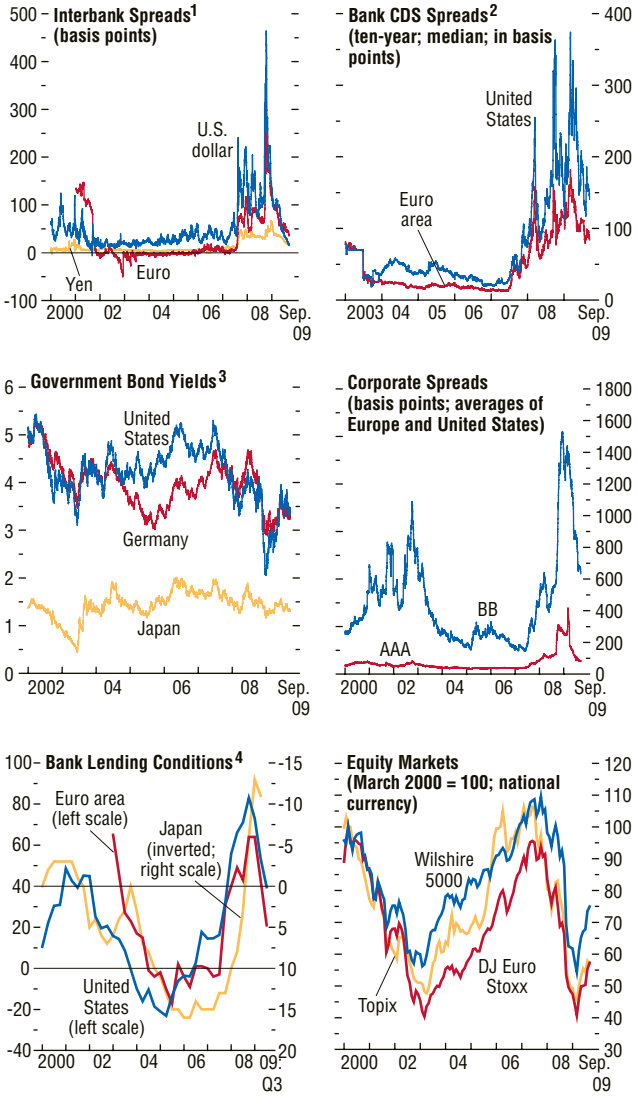
particularly in Asia and Latin America. Since midyear, emerging market corporate and sovereign deals have been oversubscribed and refinancing risks have fallen sharply, although less so in emerging Europe and the Commonwealth of Independent States (CIS). As in mature markets, high-quality corporate borrowers can access funding fairly easily, but the borrowing capacity of those with weaker credit is more constrained. Notwithstanding these favorable market developments, vulnerabilities remain, especially in emerging Europe and other countries heavily dependent on external financing. Cross-border funding for emerging market banks remains vulnerable to the need for mature-market banks to further deleverage. Refinancing and default risks in the corporate sector continue to be relatively high, especially in emerging Europe, but also for smaller, leveraged corporations in Asia and Latin America.

The return of some appetite for risk in international markets has contributed to depreciation of the dollar and yen and appreciation of emerging market currencies. This followed sharp movements in the opposite direction at the height of the crisis (Figure 1.5). The euro recently strengthened against both the dollar and the yen, although it has held more or less steady at the level prevailing before the crisis in nominal effective terms. The renminbi has moved in line with the dollar over the past year.

Even with improving financial market conditions, however, many households and firms in both advanced and emerging economies will continue to face difficult conditions. In particular, bank loans to the private sector are still stagnating or contracting in the United States, the euro area, and the United Kingdom, consistent with surveys among bank loan officers that point to a continuation of very tight credit conditions. Using revised methodologies, the October 2009 GFSR estimates that global bank write-downs could reach $2.8 trillion, of which $1.5 trillion has yet to be recognized. The bulk of these losses are attributable to U.S., U.K., and euro area banks. Furthermore, these banks face a wall of maturing debt, which will reach $1.5

## Figure 1.3. Developments in Mature Credit Markets

Public intervention has fostered a significant improvement in financial conditions. Nonetheless, for most households and firms credit will continue to be difficult to obtain, as evidenced by still-tight bank lending conditions and high interest rates on lower-quality credit.




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

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

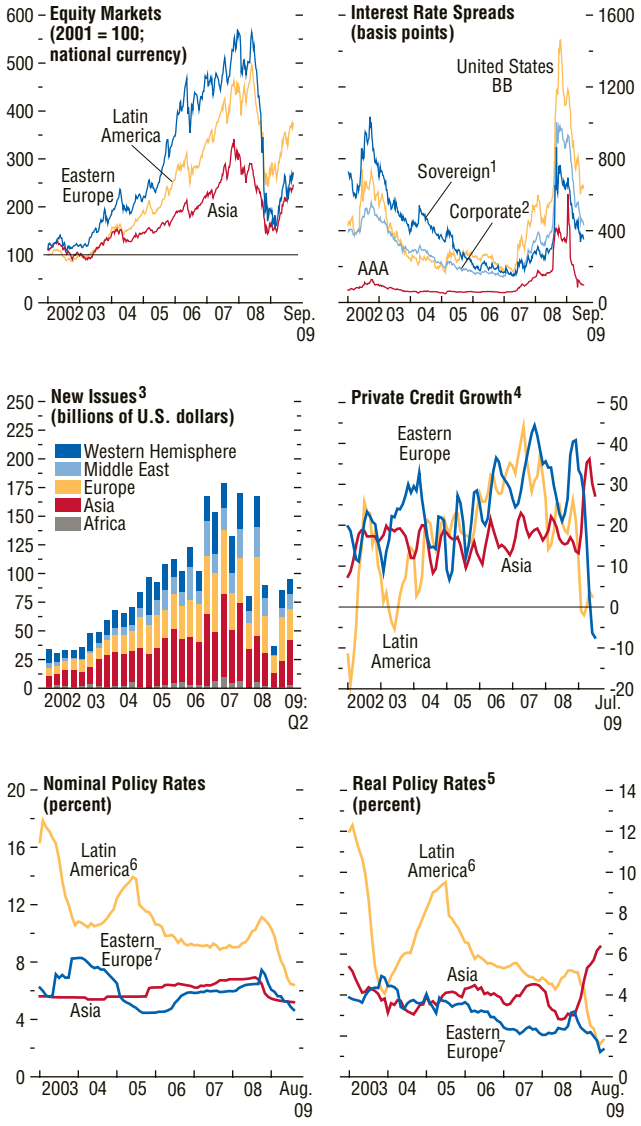
[2]CDS = credit default swap.

[3]Ten-year government bonds.

[4]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.

## Figure 1.4. Emerging Market Conditions

Capital flows to emerging economies have picked up again, supporting a recovery in equity and bond markets. Lower policy rates have helped ease credit conditions.




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 issuances.

[4]Annualized percent change of three-month moving average over previous three-month moving average.

[5]Relative to core inflation.

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

[7]Bulgaria, Estonia, Hungary, Slovak Republic, Latvia, Lithuania, and Poland.

trillion by 2012. At the same time, markets for securitized products remain essentially broken or heavily reliant on public support, which is a particular concern in the United States and other economies where these markets have a major influence on the general availability of credit.

Deleveraging is thus likely to continue for a considerable period in the United States, the euro area, and the United Kingdom. The current outlook for these areas presumes that nonfinancial private sector credit will contract or barely grow during the remainder of 2009 or the first part of 2010, consistent with GFSR estimates. Conditions may ease sooner in the United States, where banks have delevered faster. Because risk premiums remain elevated on high-yield securities and bank lending standards remain tight, financing conditions for many (particularly small and medium-size) enterprises and consumers will remain very difficult.

Projections for emerging economies assume that capital flows, which took a major hit over the past year, will again begin to grow broadly in line with GDP. Credit growth will continue to fall or stay at very low levels, and this will hold back investment, with the notable exception of China. Significant credit contraction is generally unlikely, except in parts of emerging Europe and the CIS, where debt markets are open only to some major corporations and banks and where financial systems are still early in the process of recovering from major credit busts. In general, emerging economies have withstood the financial turmoil much better than expected based on past experience, which reflects improved policy frameworks (Box 1.2).

## Sluggish Real Sector Dynamics

The rebound in activity in the real sector is lagging that in the financial sector and will remain subdued over the coming year, particularly in advanced economies. The current recovery in activity is substantially driven by a turn in the inventory cycle, after the sharp destocking

that came with the abrupt halt of production at the peak of the crisis. Public policies have successfully improved confidence, demand, and financial conditions, and this has helped industrial production to stabilize and even to increase in a growing number of countries, notably in Asia. As a result, demand for commodities has increased, and with it real sector activity in a number of other emerging economies, boosting international trade. However, in major advanced economies, spare capacity is high and still rising, and household finances are under pressure. Therefore, firms will be cautious about investment, and households will increase their consumption of durables and housing very gradually. Furthermore, many firms and households will continue to struggle to repay debt, which will slow the recovery in housing and financial markets. Subdued demand in advanced economies will hold back the recovery of activity in emerging economies.

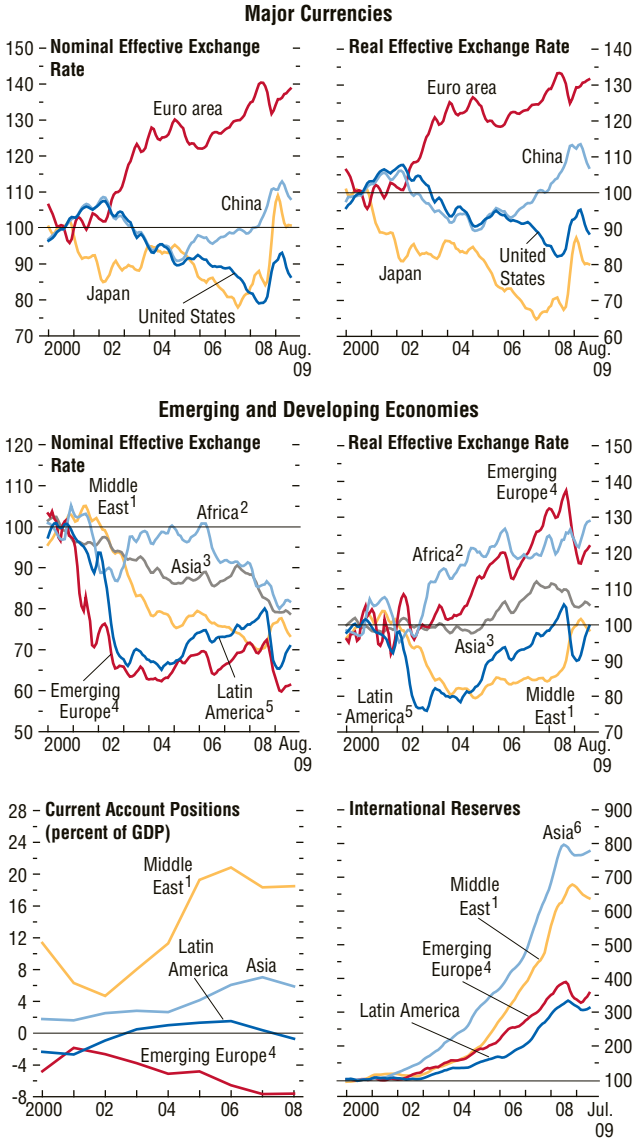
Faced with low demand, weak revenue, large excess capacity, and tight credit conditions, nonfinancial corporations in advanced economies are likely to continue to lay off workers. In the United States, the unemployment rate climbed by over 4 percentage points during the past year to a 26-year high of 9.7 percent in August and is projected to exceed 10 percent by early 2010. Starting from a higher level, the rate in the euro area rose by 2 percentage points to 9½ percent. Countries that experienced particularly large real-estate-related shocks, for example, Ireland and Spain, have seen much larger increases in unemployment because of the sharp contraction in construction jobs. The more moderate increase in the unemployment rate in Europe reflects these economies' greater tendency to adjust payrolls in response to changes in demand by lowering hours worked rather than the number of workers, a practice encouraged in part by labor market policies and institutions (Box 1.3). However, because the euro area is expected to make only a sluggish recovery, more job cuts are likely.

Saving rates are likely to stay high, investment rates low, and labor markets weak. Any substan-

## Figure 1.5. External Developments

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

Growing risk appetite has accompanied dollar and yen depreciation. Nonetheless, both currencies remain appreciated relative to precrisis levels, whereas those of emerging economies have mostly depreciated, which reflects in part the limited use of currency reserves to buffer external shocks.




Sources: IMF, *International Financial Statistics;* and IMF staff calculations.
[1]Bahrain, Egypt, I.R. of Iran, Jordan, Kuwait, Lebanon, Libya, Oman, Qatar, Saudi Arabia, Syrian Arab Republic, United Arab Emirates, and Republic of Yemen.
[2]Botswana, Burkina Faso, Cameroon, Chad, Republic of Congo, Côte d'Ivoire, Djibouti, Equatorial Guinea, Ethiopia, Gabon, Ghana, Guinea, Kenya, Madagascar, Mali, Mauritius, Mozambique, Namibia, Niger, Nigeria, Rwanda, Senegal, South Africa, Sudan, 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.
[6]Due to data limitations, China's reserves are assumed unchanged since May 2008.

### Box. 1.1. Trade Finance and Global Trade: New Evidence from Bank Surveys

The collapse in trade during the crisis was attributed in part to a lack of credit to exporters and importers. Increased uncertainty led exporters and importers to switch from less secure forms of trade finance to more formal arrangements. Exporters increasingly asked their banks for export credit insurance (ECI) or asked importers to provide letters of credit (LCs, a bank's certification that the importer can pay). This increase in the demand for trade credit was assumed to be partly offset by the fact that some merchants switched from bank-financed trade credit to more general loans, as importers were asked to pay for goods before shipment and exporters sought more liquidity to smooth their cash flow. Anecdotes abounded, but there was a lack of information on the extent and types of changes in the demand and supply of trade finance.

To fill this information gap the IMF worked with the Bankers' Association for Finance and Trade to initiate a series of surveys of banks on factors affecting the supply of and demand for trade credit. This box reports the results of a survey comparing conditions in the second quarter of 2009 with those in the fourth quarter of 2008, and conditions in the fourth quarter of 2008 with those in the fourth quarter of 2007. Participants in this survey included a wide range of advanced and emerging market banks. This was the third survey, completed in July and coordinated by FIMetrix.

The survey results suggest that the downturn in trade largely reflected falling demand rather than a lack of trade finance. Trade generally fell by much more than trade finance during 2008 and the first half of 2009, including in the areas hit hardest by the crisis (industrial economies, emerging Europe, Latin America, and—in the first half of 2009—emerging Asia). Correspondingly, six of seven banks pointed to a decrease in trade as the main driver of the decrease in their trade finance activities, and about half also indicated that lower commodity prices contributed to the fall in the value of their trade finance activities. There is, however, some evidence of a separate effect from credit conditions: four of ten banks also cited limited credit at their own banks as a reason for lower trade finance activity, and a similar proportion identified a lack of credit at counterparty banks as a constraint.

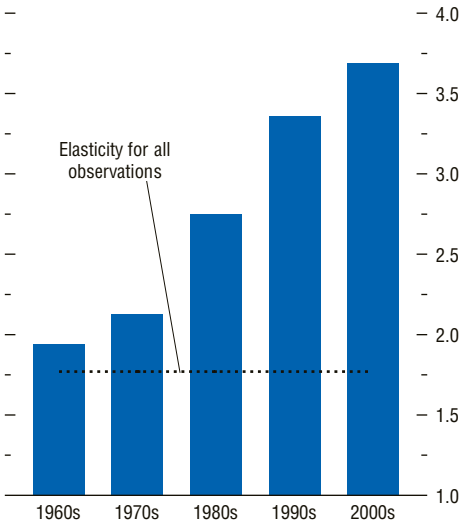
Research on the behavior of trade elasticities during downturns also points to demand, rather than trade finance, as a key driver of the downturn. Recent work by Freund (2009) shows that the responsiveness of trade to GDP has increased over time, with elasticities of more than 3.5 during this decade (first figure). The pattern of trade responses across economies also points to increased flexibility: Germany and Japan experienced much larger declines than expected given their diversified export bases and broad access to financial markets. Correspondingly, the rebound may be sharper, and recent data seem to bear this out.

The cost of trade credit also rose during the crisis. Higher funding costs and increased risk continue to put upward pressure on the price of trade credit, for which the increase in demand has been the largest. Even so, the upward price pressures seem to be easing for some instruments, with increasing evidence that the collapse in trade is bottoming out, as demand starts to recover and banks become more positive about

The authors of this box are Irena Asmundson, Armine Khachatryan, and Mika Saito, with assistance from Ioana Niculcea.

tial pickup in capacity utilization and investment that could lay a foundation for sustained increases in employment appears a long way off. Households struggling with lower pay and job losses and facing weak labor markets will constrain their consumption of durables and their demand for housing. In addition, saving will increase to help rebuild net household wealth. This is particularly true in the United States and the United Kingdom, where household debt is relatively high, house prices have fallen considerably, and asset price changes tend

### Elasticity of World Trade to World Income by Decade

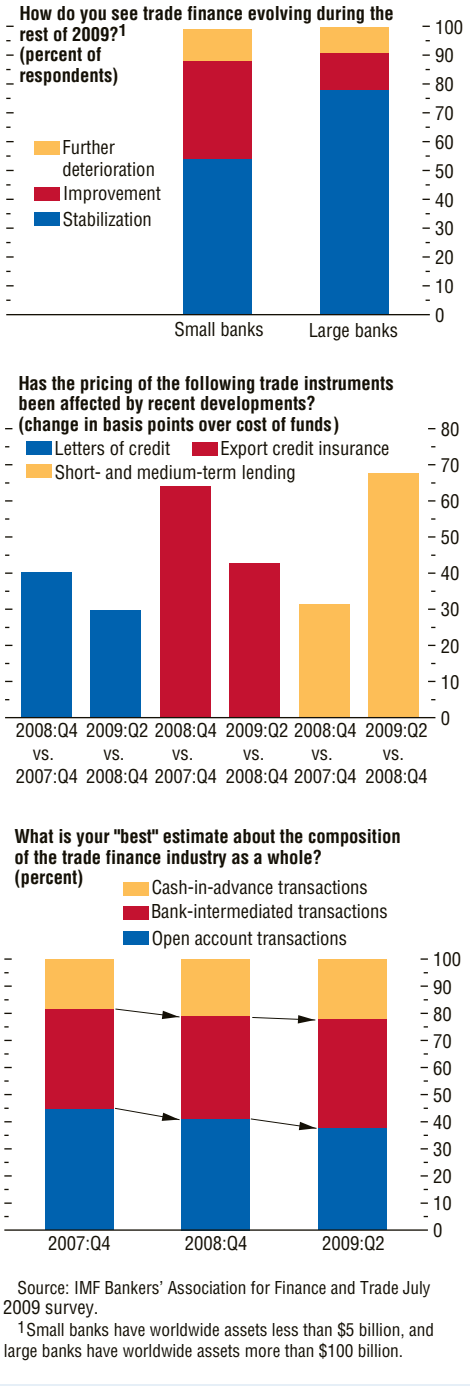



Source: Freund (2009).

the economic outlook. For example, price increases have started to ease for ECI and LCs (possibly also reflecting competition from official lending bodies whose resources were enhanced).

The shift toward bank-intermediated trade finance appears to be continuing. Surveyed banks estimate that open account transactions (for which exporters provide credit directly to importers) continued to shrink as a share of the total, to less than 40 percent in the second quarter of 2009, from 45 percent at the end of 2007. This has been largely offset by the increasing reliance of traders on bank finance—mainly LCs—as well as by a more modest shift toward cash-in-advance transactions (for which importers pay for goods before shipment). These trends appear to reflect increased risk aversion on the part of both nonfinancial corporations (the decline in the share of open accounts) and banks (increased margins driving some to cash-in-advance transactions), and as such may reflect a more permanent switch in the nature of trade financing (second figure).

### Bank Expectations about Trade Finance




Source: IMF Bankers' Association for Finance and Trade July 2009 survey.

[1]Small banks have worldwide assets less than $5 billion, and large banks have worldwide assets more than $100 billion.

## Box 1.2. Were Financial Markets in Emerging Economies More Resilient than in Past Crises?

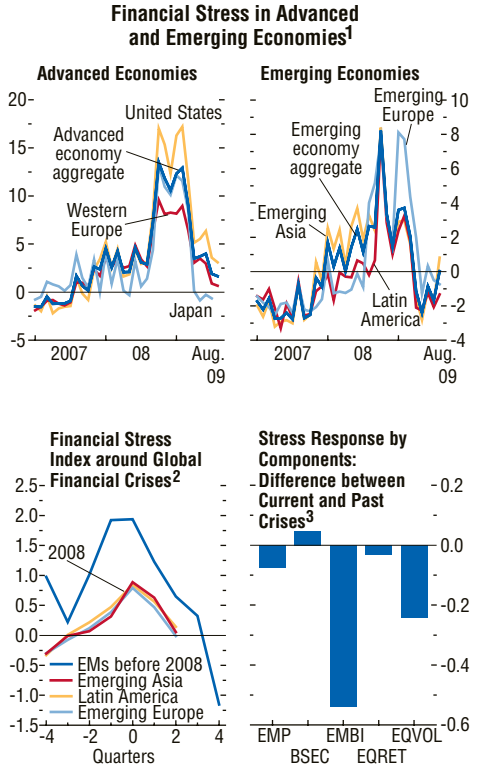
Given the intensity of the global crisis, financial markets in emerging economies have been remarkably resilient. Although many financial institutions in the advanced economies engaged in significant deleveraging, the ruptures in capital markets did not lead to widespread sudden stops of capital flows, and emerging economies with large near-term debt-rollover requirements, such as Turkey, managed to finance such debt relatively well.

The broader economic disruptions in the emerging economies were far from negligible, however. Stock markets fell drastically in the aftermath of the Lehman Brothers bankruptcy, primary funding markets ceased to function for some months, exchange rates came under severe pressure in some regions, and sovereign spreads widened. This box explores how financial markets in emerging economies fared compared with past crises and what might explain any differences (the analysis builds on the approach developed in Chapter 4 of the April 2009 *World Economic Outlook*).

To gauge the resilience of financial markets in emerging economies, we track developments in the Emerging Markets Financial Stress Index (EM-FSI) during the current crisis and during past crises. The EM-FSI measures disruptions in financial intermediation by assessing market signals in various segments of an economy's financial system, including securities markets, the banking system, and foreign exchange markets.[1] By comparing how this index has evolved around the peak of the current crisis with its pattern around past crises, differences in financial market responsiveness can be determined for emerging economies as a whole and by region and for different parts of a country's or region's financial system.

Data from the EM-FSI in the top panels of the first figure document that financial stress sharply increased in advanced and emerging economies during the final quarter of 2008 and

### Emerging Economies: Resilient Financial Markets




Source: IMF staff calculations.

[1]Purchasing-power-parity-weighted average; the financial stress indices are expressed as a deviation from average since the mid-1990s. See Chapter 4 of the April 2009 *World Economic Outlook*.

[2]Before 2008: 1998 Long-Term Capital Management collapse, 2000 dot-com crash, 2002 default of Enron and WorldCom. Stress response of emerging markets scaled for different size of financial stress in advanced economies in 2008 relative to pre-2008 crises. EMs: emerging markets; Emerging Asia: China, Korea, Malaysia, Philippines, Thailand; Emerging Europe: Hungary, Poland; Latin America: Argentina, Brazil, Colombia, Mexico, Peru.

[3]EMP: exchange market pressure; BSEC: banking sector; EMBI: Emerging Market Bond Index spreads; EQRET: equity market return; EQVOL: equity market volatility.

The main author of this box is Stephan Danninger.

[1]For a description of the EM-FSI and the corresponding index for the advanced economies (AE-FSI), see Balakrishnan and others (2009). The index measures the intensity of stress in the various segments as the deviation from past averages of prices, returns, or volatility indices. The index does not cover corporate bond spreads (CEMBI) due to limited time and country coverage.

subsided from historical highs during the first months of 2009. Interestingly, the stress index shows increased resilience across all emerging regions during the current crisis. The bottom panels compare the EM-FSI during the current and past crises in advanced economies—the collapse of Long-Term Capital Management in 1998, the dot-com crash in 2000, and the U.S. corporate crises (WorldCom, Enron, and Arthur Andersen defaults) in 2002—adjusted for the higher level of stress in advanced economies during the current event.[2] Two results stand out: (1) financial stress rose much less compared with past global episodes, and (2) financial market resilience was observed in all emerging regions (lower left-hand panel). These findings were confirmed in a more stringent econometric analysis (see Balakrishnan and others, 2009).

To better understand the forces driving this increased resilience, the differences in response were separated according to the various components of the financial sector: foreign exchange markets, sovereign debt markets, the banking sector, and equity markets (lower right-hand panel). Four of the five components show less responsiveness during the current crisis; only banking sector stress rose, albeit moderately. Because the current crisis is concentrated in the banking sector, the muted increase in stress in this sector is somewhat surprising. The stress response in exchange markets was less strong but broadly the same as in the past. The main contributors to the increased resilience during this crisis were a considerably more moderate widening of sovereign debt spreads and a less sharp increase in equity market volatility. The latter may reflect the fact that earlier crises were centered primarily in the securities markets. The resilience of sovereign debt markets during the current crisis, however, appears to be an important new development.

[2]The regional EM-FSIs for the current crisis were scaled by the intensity of financial stress in advanced economies to obtain comparable responsiveness measures between past and current crises.

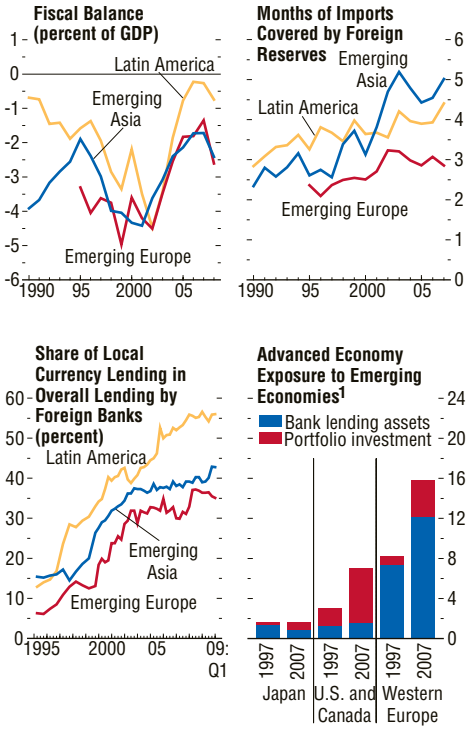
What could explain the uniformly more moderate stress response of financial markets in emerging economies? The fact that the more muted financial market response occurred in all emerging regions could indicate that global developments may have played a role, although limited country coverage within some regions hides important variations (for example, the Baltic economies experienced large financial turmoil but are not in the sample). Focusing on the available sample, two factors could have moderated the stress response in sovereign debt markets, exchange markets, and the banking sector: (1) improved macro conditions in emerging economies, such as higher foreign reserves or fiscal balances; and (2) declining foreign currency exposure among borrowers in emerging economies, which was a source of stress during past crises. The analysis first examines whether these variables exhibit a common trend across regions and then assesses the extent to which they can explain differences in resilience across economies.

The two upper panels of the second figure depict trends in fiscal balances and foreign reserves coverage rates across emerging regions. Over the past decade, fiscal vulnerabilities have decreased in most regions and could explain the more limited response of sovereign debt spreads. Similarly, growing reserve buffers may have helped prevent greater exchange market pressure. Further empirical analysis using country-by-country data suggests that rising fiscal balances are associated with a lower financial stress response but there is no strong association with changes in foreign reserves.

The lower left-hand panel depicts trends in local currency lending by foreign banks and domestic subsidiaries in different emerging regions (share of local currency lending in overall foreign lending) to capture the willingness of foreign investors to bear an economy's currency risk. The share of local currency lending has risen in all regions and may reflect the development of more stable financial systems and the implementation of stronger macroeconomic policy frameworks, leading to lower perceived

## Box 1.2 *(concluded)*

### Emerging Economies: Factors Affecting Resilience




Sources: Bank for International Settlements; IMF, Coordinated Portfolio Investment Survey; and IMF staff calculations.
[1]Assets in percent of advanced economies' GDP.

risks from exchange rate fluctuations. There is a negative association between this variable and country-by-country data on the stress response, indicating that economies with higher shares of domestic currency lending have been more resilient (responded less during the current crisis). In a simple regression framework, this variable complements the association between resilience and stronger fiscal balances.[3]

Finally, it may be surprising that financial sectors in emerging Europe were as resilient as those in emerging Asia or Latin America, even though many emerging European economies entered the crisis with weaker macroeconomic fundamentals. One reason is that the available sample omits many of the vulnerable economies in emerging Europe. Another is that investor exposure to emerging Europe was very large in individual economies (Austria, Belgium) and was generally concentrated in the banking sector (lower right-hand panel). As a result, efforts to coordinate the policy response, for instance through multilateral support by the European Union and international financial institutions (European Central Bank, International Monetary Fund, and others), may have led lenders to agree to retract more gently from financial markets in the region to avoid adverse repercussions from an abrupt slowdown.

In sum, the global crisis severely strained the financial systems of emerging economies but by less than would have been indicated by past patterns of financial stress transmission. Stronger fiscal balances and more limited foreign currency exposure among borrowers could have strengthened these economies' resilience, although efforts to coordinate the response of investors, especially in emerging Europe, may also have helped limit the fallout.

[3]Given the small number of observations (16), these results are only indicative.

to have larger effects on consumption because retirement benefits are more closely related to financial market developments (via defined contribution plans) and borrowing is more dependent on real estate collateral. Furthermore, consumers in many economies that have been hit hard by financial and real-estate-related shocks, such as the United States, are likely to become more prudent, showing a higher propensity to save and a lower appetite for risky assets.

These forces also mean that real-estate-related activity, which along with the related downward pressure on bank balance sheets lies at the origin of the global downturn, may not see a strong rebound for some time. House prices

## Box 1.3. Will the Recovery Be Jobless?

The response of unemployment during the current global recession has been very different across economies and regions. In the United States, the unemployment rate has risen by nearly 5 percentage points, to levels not seen since the early 1980s. In contrast, in Germany, despite a major drop in output, the unemployment rate has increased only by ¾ percentage point and remains well below levels seen earlier this decade. This box tries to explain such differences for advanced and emerging economies by comparing current dynamics with those seen around past cycles.

We follow the approach of Chapter 3 of the October 2009 *World Economic Outlook* and compare current labor market dynamics with those around previous recessions.[1] However, we do not look solely at employment dynamics but also at labor productivity and labor participation dynamics.[2] This allows us to get a fuller picture of what is driving output per capita. Specifically, we make use of the fact that the logarithm of output per capita is equal to the sum of the logarithms of labor force participation, the employment rate, and output per employee:

$$\Delta\log\left(\frac{Y}{P}\right) = \Delta\log\left(\frac{Y}{E}\right) + \Delta\log\left(\frac{E}{LF}\right) + \Delta\log\left(\frac{LF}{P}\right),$$

where $Y$ is real GDP, $P$ is population, $E$ is employment, and $LF$ is the labor force.[3]

This allows us to examine how economies adjusted to recent shocks. Has employment adjusted more quickly during this recession? Or is labor hoarding more prevalent than in previous recessions, with productivity initially taking a bigger hit and employment declining only marginally or slowly over time? How uniform are these responses across economies? We apply the decomposition to both advanced and emerging economies, and then use richer data available on labor market institutions and across sectors to take a deeper look at employment dynamics in the advanced economies.

### *Labor Hoarding or Employment Losses: Which Dominates after a Recession?*

As shown in the first figure, during past recessions, the employment rate declines and labor productivity (as measured by output per employee) growth slows, with the latter even turning negative for the average emerging economy, consistent with labor hoarding.[4] During the current crisis, there has been a much bigger impact on output per capita, both in advanced and emerging economies. This is driven mainly by a significantly larger fall in output per employee, which suggests that labor hoarding has been much higher on average during this recession.

However, there is considerable heterogeneity across countries (second figure). For example, among advanced economies, the United States shows a pattern opposite to that of the median country: employment has been cut deeply, helping to maintain labor productivity (whether defined as output per hour or per employee), with little difference in the dynamics of labor force participation. Indeed, during the second quarter of 2009, U.S. nonfarm output per hour grew at its fastest pace in six years (seasonally adjusted annual rate). This is similar to the

The main author of this box is Ravi Balakrishnan. Murad Omoev provided research assistance.

[1]This includes recessions going back to the 1970s, and $t = 0$ is the point at which real GDP reaches a peak.

[2]Labor productivity is usually measured here as output per employee because of the lack of comparable data on hours worked for many advanced and emerging economies. However, when comparing German and U.S. labor dynamics, we measure labor productivity as output per hour.

[3]When data on hours worked are available, we can further decompose output per employee:

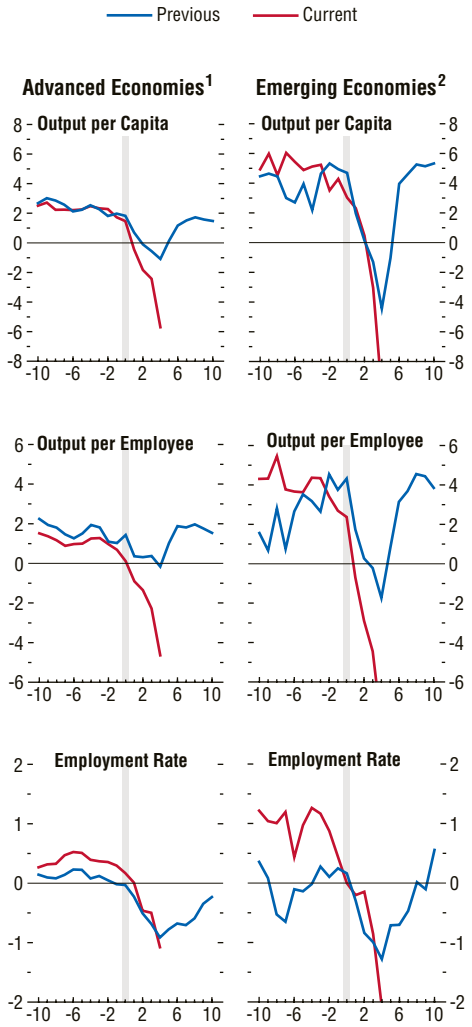
$\log\left(\frac{Y}{E}\right) = \log\left(\frac{Y}{H}\right) + \log\left(\frac{H}{E}\right)$, where $H$ is total hours worked. This allows us to see which margin is being adjusted: hours worked per employee or employment levels.

[4]Participation trends do not add much insight and so are not discussed in detail.

## Box 1.3 *(continued)*

### Labor Market Dynamics around Recessions

*(Median annual percent change unless otherwise noted; quarters on x-axis; peak in output at t = 0)*




Sources: Haver Analytics; IMF staff calculations; and Organization for Economic Cooperation and Development.
[1]Advanced Economies comprise Australia, Austria, Belgium, Canada, Czech Rep., Denmark, France, Germany, Greece, Ireland, Italy, Japan, Korea, Netherlands, New Zealand, Norway, Portugal, Spain, Sweden, United Kingdom, and United States.
[2]Emerging Economies comprise Argentina, Brazil, Bulgaria, Chile, Colombia, Estonia, Hungary, Latvia, Lithuania, Malaysia, Peru, Philippines, Poland, Russia, South Africa, Thailand, and Turkey.

dynamics of U.S. output per hour following the previous recession, in 2001, which was followed by a so-called jobless recovery, and contrasts with most earlier recessions, when output per hour declined considerably. U.S. employment losses during the current cycle have been significantly larger than for the 2001 recession, or any previous recession. Hours worked per employee have also fallen significantly, but in line with previous cycles.

At the other extreme, Germany, which has also faced an output decline much deeper than during previous recessions, has so far experienced substantially fewer employment losses when compared with previous recessions or with the United States. Output per hour has taken a deep hit, despite hours per employee being cut sharply. This pattern may have been affected by subsidies for part-time work *(Kurzarbeitergeld)*—the availability of which has been lengthened from 6 to 24 months—and by special provisions in collective wage agreements.

Among the emerging economies, during past cycles, southeast Asia tended to demonstrate smaller adjustments in employment and thus had more volatility in output per employee; emerging Europe displayed the opposite pattern. This time around, emerging Europe faces a massive output adjustment, implying declining output per employee, as well as major employment losses. In southeast Asia, employment losses have been minor so far, even relative to previous cycles, whereas in Latin America, there appears to have already been a significant adjustment on the employment margin (third figure).

### *Can Labor Market Institutions and Regulations Explain the Differences across Advanced Economies?*

To explain the heterogeneity, we examine the impact of labor market flexibility, which has many dimensions, such as the types of wage-bargaining arrangements and the level and duration of unemployment benefits. A comprehensive analysis of all facets of labor market flexibility is beyond the scope of this analysis. Instead, we focus on employment

protection legislation (EPL), which should be especially important during the current crisis. Research indicates that, although the effect of stricter EPL on the steady-state employment rate is not clear, it could slow the reallocation of labor after major shocks. Of course, EPL may be correlated with other characteristics of labor markets that can affect employment, such as unionization, collective wage bargaining, and various programs to support the unemployed (including subsidies for part-time employment), and EPL could therefore act as a proxy for other labor market characteristics.

Given the lack of data on EPL measures for emerging economies, we focus on advanced economies. We group such economies by their degree of EPL, which we measure by the Organization for Economic Cooperation and Development's index of EPL strictness.[5] Economies are ranked according to their average EPL score during 1985–2007. Canada, the United Kingdom, and the United States are designated as having "low" EPL, and all other advanced economies are designated as having "medium/high" EPL.[6]

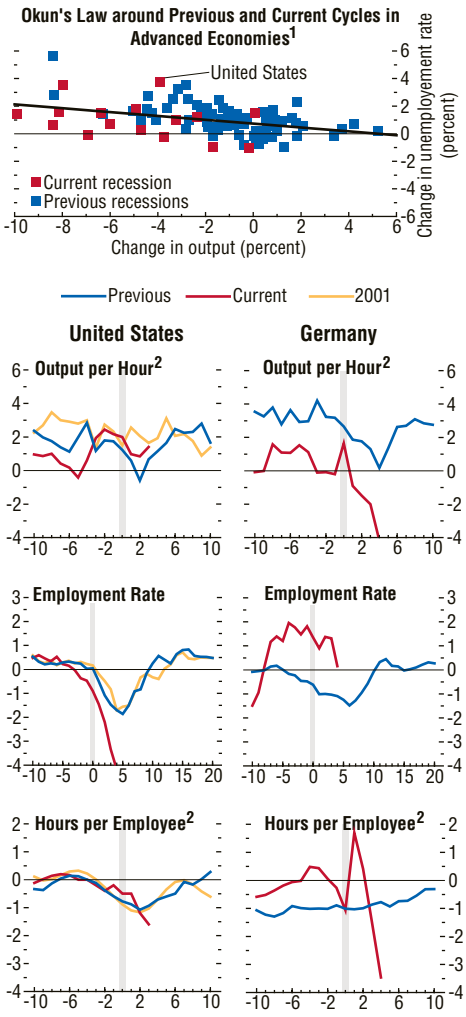
The third figure shows the different dynamics of labor productivity (measured by output per employee) and the employment rate across the two groups of advanced economies, during previous recessions and currently. The drop in output per employee is substantial for both groups in the current downturn, but it is particularly sharp among medium/high EPL economies, suggesting a greater degree of labor hoarding given the size of the output drops.

[5]This is produced annually and generally goes back to the mid-1980s. It is a summary indicator, which weighs 14 subcomponents of EPL (on dismissal procedures for regular contracts and the use of temporary contracts).

[6]Of course, many economies have significantly reduced EPL since the mid-1980s (and have made the labor market more flexible in general). However, this doesn't affect the ranking. Moreover, as a robustness check, we examine whether the responses around previous recessions are different before and after the late 1980s, and find that they are quite similar.

**Okun's Law and U.S. and German Dynamics**

*(Median annual percent change unless otherwise noted; quarters on x-axis; peak in output at t = 0)*




Sources: Haver Analytics; IMF staff calculations; Institute for Employment Research; and Organization for Economic Cooperation and Development (OECD).

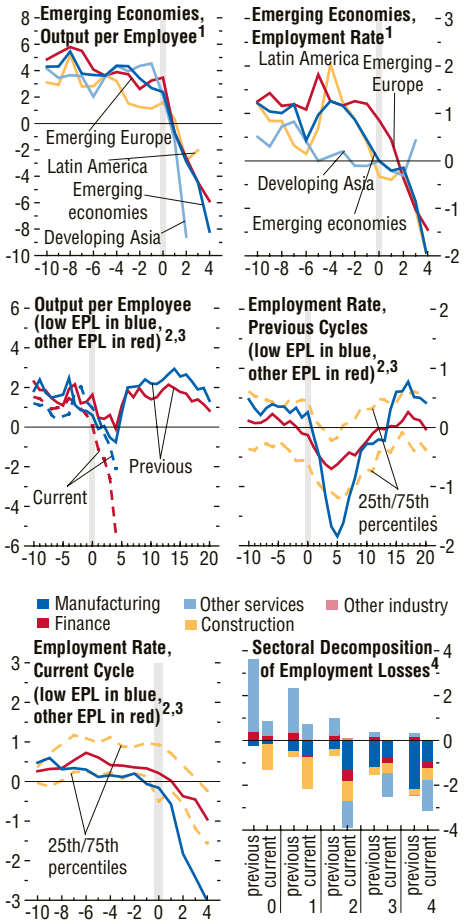
[1]Changes in output and the employment rate are defined as year-over-year growth rates at time = 4.

[2]The OECD hours per employee series is used apart from the current period, for which we use Haver Analytics total economy average weekly hours for the United States and Institute for Employment Research total economy quarterly hours per employee for Germany. The series are spliced using year-over-year growth rates of the data used for the current period.

## Box 1.3 *(concluded)*

### Other Decompositions around Recessions

*(Median annual percent change unless otherwise noted; quarters on x-axis; peak in output at t = 0)*




Sources: Haver Analytics; IMF staff calculations; and Organization for Economic Cooperation and Development.

[1]Emerging economies: all countries in regional groups plus Russia and South Africa; Emerging Europe: Bulgaria, Czech Rep., Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Turkey; Latin America: Argentina, Brazil, Chile, Colombia, Peru; Developing Asia: Malaysia, Philippines, Thailand.

[2]Low employment protection legislation (EPL) countries comprise Canada, United Kingdom, and United States.

[3]Other EPL (medium/high) countries comprise Australia, Austria, Belgium, Czech Rep., Denmark, France, Greece, Ireland, Italy, Japan, Korea, Luxembourg, Netherlands, New Zealand, Norway, Portugal, Spain, and Sweden.

[4]Countries comprise Spain, United Kingdom, and United States. Employment losses are defined as the year-over-year change in employment scaled by the labor force.

The big difference between the two groups is in the employment rate response. During previous cycles and during the current recession, the initial employment losses are much greater among low EPL economies and are even outside the interquartile range for medium/high EPL economies. Regarding job creation once the recovery has taken root, during previous cycles, low EPL economies also tended to register larger employment gains.

What explains this? Clearly, the size of the shock is much larger this time (the biggest global financial crisis since the Great Depression combined with the largest recession since World War II), and this explains the bigger declines in output per capita and output per employee on average. The stronger employment response in low EPL economies, relative to medium/high EPL economies, is consistent with the academic literature, which suggests that employment protection reduces both inflows to and outflows from employment. For medium/high EPL countries, the reduction in employment during this crisis has been similar to that during previous cycles despite substantially bigger output losses, which suggests a higher degree of labor hoarding. Spain, a medium/high EPL economy, is an important exception, most likely because of the dual nature of its labor market. For example, during the current downturn, about half the total employment decline is a result of fixed-term employment losses in the construction sector.[7]

[7]Both historically and during the current recession, Spain has seen bigger employment losses in the downturn phase than low EPL countries. Although employment protection has recently been reduced significantly on regular contracts, at the time fixed-term contracts were introduced (in 1984) it was very high, which led to most new jobs being created on a fixed-term-contract basis. The relatively large stock of fixed-term contracts makes it easier for firms to adjust the level of employment, and also explains why labor productivity (measured as output per hour or employee) doesn't tend to fall in Spain during recessions.

### *How Are Different Sectors Responding in Advanced Economies?*

Because the current recession involves housing busts and systemic banking crises in some of the major advanced economies, we examine whether there is a significantly different sectoral decomposition to employment losses than for previous recessions. We use employment data at the sectoral level, focusing on Spain, the United Kingdom, and the United States, which have all suffered housing busts, and looking at five sectors: manufacturing, construction, other industries, financial and real estate services, and other services (see third figure).

During previous cycles, on average, the service sector provided the bulk of the jobs created during expansions, but most of the job losses during recessions were in the manufacturing sector. Indeed, during downturns, on average, employment increased in services (both financial and other). During this crisis, the manufacturing sector has shed labor as expected, but there have also been big employment losses in construction and financial and other services, consistent with the larger impact of financial crises on financial sector services and of housing busts on construction. The big decline in other services employment may reflect the size of the output drops and spillovers from other sectors.

### *A Jobless Recovery?*

The signs point to substantial labor hoarding in advanced and emerging economies, given that most of the adjustment so far seems to have been in terms of productivity declines rather than employment losses. Of course, this may be part of a rational response by firms, which, because of hiring and firing costs, may be willing to hoard labor if the shock hitting the economy looks transitory. As a recession deepens, however, firms may consider the shock to be more persistent and may start to shed jobs at a faster pace. Given the size and persistence of the recent shocks to the global economy, this harbingers the potential for a jobless recovery, as excess labor hoarding is gradually unwound, although the analysis suggests that it is critical to distinguish among individual economies.

Advanced economies with low levels of EPL (Canada, United Kingdom, United States) have already experienced major employment losses. If history is any guide, employment in these economies will bounce back strongly, potentially presaging a return to job creation in the not-too-distant future (although after the 2001 recession, employment took a long time to pick up in the United States). The employment losses in the United Kingdom and United States, however, reflect that they have suffered not only recessions but also housing busts and systemic financial crises. As demonstrated in IMF (2009a), such a combination generally leads to large output drops and significantly delays recovery, suggesting a slow and tepid pickup in job creation for these two economies.

Many advanced economies with medium/high levels of EPL have also suffered major recessions but have so far not seen their unemployment rates spike. Some of the adjustment has been through reduced hours, although this may only delay inevitable job losses unless the global recovery is more vigorous than currently expected. For Germany, subsidies for part-time work are making it easier for firms to retain workers by reducing hours worked per employee. These benefits last up to two years, and the result may be reduced job destruction in the downturn, but also significantly less job creation in the recovery period, as hours per employee are simply increased—close to 1.2 million employees, about 3 percent of the labor force, are receiving support under this program.

Emerging economies are expected to recover more strongly than advanced economies, with the notable exception of emerging Europe and the Commonwealth of Independent States, and this should support employment growth. In emerging Europe, the employment adjustment has been severe, and labor market flexibility will be key to the necessary reallocation and future job creation.

are declining at a slower rate or beginning to stabilize in some advanced economies, such as the United States and the United Kingdom, but many markets still face the risk of further price declines (Box 1.4). Even though the heavy drag on growth exerted by falling residential investment is diminishing, a return to more buoyant housing conditions is unlikely as long as households are facing difficult job market prospects and foreclosures continue to mount. Furthermore, the fall in activity has yet to bottom out for commercial real estate, which has lagged the residential sector but is now also going through a severe downturn. Thus, construction activity is likely to stay weak for the foreseeable future, with adverse implications for the financial sector.

Growth dynamics are somewhat stronger in emerging economies. Domestic demand appears relatively robust, particularly in China and India, helped by strong macroeconomic policy support. In addition, many economies are now benefiting from the rebound in commodity prices. Limited information on unemployment in emerging economies points to less difficult although still challenging conditions, with economies in emerging Europe and the CIS suffering large job losses. However, subdued consumption in advanced economies will weigh on many emerging economies' exports, particularly once inventory rebuilding has run its course.

## Continued, but Diminishing, Support from Policy

Monetary, fiscal, and financial policies have played a critical role in cutting the adverse feedback loops between the financial and real sectors. However, the policy boost to growth will gradually diminish because room for additional stimulus is limited. Moreover, fundamental financial sector repair is progressing slowly.

### Expansionary Monetary Policies

The sharp drop in activity and rise in output gaps have decreased inflation pressures. At the global level, year-over-year inflation moderated to 1.0 percent in July, down from more than 6 percent a year earlier. In the advanced economies, headline inflation has been below zero since May, as oil prices have remained far below levels a year earlier despite their recent pickup. Core inflation has eased to 1.2 percent, down from just over 2 percent a year earlier. Similarly, headline and core inflation in the emerging economies have moderated, falling to 4.2 percent in July and 0.4 percent in June, respectively. However, developments have been uneven, with inflation falling mainly in emerging Asia and less so in emerging Europe.

Policy interest rates have been brought down considerably, close to the zero floor in many advanced economies (Figure 1.6). In response to the growing crisis, central banks proceeded with large cuts in policy rates, which have averaged more than 300 basis points on a global basis since August 2007. In most advanced economies, policy rates were reduced to between 0.25 percent (Canada, Sweden, United States) and 1 percent (euro area). With few exceptions, room for further cuts has thus been exhausted in advanced economies, and markets do not foresee significant rate hikes over the coming year.[1] In an effort to transmit cuts in short-term rates to longer maturities, the U.S. Federal Reserve, the Bank of Canada, and the Swedish Riksbank have explicitly committed to maintaining low policy rates until there are clear signs of recovery. Cuts were generally smaller in emerging economies, reflecting a combination of higher inflation at the onset of the crisis and pressure for exchange rates to depreciate in response to capital outflows. Looking ahead, some central banks in Asia and Latin America may start to tighten again if the strong rebounds there are sustained, although some central banks in emerging Europe are still exploiting

[1]Although the European Central Bank (ECB) policy rate remains at 1 percent, after a major one-year repurchase operation, the overnight money market rate in the euro area has dropped to about 0.5 percent and the rate on deposits at the ECB is only 0.25 percent.

room to cut rates in response to more stable external financial conditions.

Central banks in most advanced economies and some emerging economies resorted to a range of unconventional measures to further ease financial conditions during the past year. There have been a variety of different approaches, mainly reflecting different financial system structures.[2] All central banks deployed extensive liquidity support measures for banks, given their importance in every financial system. For example, the ECB introduced much more flexibility into its repurchase facilities, broadening an already wide range of acceptable collateral and introducing six-month and one-year maturities. Many central banks also provided liquidity in U.S. dollars, arranged via swap lines with the Federal Reserve. The Federal Reserve and Bank of England, among others, intervened with outright purchases of government bonds in an effort to lower long-term yields. Given the much greater importance of securities markets for the U.S. economy, the Federal Reserve also intervened heavily in markets for the debt of government-sponsored enterprises,[3] for mortgage-backed securities, and for commercial paper and provided funding and some protection to investors in asset-backed securities.[4]

Together with policy rate cuts and fiscal stimulus, these operations helped to reduce tail risks related to rapidly falling confidence and liquidity constraints. In fact, some interventions are already unwinding naturally in the wake of improvements in financial conditions. Overall, operations targeted at specific dislocated markets appear to have been more effective than purchases of government bonds, although these

[2]For example, in the euro area, bank financing accounted for roughly 70 percent of firms' total external financing during 2004–08. In the United States, market-based sources comprised 80 percent of total external financing (Trichet, 2009). Markets for mortgage-backed securities are also much larger in the United States.

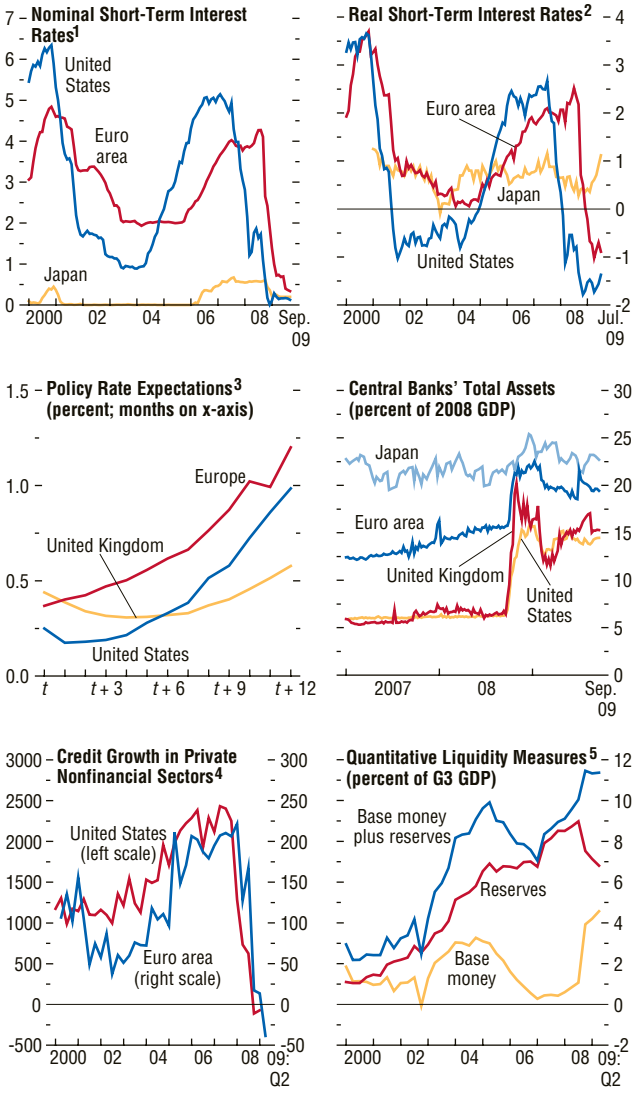
[3]These include the Federal National Mortgage Association (Fannie Mae) and the Federal Home Loan Mortgage Corporation (Freddie Mac).

[4]For further details, see Klyuev, de Imus, and Srinivasan (forthcoming).

## Figure 1.6. Measures of Monetary Policy and Liquidity in Selected Advanced Economies

*(Interest rates in percent unless otherwise noted)*

Central banks have implemented unusually large interest rate cuts to combat the recession. In addition, they have intervened in credit and asset markets to ease financial conditions. With inflation expected to remain constrained, very limited policy tightening is expected over the coming year.




Sources: Bloomberg Financial Markets; Eurostat; Haver Analytics; Merrill Lynch; Organization for Economic Cooperation and Development *Economic Outlook;* and IMF staff calculations.

[1]Three-month treasury bills.

[2]Relative to core inflation.

[3]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 16, 2009.

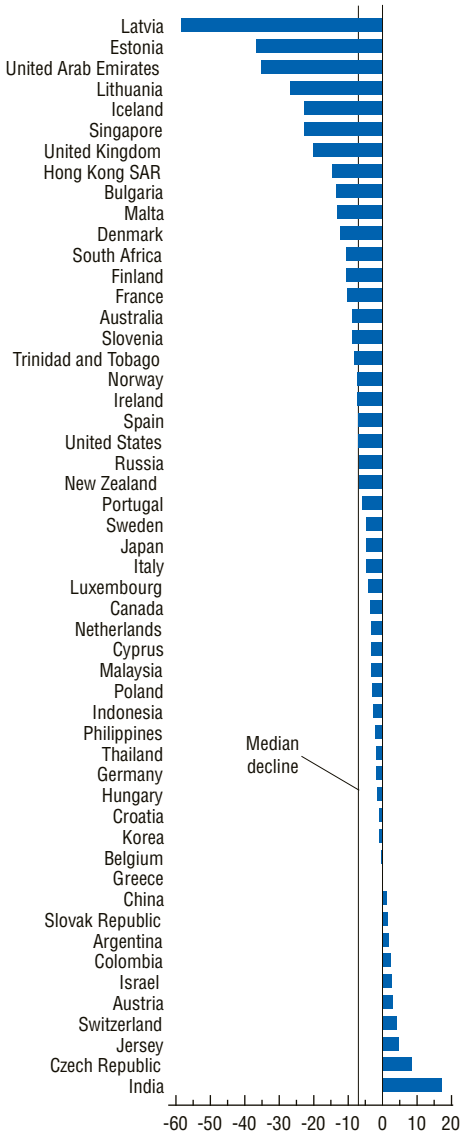
[4]Quarter-over-quarter changes; in billions of local currency.

[5]Change over three years for euro area, Japan, and United States (G3); denominated in U.S. dollars.

## Box 1.4. Risks from Real Estate Markets

### Change in House Prices, 2009:Q1[1]

*(Percent, year-over-year, inflation-adjusted)*




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

[1]Data for Argentina, Belgium, Colombia, Croatia, Czech Republic, Greece, Hungary, India, Korea, Lithuania, Luxembourg, Malaysia, and Slovak Republic are as of 2008:Q4.

The global correction in residential real estate markets has generated large declines in house prices and construction activity across a broad range of economies, although there are some recent signs of stabilization in a few. The median annual decline in real house prices across economies in the year ending in the first quarter of 2009 was 7 percent, with far more dramatic declines in the Baltic economies, Iceland, Singapore, the United Arab Emirates, and the United Kingdom (first figure). Housing activity—measured by the number of transactions or residential investment—has also been falling; housing permits, for instance, showed a median annual decline of about 35 percent in the first quarter of 2009.

With the residential housing bust and the severe global economic downturn, demand for office space and retail/industrial buildings has declined, bringing down the commercial real estate market too. Office vacancy rates increased significantly during 2008 in many cities across the globe. Hardest hit were major cities in some emerging markets, such as Moscow and Shanghai, and international financial centers such as Dublin, New York, London, and Tokyo (second figure).[1] Investment in nonresidential construction has dropped sharply and, in a few cases, has eclipsed the decline in residential construction (third figure).[2] Commercial property sales have come close to a halt (fourth figure), and property prices are falling.

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

[1]Dublin, along with Luxembourg, is one of the main offshore financial centers in Europe.

[2]Nonresidential construction gross fixed capital formation also includes expenditures for public works, but investment in commercial real estate constitutes the bulk of the total. On average, gross fixed capital formation in nonresidential construction constitutes a slightly larger share of GDP (7.4 percent) than residential construction (4.9 percent), but the nonresidential sector is considerably larger in the Czech Republic, Korea, Luxembourg, the Slovak Republic, and the United Kingdom.

How much further are house prices likely to fall? And what are the risks to the macroeconomy from the corrections in residential and commercial real estate markets? This box updates the analysis of the housing market in previous issues of the *World Economic Outlook* (WEO) and extends it to commercial real estate.[3]

### *Corrections in House Prices*

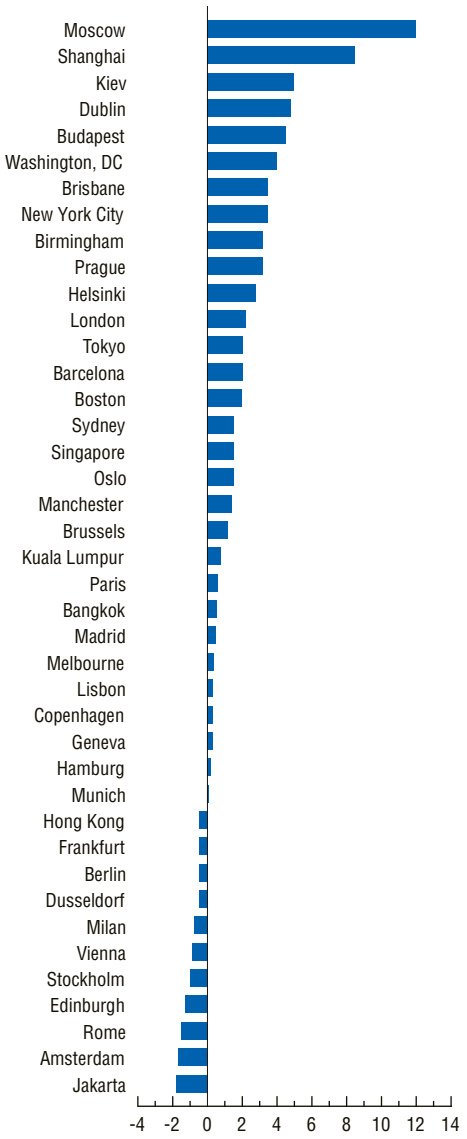
On average across advanced economies, upturns in housing markets have lasted about six years, with real house prices going up about 50 percent during that period. Downturns have been characterized by house prices falling by 24 percent over a five-year period (see table). The latest upturn was twice as long as the previous average and more than twice the magnitude (in terms of price). Hence, although house prices have already fallen 20 percent during the ongoing downturn—close to the historical average—there could still be a significant correction to come.

Of course, the extent of the total price correction will vary across economies, and recent price declines have gone further in some than in others. Given the difficulties in assessing house price overvaluation, the fifth figure presents four approaches to computing the likely price correction still to come. The top panel shows the gap between the house price decline in an economy during the current housing downturn and the average declines in that economy during past episodes. If past is prologue, these estimates suggest that the Netherlands and Finland are likely to see further house price declines, whereas the corrections in Australia and the United States are close to complete.

However, this approach does not account for differences across cycles in the driving forces behind house price movements. The estimates in the second panel are based on an econometric model that seeks to explain the increase in house prices that has taken place over the past decade in terms of relevant explanatory variables. To this end, real house price growth is modeled as a function of the following variables: growth in per capita disposable income, working-age population, and credit and equity

**Office Vacancy Rates**

*(Percent, change from end-2007 to end-2008)*



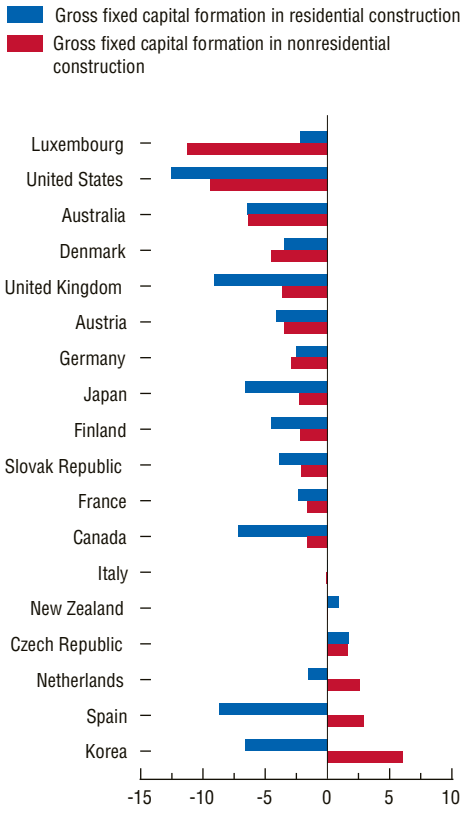

Sources: Knight Frank, LLC; and IMF staff calculations.

[3]See Box 3.1 in the April 2008 WEO, Box 1.2 in the October 2008 WEO, and Chapter 1 (pp. 18–19) in the April 2009 WEO.

## Box 1.4 *(continued)*

### Investment in Residential and Nonresidential Construction

*(Percent, quarter-over-quarter growth rate as of 2009:Q1)*




Sources: Organization for Economic Cooperation and Development; and IMF staff calculations.

### Comparison of Current Housing Cycle to Past Cycles

| | Upturn | | Downturn | |
|---|---|---|---|---|
| | Duration | Amplitude | Duration | Amplitude |
| Past cycles | 23 | 48 | 19 | –24 |
| Current cycle | 46 | 124 | 8 | –20 |

Source: Collyns, Igan, and Loungani (2009).

Note: Average values across 18 advanced economies. Duration is in quarters; amplitude is in percent.

prices; the level of short-term and long-term interest rates; and construction costs.[4] Dynamic effects of these variables are captured through the inclusion of lagged real house price growth and an affordability ratio (the lagged ratio of house prices to disposable income). This model is estimated for each economy using quarterly data for 1970 to 2008. The increase in house prices between end-2008 or the first quarter of 2009 and the 1997–2001 period that is not explained by these fundamental factors—referred to as the house price gap—provides an estimate of the remaining potential for correction in house prices. This analysis suggests that further price adjustments are likely in Ireland, Italy, and the United Kingdom. Compared with earlier WEO estimates, the average estimated misalignment drops from a 10 percent overvaluation to a 6 percent overvaluation. The ranking of economies remains broadly unchanged.[5]

[4]When compared with Box 3.1 in the April 2008 WEO and Box 1.1 in the October 2008 WEO, this house price model reflects two enhancements. First, to avoid sensitivity to base-year assumptions, the house prices in the first quarter of each year from 1997 to 2001 are used as alternative base levels from which the fitted values of the house price increases are accrued; the cumulative gap is then calculated as the average over these base years. Second, the model now includes construction costs as a proxy for supply conditions. Although the gap estimates could still partly reflect omitted fundamental factors, they provide an indication of how large those omitted factors would have to be for the rise in house prices over the past years to be considered an equilibrium outcome.

[5]The same data series running from 1970 to 2008 is used to produce estimates under the model used in the earlier reports and under the enhanced model. Hence, the difference in misalignment estimates is due to the enhancement of the model, not to the declines recorded since the date of the last report. Estimates for several economies are sensitive to country-specific factors. For instance, in the case of Australia, if the impact of long-term migration on housing demand is taken into account, the results do not produce evidence of a significant overvaluation of house prices. Similarly, for the Netherlands, the estimated house price gap might be smaller if the rise in single-person households is taken into account, together with institutional factors (strict zoning regu-

Long-term relationships between house prices, rents, and incomes can also be used to gauge the extent of likely declines. The lower panels show the gap between the current price-to-income ratios in different economies and their respective historical averages (third panel) and the gap between the house price-to-rent ratios and their historical averages (bottom panel). For most economies, both ratios are still well above historical averages; this is particularly true for Australia and Spain.

To summarize, all four approaches suggest that for most economies, house price corrections still have some way to go. The analysis most consistently points to further large declines for Denmark, Spain, and the United Kingdom, while in Germany, Korea, and the United States corrections are likely to be small.

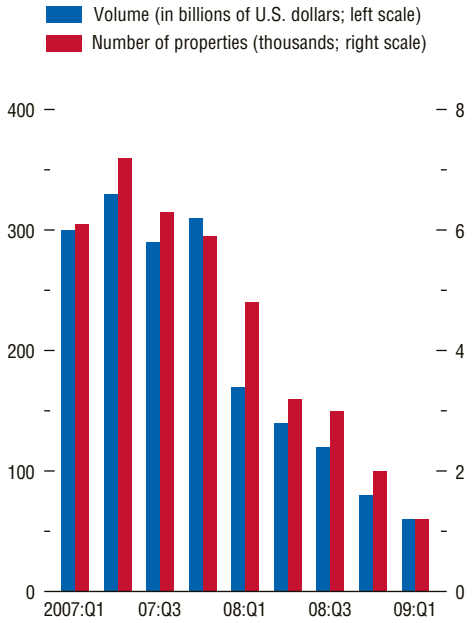
Of course, there could be more pronounced corrections at the subnational level than is evident from the aggregate data. In Canada, for instance, the potential for further price corrections is estimated to be much higher in the western provinces (Alberta, British Columbia, Saskatchewan) than in the eastern provinces (Ontario, Quebec).[6] In the United States, the northeast corridor, the West Coast, and three of the four "sand states" (Arizona, Florida, Nevada) appear to be susceptible to continuing corrections, based on analysis of price-to-income ratios.[7]

lations and generous mortgage interest deductibility). For Italy, low loan-to-value ratios, low household debt levels, and demand from foreigners considerably diminish downside risks to real estate prices. For Japan, given the persistent decline in house prices over the past few decades, gap estimates may be sensitive to specification of trends.

[6]IMF (2009b).

[7]These price-to-income ("affordability ratio") calculations compare the median household income in a state to the income level required to obtain a standard mortgage loan for purchase of a median-priced home in the area. See Collyns, Igan, and Loungani (2009) for details. Further disparities across regions are reflected in delinquency and foreclosure rates, again led by the sand states (Arizona, California, Florida, Nevada).

**Global Commercial Property Sales**



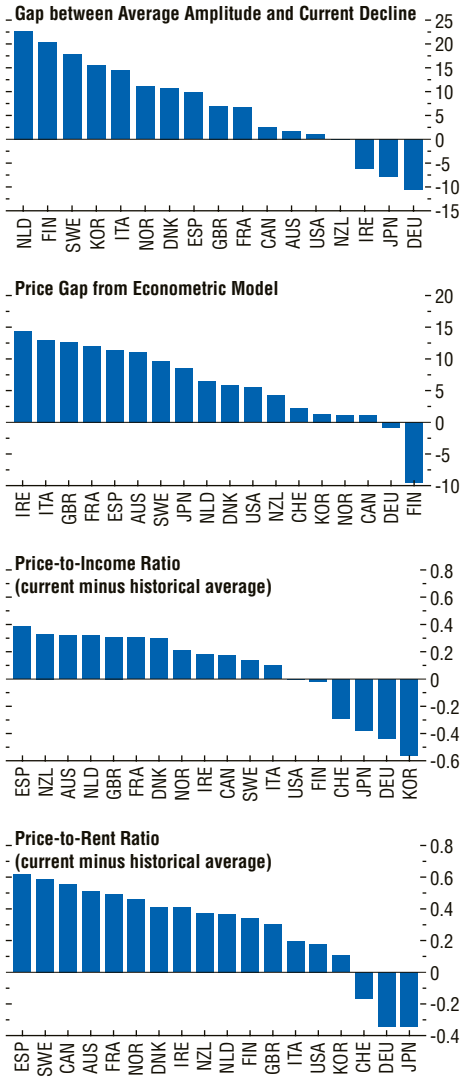

Sources: Real Capital Analytics; and IMF staff calculations.

### *Corrections in Commercial Real Estate Prices*

Commercial real estate markets are facing substantial price corrections. Current rent levels on office, retail, and industrial space are, on average, almost 15 percent above the historical norm (sixth figure). Rents have already started to decline around the world, and this trend is likely to continue given the economic outlook, which will put pressure on commercial property prices. Systematic global price data are not available, but the U.S. market illustrates the scale of the problem. In the United States, commercial real estate prices went through a boom of their own between 2005 and 2007, which has since turned into a bust (seventh figure). As of the second quarter of 2009, U.S. commercial real estate prices had already declined almost 40 percent from their peak in the second quarter of 2007. This compares with a peak-to-trough decline of 27 percent in the market bust of 1987–92. Implications of such a sharp correc-

## Box 1.4 *(continued)*

### Estimates of House Price Corrections [1,2]




Sources: Organization for Economic Cooperation and Development; and IMF staff calculations.

[1]In all panels, a positive value corresponds to overvaluation or potential price drop based on analysis of or comparison with past price movements.

[2]AUS: Australia; CAN: Canada; CHE: Switzerland; DEU: Germany; DNK: Denmark; ESP: Spain; FIN: Finland; FRA: France; GBR: United Kingdom; IRE: Ireland; ITA: Italy; JPN: Japan; KOR: Korea; NLD: Netherlands; NOR: Norway; NZL: New Zealand; SWE: Sweden; USA: United States.

tion are likely to be considerable: defaults on commercial real estate loans currently stand at 7.9 percent but, given the size of the bust and the fact that they reached 12 percent in the early 1990s, they could more than double.[8]

### *Impact on the Real Economy*

At a conceptual level, the impact of housing corrections on the real economy depend on the extent of house price misalignment, as estimated above; the impact of a given house price correction on macroeconomic variables—which could vary across economies due to differences in the characteristics of mortgage markets or because or differences in policy responses to housing shocks; and transmission and amplification mechanisms, such as the impact of defaults on bank balance sheets or the indirect effects on commercial real estate, which may not be fully captured in a standard macroeconomic model of the impacts of housing price shocks.

To provide a baseline assessment of the impact of house price declines on the economy, we estimate a vector autoregression (VAR) model for each of 20 advanced economies for which we have long series of quarterly data.[9] Each model includes the following variables: real GDP, real private consumption, real residential investment, consumer price index inflation, short-term interest rate, and real house prices.[10] The sample period is the first quarter of 1986 to the fourth quarter of 2008.

[8]The delinquency rate reported is for all commercial banks. Default rates tend to lag the price cycle. Delinquencies peaked in the first quarter of 1991, more than three years after prices did. Although an in-depth analysis of the determinants of default rates is beyond the scope of this box, these estimates are consistent with forecasts in IMF (2009a). For more information on modeling defaults, see Igan and Pinheiro (2009) and Box 1.6 in IMF (2008).

[9]Australia, Austria, Canada, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Japan, Korea, Netherlands, Norway, New Zealand, Sweden, Switzerland, Spain, United Kingdom, United States.

[10]Recent examples of this methodology include Jarocinski and Smets (2007) and Cardarelli and others (2009).

We use the model to trace the response of GDP, residential investment, and consumption to a shock to housing prices. The results indicate that, on average, a 10 percent decline in house prices leads to declines after one year of about 2 percent in real GDP, 2½ percent in consumption, and 15 percent in residential investment. In many economies, private consumption growth became closely linked to house price appreciation during the past decade, and house price declines are now driving down consumption growth. Some economies show high responsiveness of the macroeconomy to house prices, including Finland, Greece, and New Zealand. The heterogeneity in the response across economies could be due to numerous factors, but previous work reported in various issues of the WEO suggests that a critical factor is likely to be the ease with which households are able to access mortgage credit.

The VAR model provides baseline estimates of the macro impact of house price declines but may not fully reflect transmission and amplification mechanisms that may be in play. Such mechanisms may be especially important in economies where residential construction has been an important contributor to GDP growth in recent years or where household balance sheets became largely dependent on residential assets. For instance, in Spain, the construction sector grew to account for more than 10 percent of value added in 2007, compared with 6 percent in 1997; in the latest data for 2009, this share has started to shrink, with important implications for income growth and employment. A similar pattern is visible in Estonia and Ireland and, to a lesser extent, in Norway and the United Kingdom.

The indirect effects from weaknesses in commercial real estate are also important at present. Because commercial real estate investors are typically more leveraged than residential homeowners, the impact of price declines on delinquencies and thus on financial institutions' balance sheets is likely to be bigger than the impact of house price declines. In the United States, there are concerns about rising delinquency rates for construction loans and commercial-mortgage-backed securities.[11] With

**Rents for Commercial Space**[1]

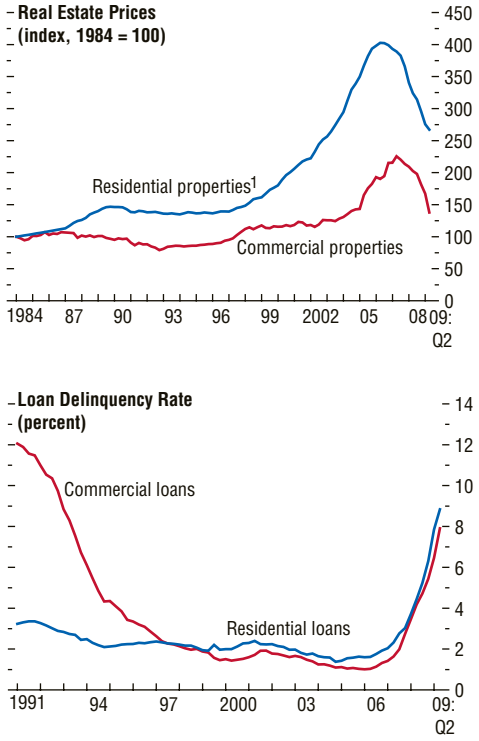
*(Current minus historical average, expressed in percent of current level)*


Sources: Knight Frank, LLC; and IMF staff calculations.
[1]Rents in domestic currency. Average for office, retail, and industrial space for each country. Data for different countries start on the following: Australia 2000, Austria 2001, Belgium 1990, China 1991, Czech Republic 2002, Denmark 1996, Finland 2005, France 1990, Germany 1990, Hong Kong SAR 1992, Hungary 2002, India 1999, Indonesia 1997, Ireland 1992, Italy 1990, Japan 1998, Malaysia 1991, Netherlands 1990, Norway 2005, Poland 1993, Portugal 1991, Russia 2003, Singapore 1982, Spain 1990, Sweden 1992, Switzerland 2001, Thailand 1997, Ukraine 2006, United Kingdom 1980. Data are in nominal terms.

[11]Spreads for investment-grade commercial mortgage-backed securities (CMBSs) soared in summer 2008, along with spreads for other asset-backed securi-

## Box 1.4 *(concluded)*

### United States




Sources: Haver Analytics; and IMF staff calculations.
[1]Residential real estate prices are measured by the S&P/Case-Shiller index.

refinancing needs of commercial real estate investors expected to peak during 2011–13, defaults before maturity and property liquidations could start another wave of financial distress.[12] Other economies also face substantial risks from corrections in this sector. These include the United Arab Emirates, where the share of construction in non-oil GDP is high, banks have high direct and indirect exposure to the sector, and there is high reliance on external borrowing.

### *Conclusions*

House prices continue to decline across a broad range of economies, although signs of stabilization have emerged recently where the correction has been ongoing for a number of years, such as the United States. But an analysis of past house price cycles suggests that for most economies, there could still be significant corrections to come given the stronger-than-average upturn in house prices that preceded the present downturn. Moreover, the global recession has put pressure on commercial property markets, where increasing vacancy rates and decreasing rents drove down nonresidential construction investment. Leveraged commercial real estate investors are likely to face difficulties in refinancing the loans that are coming due, and soaring delinquencies therefore have the potential to create a second wave of financial distress in exposed financial institutions. The ongoing effects on the real economy of house price corrections and increasing stress in commercial property markets are being amplified in economies where construction has been an important contributor to growth in recent years, where consumption was driven by house price appreciations, and where commercial real estate markets have been placed in a precarious position by the weakening of the real economy.

ties, and remain elevated. In August 2009, the U.S. Federal Reserve and the U.S. Treasury Department announced the extension of the Term Asset-Backed Securities Loan Facility to mid-2010 for CMBSs to support the ailing commercial real estate market. Exposure of nonbank financial institutions to CMBSs is cause for concern under current market conditions.

[12]For example, in the United States, Wells Fargo, Bank of America, and JPMorgan Chase are among the top commercial real estate lenders. Smaller, more geographically concentrated lenders have already reported losses associated with such loans. Overall, commercial banks hold $1.6 trillion in commercial mortgage loans amounting to 45 percent of the total outstanding. CMBS issuers (26 percent), life insurance companies (9 percent), and savings institutions (6 percent) are the other major holders of commercial real estate debt.

operations may be hard to unwind as long as markets remain illiquid and fundamental market failures remain unaddressed.[5]

## Supportive Fiscal Policies

In both advanced and emerging economies, fiscal policy has provided major stimulus in response to the deep downturn, which was particulary important because the transmission of monetary policy has been impaired in many economies (Figure 1.7). Overall fiscal deficits are projected to increase by about 6 percentage points of GDP weighted by purchasing power parity in 2009–10 compared with 2007 pre-crisis levels. The fiscal expansion is greater in advanced economies, reflecting the larger size of their governments and the greater role of automatic stabilizers such as income taxes and transfers (welfare payments, unemployment benefits). For the Group of 20 (G20) economies, crisis-related discretionary measures are estimated at about 2 percent of GDP for 2009 and 1.5 percent of GDP for 2010, both relative to 2007 baselines, with the largest policy packages in Asia, the Middle East, and the United States. The categories of stimulus that were implemented most rapidly—tax breaks and transfer payments—are those that typically have lower effects on activity. Stimulus measures that have higher multipliers will likely be implemented at an accelerated pace during the second half of 2009, reflecting the lags inherent in new and expanded government spending programs, particularly in infrastructure.

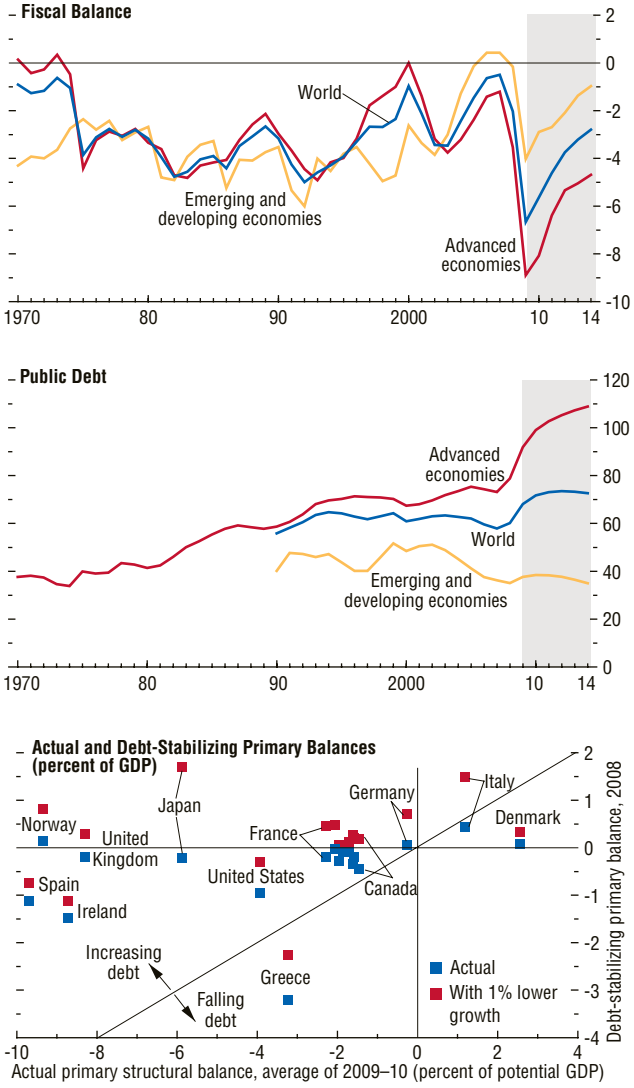
With some signs that conditions are stabilizing, most countries are taking a "wait-and-see" approach, focusing on implementing previously announced measures and on assessing their impact before providing additional stimulus. Estimates for 2010 reflect the phased implementation of stimulus spending initiated during 2009 and a carryover of tax provisions as well as the continued operation of automatic stabilizers.

[5]For analysis of early evidence, see McAndrews, Sarkar, and Wang (2008); Čihák and others (2009); Meier (2009); and Taylor and Williams (2009).

### Figure 1.7. General Government Fiscal Balances and Public Debt

*(Percent of GDP)*

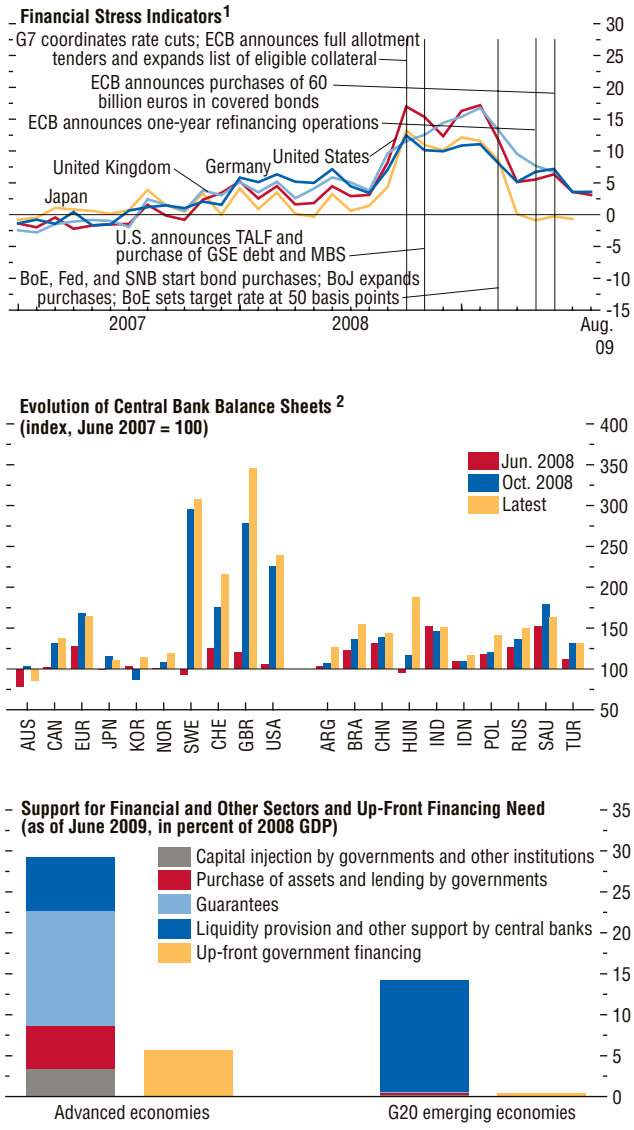
Fiscal policy is providing significant stimulus to the global economy. Public debt, however, is rising fast, particularly in advanced economies. Large corrections in fiscal balances will be necessary to reverse this trend once the recovery is on a firm footing.




Sources: World Economic Outlook database; and IMF staff estimates.

## Figure 1.8. Public Support to Ease Financial Stress

Extraordinary public intervention has helped reduce financial market turmoil. As a result, balance sheets of central banks have expanded considerably, and governments have incurred significant actual and contingent expenditures.




Sources: Horton, Kumar, and Mauro (2009), Table 4; and IMF staff calculations.

[1]Financial stress indicators consist of seven financial market variables, including the beta of banking stocks, the TED spread, the slope of the yield curve, corporate bond spreads, stock market returns, stock market volatility, and exchange rate volatility. BoE: Bank of England; BoJ: Bank of Japan; ECB: European Central Bank; Fed: Federal Reserve; GSE: government-sponsored enterprises; MBS: mortgage-backed securities; SNB: Swiss National Bank; TALF: Term Asset-Backed Securities Loan Facility.

[2]AUS: Australia; CAN: Canada; EUR: Euro area; JPN: Japan; KOR: Korea; NOR: Norway; SWE: Sweden; CHE: Switzerland; GBR: United Kingdom; USA: United States; ARG: Argentina; BRA: Brazil; CHN: China; HUN: Hungary; IND: India; IDN: Indonesia; POL: Poland; RUS: Russia; SAU: Saudi Arabia; TUR: Turkey.

Budget deficits are thus projected to be broadly the same in 2010 as in 2009, implying continued support for activity. For the G20 economies, fiscal policy is estimated to boost GDP by at least 1 percentage point in 2009 and by less in 2010.[6] The continued stimulus to growth in 2010 reflects implementation lags and the growing share of capital (infrastructure) spending, which has larger multipliers than taxes or transfers. In subsequent years, fiscal deficits will start to contract, in the absence of further measures, as stimulus measures phase out and the recovery improves cyclical components of the budget.

### Financial Sector Support

In addition to central bank efforts, governments also intervened heavily in financial systems to relieve concerns about a potential systemic collapse and to reestablish trust. Measures included deposit and debt guarantees, recapitalization of financial institutions, and programs to ring-fence or remove bad assets from these entities' balance sheets (Figure 1.8). Differing country circumstances spurred a wide variety of approaches. Most governments provided guarantees, because these entail low up-front fiscal costs and are relatively easy to implement. Programs to recapitalize financial institutions and remove their toxic assets quickly ran into major political obstacles, as skeptical electorates resisted what they considered overly generous bailouts for the very firms seemingly responsible for the crisis or questioned the growing role of government in credit intermediation. Recapitalization also raised a number of specific difficulties, notably how to gauge capital shortfalls with uncertain valuations for bad assets and resistance from existing shareholders who did not want their stakes and influence diluted.

Accordingly, only a limited amount of government funding has been allocated up front

[6]The size of fiscal multipliers is uncertain. Based on plausible ranges, stimulus packages could boost GDP by 1 to 5 percentage points in 2009 and by 0 to 1 percentage point in 2010, both with respect to the previous year. These estimates consider cross-country spillover effects. For details, see Horton, Kumar, and Mauro (2009).

for financial support operations. The advanced G20 economies are estimated to have put aside somewhat less than 6 percent of GDP; for the emerging G20 economies, whose financial systems are affected much less directly by the crisis, that number is below 1 percent of GDP.[7] The amount of financial sector support actually disbursed generally has been even less, reflecting a variety of factors. Some are innocuous, such as the precautionary nature of initial announcements and indications of increasing stability and improved bank liquidity. Others are more worrisome, such as lags in implementation of programs for recapitalization and asset purchases caused by financial institutions' preference to wait out the crisis and deleverage rather than take write-downs and accept government support to increase lending.

Various governments have taken an active role in assessing their banking systems by performing stress tests, which, when accompanied by credible measures to address any shortfalls in capital, have been a useful tool in accelerating balance sheet repair and restoring confidence in banks. But much more work remains to be done on this front in many countries. Accordingly, capital remains far short of the levels required to forestall further bank deleveraging, representing an important drag on the forces of recovery.

## A Subdued Recovery and Vulnerability to Mild Deflation

Summing up the short-term prospects, the policy forces that are driving the current rebound will gradually lose strength, and the real and financial forces remain weak but are gradually building. Specifically, fiscal stimulus will diminish and inventory rebuilding will gradually lose its influence, while consumption and investment will slowly build. Thus, after contracting by about 1 percent in 2009, global activity is forecast to expand by about 3 percent in 2010. These projections reflect modest upward revisions to those in the July 2009 *WEO Update* (Table 1.1; Figure 1.9).

Advanced economies are projected to expand sluggishly through much of 2010, with output growth rising toward medium-term potential only later in the year. Thus, average annual growth in 2010 will be only modestly positive, at about 1¼ percent, following a contraction of 3½ percent during 2009. The recovery of activity is more clearly evident on a fourth-quarter-over-fourth-quarter basis: from 2009:Q4 to 2010:Q4, output is expected to rise by about 1¾ percent, up from an expansion of about ½ percent (annualized) during the second half of 2009 and a 2 percent contraction in the first half. The recovery is being felt first by advanced economies in Asia. In the United States, consumption should receive some support from gradually diminishing employment losses, as well as firmer asset prices. In Europe, improvements are being driven by policy support and recovering confidence and trade—output in France and Germany already expanded moderately in the second quarter of 2009. However, a prolonged period of significant job losses is expected to weigh on activity in Europe well into 2010.

In emerging economies, real GDP growth is forecast to reach 5 percent in 2010, up from 1¾ percent in 2009. The rebound is driven by China, India, and a number of other emerging Asian economies. Economies in Africa and the Middle East are also expected to post solid growth of close to 4 percent, helped by recovering commodity prices, whereas Latin America will benefit from higher commodity prices and rising global trade. In emerging Europe and the CIS, the recovery may lag because of tighter external financial constraints that are bringing down very large current account deficits (see Chapter 2).

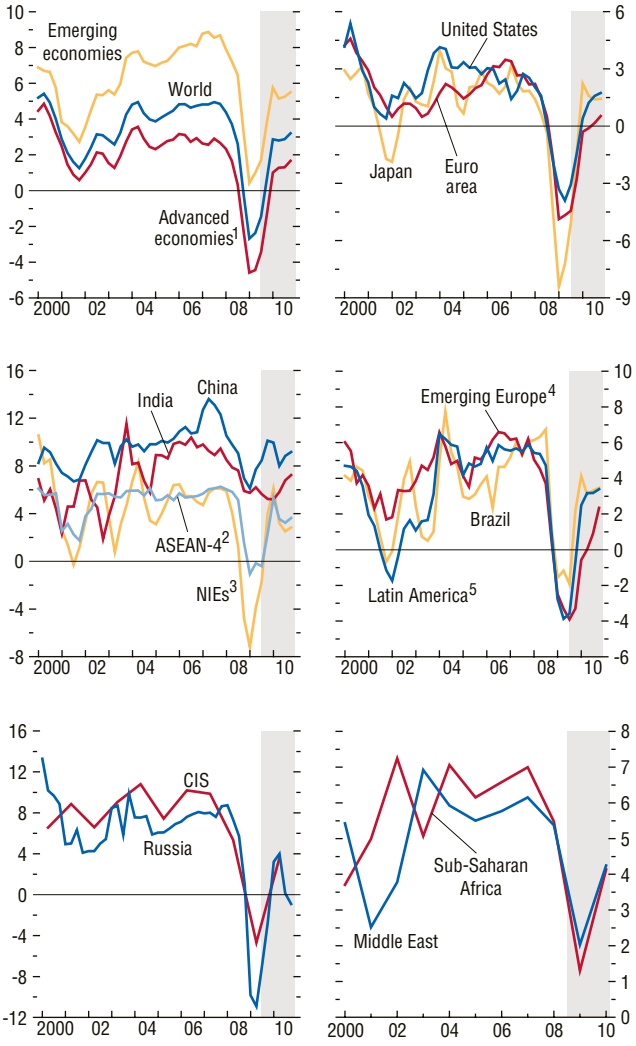
The gradual pace of recovery points to a prolonged period of subdued inflation and vulnerability to mild deflation (see Figure 1.10). Although the risks of sustained deflation have diminished over the past quarter, deflation pressures—as gauged by a broad indicator that comprises various price indicators, estimates

[7]See Horton, Kumar, and Mauro (2009).

### Figure 1.9. Global Outlook

*(Real GDP; percent change from a year earlier)*

A recovery is expected to take hold in 2009–10. However, economic growth will be uneven: modest in advanced economies, emerging Europe, the Commonwealth of Independent States (CIS), and Latin America; strong in China and India.




Sources: Haver Analytics; and World Economic Outlook database.

[1]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.

[2]Indonesia, Malaysia, Philippines, and Thailand.

[3]Newly industrialized Asian economies (NIEs) comprise Hong Kong SAR, Korea, Singapore, and Taiwan Province of China.

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

[5]Argentina, Brazil, Chile, Colombia, Mexico, Peru, and Venezuela.

of capacity utilization, and asset prices for most G20 economies—are expected to remain relatively high over the coming year.[8] For the United States and the euro area, for example, IMF staff estimates suggest that potential output growth has fallen, is currently close to zero, and will pick up only slowly to about 2 percent and 1¼ percent, respectively, over the medium run (Figure 1.11).[9] Nonetheless, large output gaps are opening, typically measuring about 3–5 percent of potential GDP. Accordingly, inflation in advanced economies is projected to be close to zero in 2009 and to accelerate very modestly to about 1 percent in 2010, largely reflecting rising commodity prices. Prices for many manufactured goods will probably continue to decline for some time. Fortunately, inflation expectations have generally remained well anchored, providing some protection against sustained large price declines. In emerging economies, inflation is forecast to hover around 5 percent in 2009–10, down from more than 9 percent in 2008. Only China, a few of the ASEAN-5,[10] and most emerging European economies are projected to see inflation fall appreciably below 5 percent. Low potential growth and inflation will slow the process of deleveraging, adding to contractionary forces.

[8]For details on the construction of this indicator, see Decressin and Laxton (2009). Notice that Figure 1.10 also features an expanded deflation indicator, which includes house prices.

[9]The (multivariate filter) estimates are obtained by examining various macroeconomic variables and the relationships among them. If falling output translates into falling core inflation, the slowdown is cyclical; to the extent it does not, it is structural, reflecting lower potential growth. Data on output, however, are available only quarterly. More insight can be gleaned about the short term by scrutinizing capacity utilization and unemployment, and their past relationships to output. In general, however, real-time estimates of potential output are subject to wide margins of error, particularly during booms and recessions. See Bernes and others (2009).

[10]Indonesia, Malaysia, Philippines, Singapore, Thailand.

## Beyond 2010: How Will the Global Economy Rebalance?

Achieving sustained healthy growth over the medium term will depend critically on addressing the supply disruptions generated by the crisis and rebalancing the global pattern of demand. On the supply side, financial firms will need to be restructured and markets repaired to deliver adequate credit for sustained increases in investment and productivity, and labor will need to be redeployed across sectors. On the demand side, rebalancing hinges on switching from public to private demand and from domestically to externally driven growth in the many economies that experienced asset price busts. By implication, economies that previously relied on export-led growth will need to switch from externally to domestically driven growth.

### Lower Potential Output

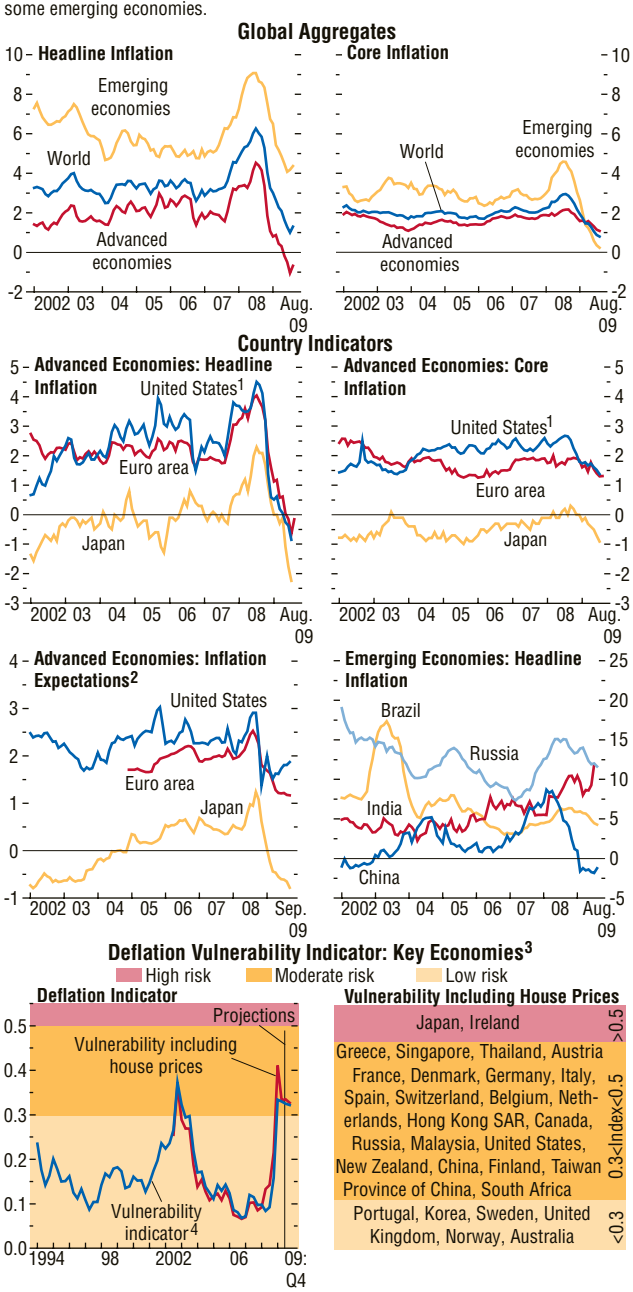
Historical evidence presented in Chapter 4 indicates that there were typically large, permanent hits to output in the aftermath of past financial crises, although there has been a wide range of outcomes and major losses have been avoided in some cases. In the past, output losses following crises manifested themselves in falling capital, higher unemployment, and lower total factor productivity. Capital accumulation typically plunged as a result of the interaction among surging funding costs, slumping demand, falling collateral values, and growing excess capacity. The dynamics of these interactions tended to be long lasting, pushing unemployment to high levels. Over time, unemployment evolved from cyclical into structural, as the jobless lost skills or were eased out of the labor force with generous early retirement or other long-term benefits. The latter played an important role in boosting structural unemployment in Europe following the big recessions of the 1970s and 1980s.[11] Total factor productivity suffers for several reasons, including short-term

[11]See, for example, Bruno and Sachs (1985).

### Figure 1.10. Global Inflation

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

The global recession has caused a large drop in inflation and rising concern about mild deflation. However, the decline in inflation pressures has been limited among some emerging economies.




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

[1]Personal consumption expenditure deflator.

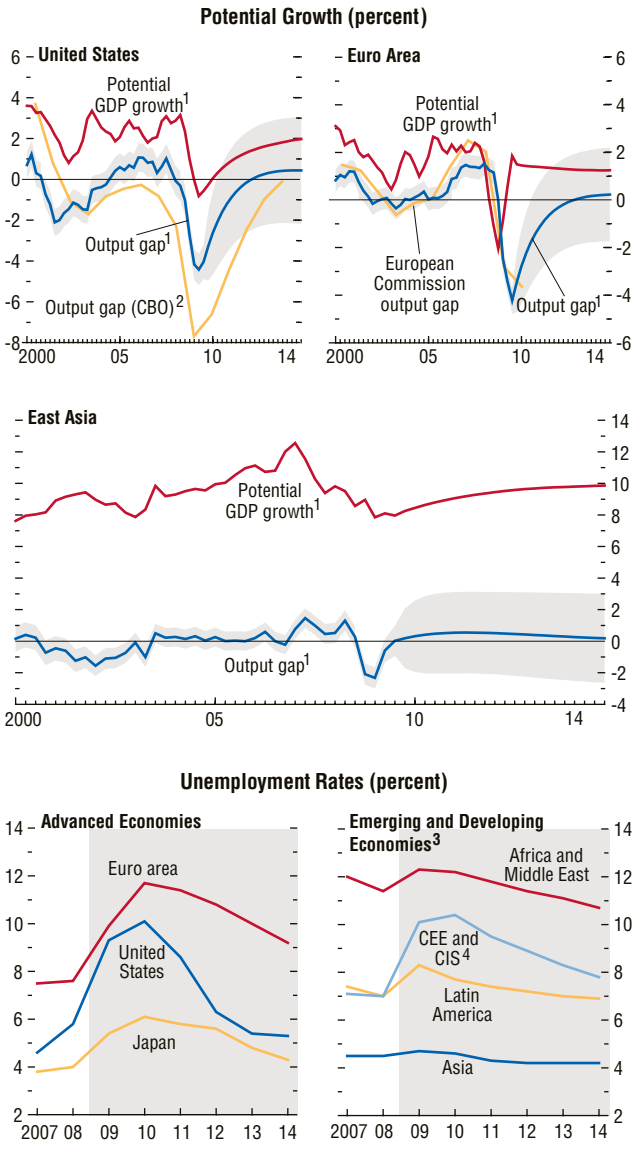
[2]One-year-ahead consensus forecasts. The December values are the average of the surrounding November and January values.

[3]For details on the construction of this indicator, see Decressin and Laxton (2009). The figure also features an expanded indicator, which includes house prices. Vulnerability as of 2009:Q3. For the equity, real exchange rate, and nominal house price components, values for August 2009 were used.

[4]Major advanced and emerging economies.

## Figure 1.11. Potential Growth and Unemployment Rates

Potential growth is taking a hit from the crisis, particularly in advanced economies and emerging economies suffering balance of payments crises. Unemployment will be above precrisis levels for some time in advanced economies but not in most emerging and developing economies.




Sources: U.S. Congressional Budget Office; and IMF staff calculations.
[1]Derived using a multivariate filtering approach. For details, see Bernes and others (2009).
[2]CBO: U.S. Congressional Budget Office.
[3]Aggregates are computed on the basis of purchasing-power-parity weights.
[4]CEE: Central and eastern Europe; CIS: Commonwealth of Independent States.

labor hoarding, obsolescence of physical and human capital, and lower research and development expenditures.

The current medium-term output projections are indeed on a much lower path than before the crisis (Figure 1.12), consistent with a permanent loss of potential output. Investment has already fallen sharply, especially in the economies hit by financial and real estate crises. Together with rising scrap rates, as corporations go bankrupt or restructure, this is reducing effective capital stocks. In addition, unemployment rates are expected to remain at high levels over the medium run in a number of advanced economies. In the euro area, for example, rates are projected to rise to close to 12 percent in 2010 and to retreat only gradually to 9½ percent by 2014. By contrast, in the United States, with its more flexible labor market, unemployment is projected to decline from a peak of about 10 percent in 2010 to 5 percent by 2014.

### Demand-Side Rebalancing

To complement efforts to repair the supply side of economies, there must also be adjustments in the pattern of global demand in order to sustain a strong recovery. Specifically, many economies that have followed export-led growth strategies and have run current account surpluses will need to rely more on domestic demand—notably emerging economies in Asia and elsewhere and Germany and Japan. This will help offset subdued domestic demand in economies that have typically run current account deficits and have experienced asset price (stock or housing) busts, including the United States, the United Kingdom, parts of the euro area, and many emerging European economies. In these economies, private consumption and investment are unlikely to pick up the slack that will be left by diminishing fiscal stimulus, given that household incomes and corporate profits will be subdued and balance sheet repair will be under way for some time, implying higher saving rates. Hence, these economies' imports will be sluggish and their

current account deficits will narrow. In addition, there will need to be sectoral shifts of resources on the supply side to accommodate shifts in demand.

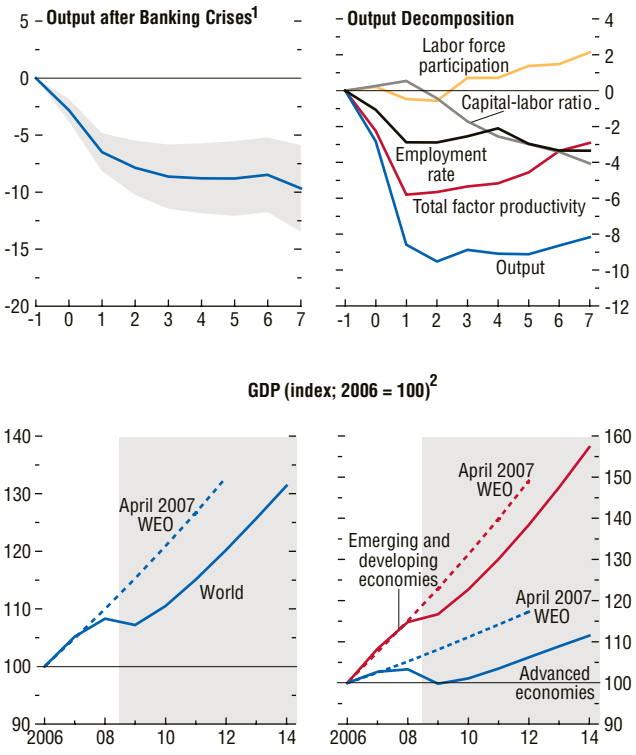
This process of rebalancing global demand will be drawn out. To illustrate the challenge, consumption in China—the main current account surplus economy—amounts to only about one-quarter of total consumption in the United States and the European economies with large current account deficits. Furthermore, the scope for advanced economies such as Germany and Japan to contribute to rebalancing is limited, given their need to build savings to prepare for population aging. Thus, rebalancing must involve a broad range of emerging economies if solid global growth is to be sustained over the medium term. It will also require major changes in consumption patterns, supported by an economic environment that fosters lower precautionary saving and higher investment, including in emerging economies that have traditionally exported large amounts of capital. This is a long-term policy challenge that involves complex issues related to lowering corporate saving, expanding and improving financial intermediation, eliminating distortions that foster production of tradable goods, and strengthening social safety nets. Rapid progress cannot be expected in the near term.

Hence, these projections paint a sobering picture of the path for demand-side rebalancing.[12] In 2009, global current account imbalances decline sharply (Figure 1.13). Current account deficits fall in the United States and various advanced economies (Greece, Ireland, Portugal, Spain, United Kingdom) and in emerging Europe—together, these economies accounted for the bulk of the world's current account deficits before the crisis. Meanwhile, surpluses diminish for oil exporters, as the value of oil

[12]Like most forecasts that use both private and official data sources, WEO projections assume unchanged real effective exchange rates. Not surprisingly, WEO projections typically underestimate the amount of rebalancing between surplus and deficit countries that actually takes place.

## Figure 1.12. GDP Growth

Historical evidence suggests that declining output after crises is driven to a roughly equal extent by lower employment, lower effective capital stocks, and lower productivity. *World Economic Outlook* (WEO) forecasts for output have been marked down appreciably relative to precrisis levels, in line with historical evidence. With lower investment and consumption, current accounts of advanced economies are expected to improve.



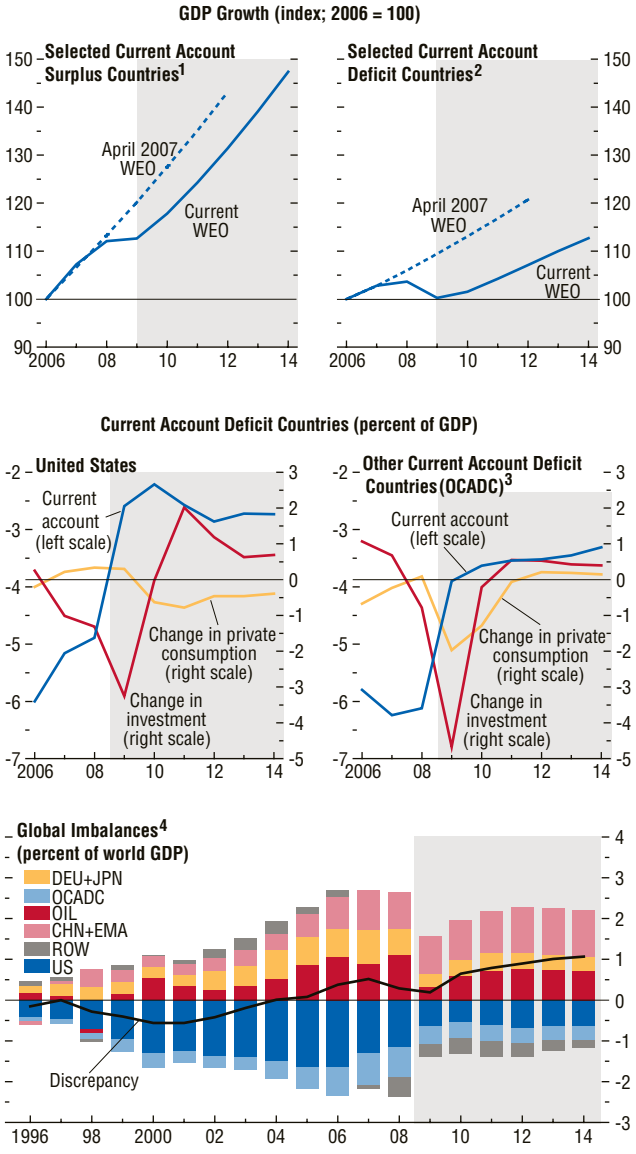

Source: World Economic Outlook database projections.

[1]In percent of precrisis trend; mean difference from year $t-1$; first year of crisis at $t=0$. The figure reports the estimated mean path (line) and the 90 percent confidence interval for the estimated mean (shaded area).

[2]GDP path predicted in the April 2007 WEO (dashed line) versus current GDP path (solid line).

## Figure 1.13. Global Imbalances

Output of countries with current account deficits is projected to drop appreciably relative to precrisis trends, driven mainly by lower investment. Consumption is expected to fall as well, however, leading to improvements in their current accounts.




Source: IMF staff estimates.
[1]China, Germany, Hong Kong SAR, Indonesia, Japan, Korea, Malaysia, Philippines, Singapore, Taiwan Province of China, Thailand, and oil exporters (including Islamic Republic of Iran, Nigeria, Norway, Russia, Saudi Arabia, and Venezuela).
[2]Bulgaria, Croatia, Czech Republic, Estonia, Greece, Hungary, Ireland, Latvia, Lithuania, Poland, Portugal, Romania, Slovak Republic, Slovenia, Spain, Turkey, United Kingdom, and United States.
[3]Countries listed in Note 2, excluding United States.
[4]US: United States; DEU+JPN: Germany and Japan; CHN+EMA: China, Hong Kong SAR, Indonesia, Korea, Malaysia, Philippines, Singapore, Taiwan Province of China, and Thailand; OIL: Oil exporters; ROW: Rest of the world.

revenues drops sharply, and for Germany and Japan. Looking further ahead, however, imbalances widen again. The recovery of oil prices is expected to boost the savings and current account surpluses of the oil exporters while lowering those of importers. The turnaround in the global manufacturing cycle is expected to raise surpluses for Germany and to a lesser extent for Japan (because of the recent appreciation of the yen). Nonetheless, these two economies and the oil exporters are expected to contribute less to global imbalances over the medium term than they have recently. At the same time, little current account adjustment is forecast for the emerging economies of Asia, notably China, over the medium term. As a result, global imbalances widen again over the medium term; also, the global current account discrepancy—the sum of all economies' current accounts—is forecast to widen somewhat compared with the recent past (Box 1.5). However, the widening of this discrepancy is limited and, for this and other reasons, its implications for the growth forecast are probably limited.

## Risks to a Sustained Recovery

Downside risks to growth are receding gradually but remain a concern. The main short-term risk is that the recovery stalls and deflationary forces become entrenched. This could be triggered by a number of adverse developments. Premature exit from accommodative monetary and fiscal policies, possibly driven by rising concerns about government intervention and unconventional action by central banks, seems to be a significant risk because the policy-induced rebound could be mistaken for the beginning of a strong recovery. Also, there could be resistance to extending policy support long enough to allow private demand to make a sustained recovery. Progress in repairing financial balance sheets could be undercut by rising unemployment, greater-than-expected increases in delinquencies on residential mortgages and commercial real estate, and more corporate bankruptcies. With banks only weakly capital-

## Box 1.5. From Deficit to Surplus: Recent Shifts in Global Current Accounts

The global current account discrepancy is a well-known anomaly in economic statistics (IMF, 1987; Annex 3 in the October 1996 *World Economic Outlook* (WEO); and Box 2.1 in the September 2002 WEO). In theory, global exports—the sum of all economies' exports—should equal global imports, but in practice they do not.[1] In fact, the discrepancy has been large on occasion, reaching as much as ½ percent of global GDP in absolute value (figure, upper panel). The origins and behavior of this discrepancy have long been of interest to policymakers and academics who analyze current account developments and prospects. The issue has taken on added importance in light of the necessary rebalancing of global demand in the wake of the current crisis. Specifically, two interrelated sets of questions have arisen.

What factors explain the turnaround in the global discrepancy in recent years to a "surplus" after many decades of "deficit"?

What are the prospects for the global discrepancy? Is the continued increase in the discrepancy implied by the WEO projections consistent with past trends?[2]

The analysis in this box suggests that movements in the discrepancy, including its recent

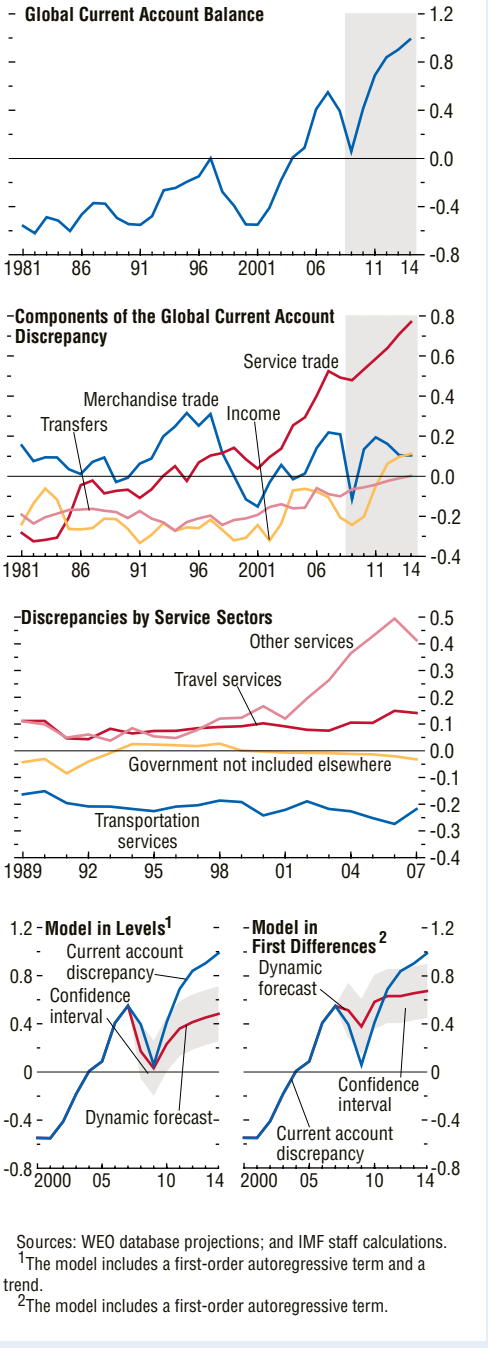
The main authors of this box are Thomas Helbling and Marco E. Terrones.

[1]The transactions subsumed in the external current account of an economy are typically referred to as international trade transactions. These are referred to as "current transactions" in balance of payments statistics (as opposed to transactions in the capital and financial accounts). Specifically, current transactions include the following major categories: exports and imports of goods and services, receipts of income from assets bought from nonresidents, return payments on liabilities to nonresidents (including returns on human capital), and receipts and payments of current transfers.

[2]The WEO country forecasts are based on common assumptions and consider variables such as growth in trading partner economies, but they do not explicitly incorporate "adding up" constraints for international transactions at the global level. The discrepancy implied by the aggregation of the country trade forecasts has thus long been used as a measure of their global consistency.

### Global Current Account Discrepancies

*(Percent of world GDP)*




Sources: WEO database projections; and IMF staff calculations.

[1]The model includes a first-order autoregressive term and a trend.

[2]The model includes a first-order autoregressive term.

## Box 1.5 *(continued)*

turnaround from deficit to surplus, reflect changes in global economic conditions and a trend increase in measurement biases toward exports, which is mostly relevant for services. The deceleration in global growth during 2008–09 already resulted in some narrowing of the global current account discrepancy in 2008, and some further narrowing seems likely in 2009. Against this cyclical decline works a growing trend for a global services surplus. However, results from simple econometric models for the global discrepancy suggest that the continued large increases in the global discrepancy during 2013–14 implied by the WEO forecasts might be stronger than consistent with historical trends.

### *What Factors Are behind the Recent Turnaround in the Global Discrepancy?*

As the figure shows, the discrepancy has generally been rising since 2001, became positive in 2005, and peaked in 2007. Based on preliminary data, the discrepancy narrowed from ½ percent of global GDP in 2007 to about ⅓ of global GDP in 2008. Quarterly data for a subset of economies suggest that the discrepancy narrowed sharply in the second half of 2008, when global trade collapsed, but that most of this decline was reversed in the first quarter of 2009.[3]

A breakdown of global trade into major categories, as shown in the second and third panels of the figure, suggests that the switch from a global current account deficit to a surplus reflects primarily increasing positive discrepancies ("surpluses") in the trade of goods and of so-called other services.[4]

The rising surplus in the global goods trade during 2001–07 likely reflects transportation-related lags in the recording of imports compared with exports at a time of rapidly expanding global trade.[5] With some exports recorded one period earlier in the source economy than the corresponding imports in the destination economy, a pickup in global trade growth can lead to an increase in the global trade surplus. With the fragmentation of production processes, trade has expanded at a much faster pace than value added (or GDP) in recent years. The observed decrease in the global trade discrepancy in 2008 could then be explained by the sharp drop in global trade, which was recorded in exports before imports.

The composition of the discrepancy in the trade of services has shifted in recent years.[6] In the 1980s and 1990s, a global deficit in transportation services was the main source of the negative discrepancy in this sector. Since 2001, however, a growing surplus in the trade of other services has more than compensated for the still-negative discrepancy in transportation services, implying a positive discrepancy in services trade overall.

[3]The subset of economies accounts for about 93 percent of global GDP.

[4]As discussed in IMF (1987) and Annex 3 in the October 1996 WEO, the negative discrepancy ("deficit") in the 1980s and 1990s was largely a result of deficits in transportation services and investment income. These deficits were attributed to the underrecording and/or failure to report credits by shipping nations (transportation services) and the underreporting by investment credit recipients (tax evasion, etc.).

[5]Other factors could also have played a role. For example, it is often argued that there is a greater incentive to underreport imports, because imports are taxed more heavily than exports. Hence, when global trade picks up, the recorded increase in imports could be systematically biased downward. Nevertheless, with trade in manufacturing components increasingly duty free, this factor may well have played a less prominent role in recent years compared with two decades ago.

[6]Measured international trade in services has been increasing rapidly in recent years. Although this expansion undoubtedly reflects rapid increases in underlying transactions, given the growing tradability of services, it also reflects important progress in measuring this type of international trade. An increasing number of economies have started to record and report trade in services over the past 50 years (Lipsey, 2009). Moreover, the number of economies reporting different kinds of trade in services has increased significantly over the past 30 years. For instance, the number of economies reporting exports and imports of financial services increased from 10 to more than 100 between 1985 and 2005.

The rising discrepancy in other services likely reflects measurement problems associated with the rapid increase in international trade in nontraditional services, such as offshoring of business, financial, and communication services. The measurement problems include the fact that exporters are easier to identify than importers because they specialize partly in providing these services (whereas the need for imports is often more sporadic) and they tend to have larger overall transaction volumes than importers. For example, law firms involved in resolving cross-border legal issues typically are long-established specialist firms, whereas many clients do not have such legal needs on a regular basis. Exporters are thus more likely to be identified and exceed the threshold for participation in the surveys that underpin measurement of a large part of international trade in services.[7] As a result, exports are more likely to be recorded than imports, which can introduce a bias toward a positive discrepancy. And this discrepancy has risen relative to global GDP as such services have greatly increased in importance.

Other reasons for positive discrepancies in the trade of "other services" include policy-related incentive biases—policymakers are often interested primarily in services exports (as a means to stimulate growth), and measurement efforts therefore focus on exports rather than imports. There is also a lack of appropriate data collection systems in services trade in emerging and developing economies, which typically are net importers of services.

It remains difficult to forecast the likely evolution of the discrepancy in the global trade of other services. Rapid trend growth in the trade of other services is likely to continue, but statistical agencies are in the process of improving the related measurements. The extent to which this will affect the magnitude and direction of the discrepancy remains highly uncertain at this point.

### *What Are the Prospects for the Global Discrepancy?*

The current WEO forecasts imply that, after a further decline in 2009, the global discrepancy will again increase relative to global GDP during 2010–14 and will grow well beyond its peak in 2007. Such a pattern seems qualitatively plausible, given the recent trends discussed above, but it would also be desirable to quantitatively assess the consistency with past trends. In other words, the question is whether the fluctuations in the discrepancy implied by the forecasts are within historical margins of error.

Marquez and Workman (2001) examine this question with an econometric model of the global current account discrepancy, which they use to check whether the implied discrepancy falls within the 95 percent confidence interval of the model forecast. This approach was predicated on their finding that during 1972–98, the discrepancy fluctuated systematically with changes in global economic conditions and past values of the discrepancy itself. Building on this work, the IMF staff reexamined these features of the discrepancy, taking into account more recent data and, on this basis, estimated a somewhat modified econometric model.

Simple statistical analysis of the overall global current account discrepancy and its major components suggests the following (first table):[8]

The means of the global discrepancy and its major components are significantly different from zero. This implies that, despite the recent switch from deficit to surplus, the discrepancy has not been on average zero.

Another key property of the global discrepancy and its major components is that they are highly persistent time-series processes. In other

[7]Unlike in the trade of goods, there are no customs records available for many types of international trade in services. Indeed, in the areas where the recording of services trade has long been established—transportation and travel—there are at least related customs records available.

[8]The analysis runs from 1981 to 2007. Reliable data start for the early 1980s, and 2007 is the last year for actual data from the IMF's *Balance of Payments Statistics Yearbook*.

## Box 1.5 *(concluded)*

### Statistical Properties of the Global Current Account Balance

*(1981–2007; in percent of global GDP)*

| | Levels | | | First Differences | | |
|---|---|---|---|---|---|---|
| | Mean | Standard deviation | Persistence | Mean | Standard deviation | Persistence |
| Merchandise trade | 0.085** | 0.118 | 0.764*** | 0.003 | 0.083 | 0.236* |
| | [0.036] | | [0.099] | [0.018] | | [0.134] |
| Services trade | 0.014 | 0.208 | 1.057*** | 0.029** | 0.062 | 0.289* |
| | [0.069] | | [0.085] | [0.013] | | [0.167] |
| Income | –0.219*** | 0.085 | 0.641*** | –0.001 | 0.071 | –0.038 |
| | [0.024] | | [0.113] | [0.010] | | [0.168] |
| Transfers | –0.186*** | 0.045 | 0.786*** | 0.003 | 0.033 | –0.103 |
| | [0.013] | | [0.084] | [0.005] | | [0.130] |
| Current Account | –0.305*** | 0.300 | 1.080*** | 0.035 | 0.139 | 0.375*** |
| | [0.093] | | [0.124] | [0.034] | | [0.114] |

Sources: IMF, World Economic Outlook database; and IMF staff calculations.

Note: Robust standard errors are reported in brackets; *, **, and *** denote significance at the 10 percent, 5 percent, and 1 percent levels, respectively.

words, past levels of the discrepancies matter for their current levels, because the first-order autoregressive coefficients are generally significantly different from zero. The relatively large, positive values of these coefficients imply that the discrepancies at any point in time are typically quite similar to the levels in the previous period.

For services trade and the overall current account balance, the autoregressive coefficients are slightly greater than 1 in value, suggesting that these discrepancies have grown over time.

Simple econometric analysis also confirms the key finding of Marquez and Workman (2001) that the global discrepancies generally fluctuate with global economic conditions but also shows that the discrepancies can grow over time (second table). Two models are fitted to the data for the global discrepancy for the current account as well as its components: one model features a time trend as well as global output growth, oil prices, and the six-month U.S. dollar London interbank offered rate. The other model omits the time trend, working with the first differences of the discrepancy variables rather than the levels. The findings suggest first that the discrepancies tend to be procyclical. In other words, they increase when global growth picks up and decrease when global growth slows. Second, the discrepancies tend to grow over time.

Hence, in assessing projections for the global discrepancy, the predicted changes in global economic conditions and its trend behavior should be taken into account. Doing this with the two models generates a forecast for the levels of the global current account discrepancy for 2008–14.[9] Comparing the model forecasts for the discrepancy during 2008–14 with the changes implied by the international trade forecasts in the current WEO projections shows that the latter are generally within the 95 percent confidence interval around the model forecasts through 2010 and 2012, respectively (lower

[9]Information criteria and in-sample forecast error comparisons suggest that a first-difference specification is preferable to a specification in levels. The estimation problems associated with highly persistent time-series processes would also argue in favor of such a specification. That said, on theoretical grounds, the global current account discrepancy should be a stationary process when it is scaled with global GDP (as in the analysis presented here). Comparing the model forecasts and the implied forecasts presented below shows that the implications of both specifications are the same. The forecasts for first difference of the global discrepancy were subsequently transformed into levels to allow for a comparison.

**Global Current Account Balance and Key Macro Variables[1]**

*(1981–2007; in percent of global GDP)*

| | Levels[2] | | | First Differences, Changes in | | |
|---|---|---|---|---|---|---|
| | Output growth | Oil prices | Interest rate | Output growth | Oil prices | Interest rate |
| Merchandise trade | 0.023*** | 0.000 | 0.003 | 0.020 | 0.000 | 0.000 |
| | [0.006] | [0.000] | [0.008] | [0.015] | [0.000] | [0.007] |
| Services trade | 0.022* | 0.000 | –0.009 | 0.016* | 0.000 | –0.009 |
| | [0.012] | [0.000] | [0.011] | [0.010] | [0.000] | [0.006] |
| Income | 0.030** | 0.000 | 0.012* | 0.016 | 0.000 | –0.010 |
| | [0.015] | [0.001] | [0.007] | [0.013] | [0.000] | [0.009] |
| Transfers | 0.008 | 0.000 | 0.002 | 0.013*** | 0.000 | –0.001 |
| | [0.007] | [0.000] | [0.004] | [0.005] | [0.000] | [0.004] |
| Current account | 0.057** | –0.001 | 0.000 | 0.052*** | 0.000 | –0.027*** |
| | [0.024] | [0.001] | [0.014] | [0.019] | [0.000] | [0.009] |

Sources: IMF, World Economic Outlook database; and IMF staff calculations.

[1]These are ARMAX models. The lags for the autoregresive and moving average components have been selected using Akaike and Bayesian criteria, taking into account the usual parsimony considerations.

[2]Regressions include a trend.

panels in the figure). The implied increases in the global discrepancy in 2011–14 and 2013–14, however, are outside the 95 percent confidence interval for the model forecasts. The deviation of the global discrepancy from the upper ends of the confidence intervals on average amounts to 0.1 to 0.2 percent of world GDP. This finding suggests that the growth projections underlying the trade forecasts for individual economies may not be fully consistent with global trade equilibrium, pointing to collective excessive optimism about growth of export shares. In the context of a need to rebalance global demand, this finding could be an indication that the forecast increases in national savings relative to investment in the economies that recorded current account deficits in recent years are not matched by commensurate declines in national savings in surplus countries at the assumed constant real exchange rates. However, these inconsistencies and their potential implications for the growth forecast are not likely to be large.

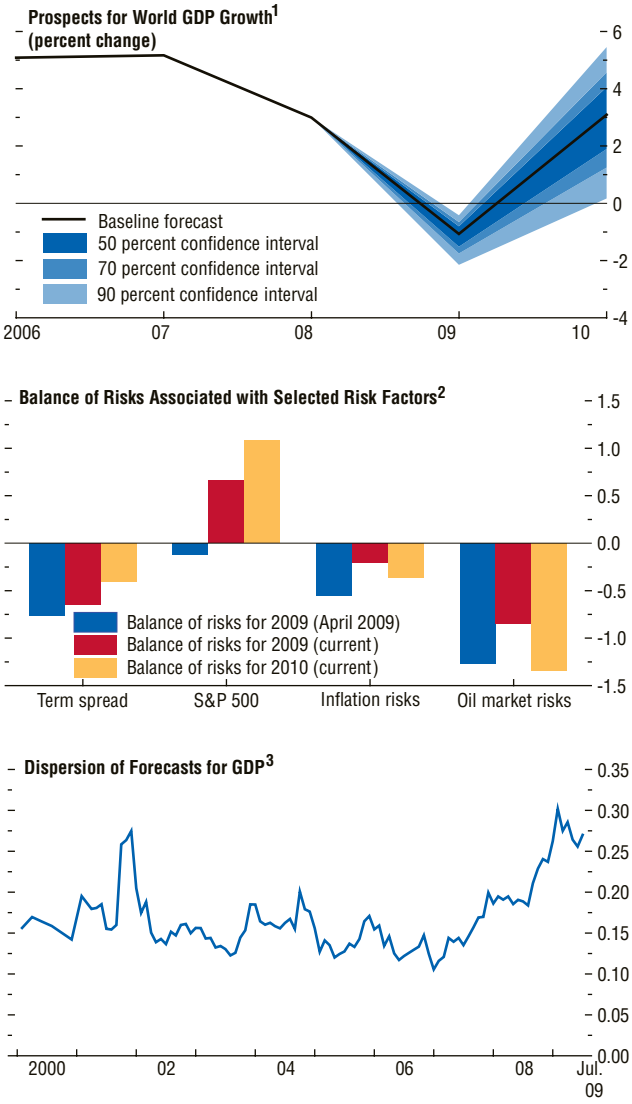
ized, this could lead to even tighter financial conditions. (These and other financial sector risks are discussed in the October 2009 GFSR.) More generally, many shocks that otherwise could be absorbed—for example, a virulent return of H1N1 flu or geopolitical tensions that remove excess capacity in the oil sector—may have a significant destabilizing impact, given the vulnerable state of the global economy and financial system.

However, there are some upside considerations, as evidenced by the recent, faster-than-expected improvement in financial conditions. In particular, the success of various policy measures in allaying fears about a 1930s-style crash in activity and fostering a strong rebound in financial market sentiment could cause consumption and investment to surge in a number of advanced and emerging economies, just as the increase in uncertainty triggered their collapse in late 2008 and early 2009. In other words, just as the crisis in confidence was underestimated during the downward spiral, so too the restoration of confidence may be underestimated during the rebound.

This assessment of the short-term risks to activity is broadly consistent with that of the markets, as embodied in selected data on options

## Figure 1.14. Risks to the Global Outlook

Risks to economic growth have diminished somewhat but remain to the downside. Consensus Economics survey information on term spreads and inflation rates and options market information on stock and oil prices suggest that the main downside risk relates to high oil prices.




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

[1]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.

[2]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.

[3]The series measures the dispersion of GDP forecasts for the G7 economies, Brazil, China, India, and Mexico.

prices and Consensus Economics expectations (Figure 1.14). These data can be used to construct a fan chart, which confirms that risks have narrowed since the April 2009 WEO but suggests that they remain on the downside.[13] The distribution of forecasts for the evolution of term spreads—typically, a high term spread anticipates recovery—points to downside risks to growth, although less so than in the recent past. Options data about the Standard & Poor's 500, by contrast, suggest that stock prices are more likely to surprise on the upside than the downside, consistent with upside risks to growth.

Market data also give indications about other specific short-term risks to the recovery. Much of the recent rebound in oil prices was related to cutbacks in production by the members of the Organization of Petroleum Exporting Countries, which were designed to stabilize prices in response to slumping demand (Appendix 1.1). One key concern in the markets is that higher oil prices could hinder economic recovery. In fact, oil prices have almost doubled from their trough earlier this year, and options prices point to further upside risks. Against this, considerable spare capacity and high inventory levels should reduce the risk of a sustained price surge, barring a major geopolitical event. Thus the projections assume that prices do not rise much further, in line with forward market prices. This does not rule out temporary price spikes, possibly fueled by speculative pressures, although financial factors cannot drive permanent shifts in real prices.

Another market concern is inflation risk, namely, that central banks may need to tighten monetary policy by more than expected to quell inflation pressures. The inflation risk comes from two sources. First, potential output may have slowed more than appreciated, just as during the late 1970s, following a prolonged slowdown in activity that policymakers mistook as cyclical rather than structural. Underlying inflation pressure would then be higher than

[13]For a detailed description of the methodology underlying this fan chart, see Elekdag and Kannan (2009).

apparent in current inflation data and could be exacerbated if the recovery surprises on the upside. Second, the large buildup of excess central bank reserves generated by unconventional monetary policy actions could feed a surge in credit growth when the recovery gains strength. As discussed below, central banks therefore must follow market developments closely and use a broad range of tools to tighten monetary conditions in the face of building pressures, although such a situation does not seem imminent.

For a number of emerging economies, by contrast, inflation risks seem more pressing. Inflation pressures have not eased as much as in the advanced economies, except in some emerging Asian and European economies. At the same time, output gaps are smaller and the rebound has been stronger in a number of these economies. Also, higher commodity prices tend to spill over faster into generalized wage pressures. Adding to these concerns, some economies are already seeing large asset price increases in response to low interest rates and easy credit, and such pressures could be exacerbated by strong capital inflows attracted by their dynamic performance.

Extending the horizon to the medium term, there are two important risks to sustained recovery, which mainly affect the advanced economies. On the financial front, continued public skepticism toward what is perceived as bailouts for those responsible for the crisis could undercut public support for financial restructuring, thereby prolonging the crisis. The result would be an even more sluggish recovery or, possibly, a long-lasting credit crunch and the equivalent of a "lost decade" for growth.

On the macroeconomic policy front, the greatest risk revolves around deteriorating fiscal positions, including as a result of measures to support the financial sector. The large increase in public debt and contingent liabilities incurred to provide stimulus to the economy and stabilize financial systems has already raised concerns in financial markets, as suggested by higher credit default swap (CDS) spreads on sovereign debt and larger sovereign spreads for some advanced economies.[14] If the recovery were to stall and be followed by a prolonged period of stagnation or very low growth, deficits and debt could balloon to difficult-to-sustain levels. There is a low probability that such a development could seriously unsettle global bond markets. Presumably, concerns would surface first in vulnerable advanced and emerging economies, notably those with large financial sectors relative to the size of their economies or with low revenue bases and high (notably short-term) public debt. This could then trigger another retrenchment in capital flows, which could drag down a number of other advanced and emerging economies. There could then be another crisis of confidence, currencies could adjust abruptly, and demand could slump, possibly raising fears about fiscal sustainability in even the larger advanced economies. Investors could react to these fears by taking flight into government or corporate bonds issued in economies with low public debt, including potentially some emerging economies, or by purchasing large amounts of precious metals. In either case, the world economy would go through profound turmoil and a long period of low activity.

Two further risks bear watching. First, whereas oil prices present some short-term risks, they present greater medium- to long-term risks to global growth. In particular, as current excess capacity is absorbed, prices could rise abruptly to very high levels just as they did during the previous upswing. This risk is amplified by cutbacks in investment in new capacity during the present downturn and continued uncertainties about oil investment regimes in some countries that have deferred investment in new fields. Second, although generally solid international collaboration has largely contained pressure for trade and financial protectionism until now, this pressure could strengthen as unemployment

[14]For various reasons, including low trading volumes, CDS spreads are imperfect stress indicators for government finance.

and social problems mount. Barriers to trade and financial flows might then be erected in some economies, triggering retaliatory moves by others. Financial markets could react quickly and vigorously, anticipating future losses in profits and productivity, leading to another downward spiral in activity. At the time of writing, however, a surge in protectionism appears to be a low-probability scenario.

From a policy perspective, the key questions are how some of the risks discussed here could interact with the challenges posed by rebalancing and what policymakers can do to prevent significant damage to global growth. The issues are illustrated with two scenarios (Figure 1.15).[15]

In the upside scenario, the major economies make rapid progress in fixing their financial systems, with a resulting increase in productivity. Emerging Asia is assumed to forcefully pursue policies to raise consumption (strengthening social safety nets and implementing financial reforms), while following flexible exchange rate policies that provide room for sustained appreciation of both real and nominal exchange rates. Governments also contribute to demand through government investment spending concentrated on "green" initiatives and infrastructure spending, the latter especially in emerging Asia and other economies where there is the greatest need for additional infrastructure.[16] All these measures encourage a decrease in precautionary saving, especially in emerging Asia, Japan, and the other major economies, and to a lesser extent in the euro area. The exception is the United States, where private saving increases further, because of the ongoing need for consumer deleveraging. Under this scenario, world GDP growth is about 1.3 percentage points higher starting in 2010, contributing to improvements in fiscal positions worldwide. There is some movement toward global current account rebalancing as net debtors' current account deficits improve and net creditors' surpluses decline, with magnitudes equal to about 0.7 percent of GDP in the United States and emerging Asia and somewhat less elsewhere.

The downside scenario assumes that the process of restoring the health of the financial systems in the major advanced economies is even slower than in the WEO baseline forecast, with a resulting loss of productivity. Economic policy missteps could exacerbate this deterioration, including through protectionist measures that distort incentives and reduce output. In this scenario, emerging Asia makes very limited progress in rebalancing demand toward domestic sources, with private saving failing to decrease by as much as projected in the WEO baseline. In some regions, especially Japan but also the United States, sluggish growth is exacerbated by the fact that monetary policy remains constrained by the zero bound on nominal interest rates, implying rising pressure on real interest rates due to price disinflation. Under this scenario, world GDP growth is about 2.2 percentage points lower starting in 2010. The objective of global current account rebalancing becomes more elusive, as current accounts move toward larger surpluses in emerging Asia and deteriorate in the United States and the euro area.

## Policy Challenges: Reconciling Short- and Medium-Term Objectives

The key policy priorities remain to restore the health of the financial sector and to maintain supportive macroeconomic policies until the recovery is on a firm footing, even though policymakers must also begin preparing for an eventual unwinding of extraordinary levels of public intervention. The premature withdrawal of stimulus seems the greater risk in the near term, but developing the medium-term macroeconomic strategy beyond the crisis is key to maintaining confidence in fiscal solvency and for price and financial stability. The challenge is to map a middle course between unwinding public interventions too early, which would jeop-

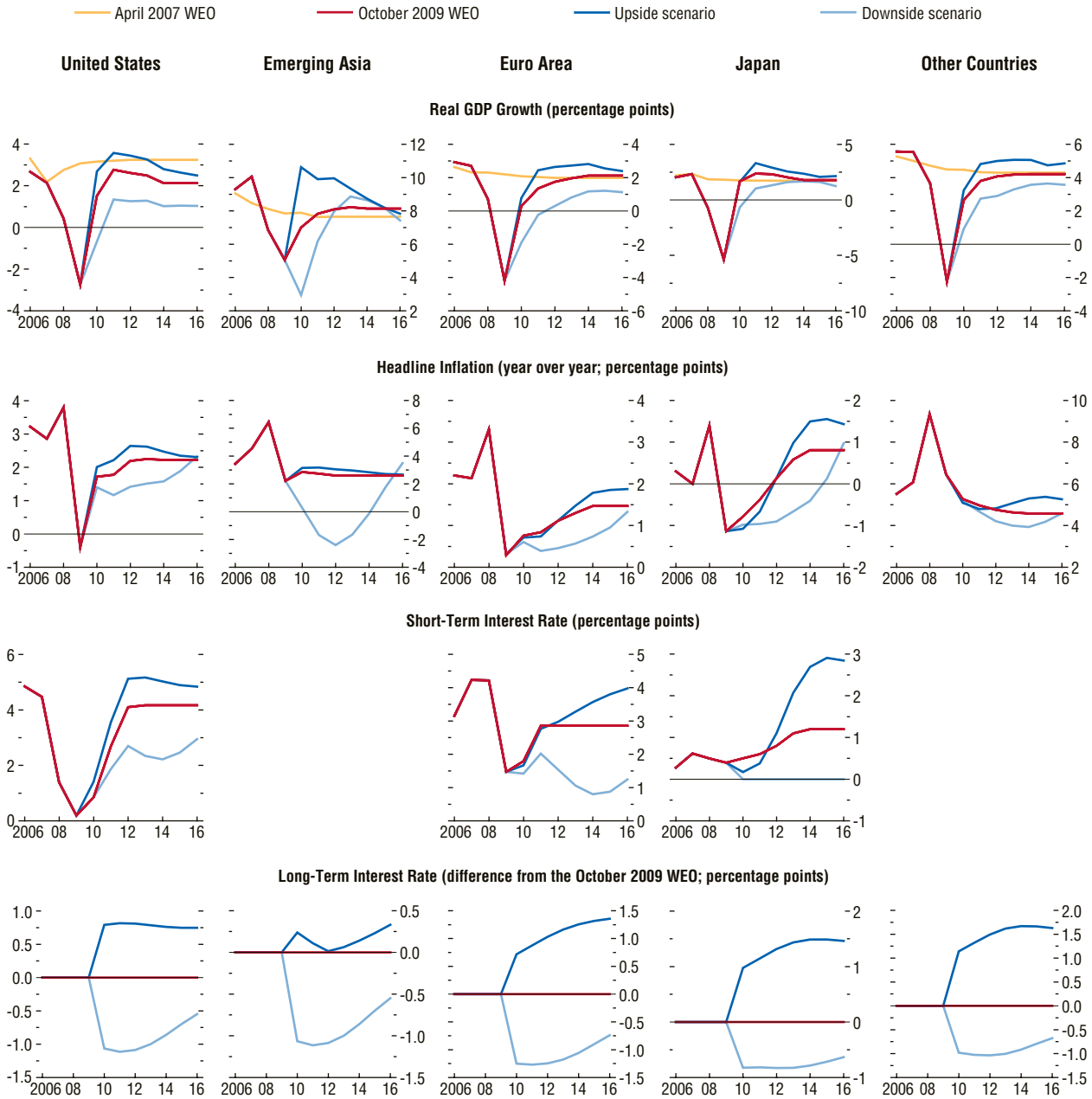
[15]For further details, see Alichi and others (2009).

[16]Spending on "green" initiatives could be encouraged by a broad multilateral agreement on a new framework to deal with climate change.

## Figure 1.15. Global Scenarios

*(All variables in levels, unless otherwise stated; years on x-axis)*

From a policy perspective, key questions are: How might various risks interact with the challenges posed by rebalancing? And what can policymakers do to prevent significant damage to global growth? In the *upside scenario,* the major economies make rapid progress in fixing their financial systems, and emerging Asia is assumed to forcefully pursue policies to raise consumption, while following flexible exchange rate policies that provide room for sustained appreciation of both real and nominal exchange rates. Under this scenario, world GDP growth is about 1.3 percentage points higher starting in 2010. The *downside scenario* assumes that the process of restoring financial system health in the major advanced economies will be even slower than in the *World Economic Outlook* (WEO) baseline and various economic policy missteps exacerbate output losses. Under this scenario, world GDP growth is about 2.2 percentage points lower starting in 2010. The goal of global current account rebalancing is even farther from resolution, as emerging Asia's current account moves into larger surplus and the United States and the euro area experience current account deterioration.




Source: Global Integrated Monetary and Fiscal Model simulations.

ardize the progress made in securing financial stability and recovery, and leaving these measures in place too long, which carries the risk of distorting incentives and damaging public balance sheets. The timing and sequence of action will vary across countries, depending on the momentum of their recoveries, policy room, and progress toward financial sector repair, but coordination will be necessary to avoid adverse cross-border spillovers.

History suggests that both premature and/or delayed exits can be costly. For example, fiscal retrenchment and the U.S. Federal Reserve's doubling of reserve requirements during 1936–37 are blamed for helping to undercut a nascent recovery.[17] Similarly, premature tax hikes in 1997, along with an unfavorable external environment, were among the factors that seem to have contributed to pushing Japan into recession. By contrast, some argue that the withdrawal of monetary accommodation after the bursting of the dot-com bubble was too slow, leaving easy conditions to fuel excessive risk taking and the subsequent house price boom (see Taylor, 2009).

Coordination within and across countries is important, because spillovers from unwinding some measures could compromise the success of unwinding others. For example, the premature withdrawal of liquidity support measures or retail deposit guarantees could delay the unwinding of government guarantees for bank bond issues, which rank among the most distortive types of public intervention.

## Timing the Tightening of Accommodative Monetary Conditions

The key issues facing monetary policymakers are when to tighten and how to unwind large balance sheets. The two objectives do not necessarily present major conflicts, because instruments exist to start tightening monetary conditions even while balance sheets remain much larger than usual.

The pace at which the buildup in central bank balance sheets should be unwound depends on progress in normalizing market conditions and the types of interventions in place. As the October 2009 GFSR emphasizes, continued central bank support will likely be needed through at least 2010 in many economies, and it could take much longer to unwind the buildup in illiquid assets on some central bank balance sheets. Supported by appropriate pricing, short-term liquidity operations will unwind naturally as market conditions improve, and this is already occurring. Assets purchased outright can be resold into markets, starting with government securities and moving toward other securities as their markets normalize. However, getting the timing right is important, because resale of nongovernment securities too soon could undermine the gradual process of stabilizing distressed markets. Specifically, mortgage-backed securities probably need to be held for a while, possibly to maturity if their sale is complicated by the need to continue supporting vulnerable housing markets. In the meantime, central banks can absorb reserves as needed to tighten monetary conditions by engaging in reverse repurchase operations, offering interest-bearing term deposits to banks, or issuing their own paper. Less attractive options include raising reserve requirements or having treasuries sell government paper and deposit the proceeds in central banks. In any case, it would be useful for national treasuries and central banks to develop arrangements to protect central bank balance sheets from the risks associated with holding securities for extended periods, as has been done in some countries, such as the United Kingdom. Such arrangements help mitigate concerns that central banks might delay tightening out of concern for the impact of higher interest rates on the value of the assets on their balance sheets.

Regarding the timing of monetary policy tightening, advanced and emerging economies

[17]The extent to which they contributed is still subject to debate. See Romer and Romer (1989) and Feinman (1993).

face different challenges. In advanced economies, central banks can (with few exceptions) afford to maintain accommodative conditions for an extended period. As discussed above, underlying inflation remains very low, with spare capacity high and restructuring and rising unemployment putting downward pressure on labor costs. Fiscal stimulus to growth is diminishing, and therefore tightening prematurely could undercut the recovery. Although a prolonged period of very low interest rates could fuel excessive risk taking, the likelihood of this is limited over the near term, because financial markets and households will take a long time to repair their balance sheets and extend credit. Nonetheless, once the recovery has firmed to such an extent that output gaps narrow and inflation becomes more of a concern, conditions will need to be tightened. Indeed, as credit begins to grow, accommodative policies may need to be removed more quickly than after the bursting of the dot-com bubble in order to limit the scope for renewed excess (consistent with the findings in Chapter 3), especially in the absence of important progress toward strengthening prudential frameworks.

The situation is more varied across emerging economies, but for a number of them, it will likely be appropriate to start removing monetary accommodation sooner than in advanced economies. Inflation pressure has eased in much of Asia and in some emerging European economies, and a number of emerging economies, notably in Asia, are already enjoying relatively vigorous rebounds in activity. Accordingly, unemployment is not forecast to be much higher in 2010 than before the crisis, implying only limited downward pressure on prices going forward. Furthermore, some of these economies are again seeing large asset price increases in response to low interest rates, raising the danger of new asset price bubbles. As Chapter 3 underscores, under such conditions, monetary policymakers may want to tighten more than suggested by output and inflation developments. In some economies, this may require allowing more exchange rate flexibility to avoid importing an excessively easy policy stance from the advanced economies.

Looking beyond the immediate challenges, what are some lessons of the crisis for conducting monetary policy? Chapter 3 argues that monetary policymakers should put more emphasis on containing macrofinancial risks, helped by the introduction of macroprudential tools. Historical evidence suggests that relatively stable inflation and output growth offer little protection against major shocks to the economy from asset price busts: output and inflation are poor predictors of asset price busts. Chapter 3 shows that other variables, notably credit growth and the current account balance, are better predictors and may deserve more attention from monetary policymakers. Thus, if concerns mount about domestic demand and asset prices, monetary policymakers should consider tightening more than required purely for the purpose of keeping inflation under control over the coming year or two. Macroprudential tools have the advantage of working directly to lean against credit cycles and can therefore be helpful in complementing the role of interest rates in stabilizing economies. Expectations of what can be achieved, however, need to be realistic.

A further question facing central banks is whether to maintain various changes in monetary policy operations introduced in response to the crisis, including those relating to their role as lenders of last resort. The crisis has made apparent the benefits of a large number of central bank counterparties and a broad range of acceptable collateral. However, access to emergency lending must come in exchange for tighter supervision and regulation, and in some cases this requires that supervisors share more information with central banks. Similarly, central banks can continue to accept a broader range of collateral but should adjust pricing and access conditions to ensure that such operations are used only to address temporary liquidity needs and do not become a normal part of financial intermediation.

## Maintaining Fiscal Support while Securing Fiscal Sustainability

Notwithstanding already large deficits and high debt in many economies, fiscal stimulus needs to be sustained until the recovery is on a firm footing and may need to be amplified or extended beyond current plans if downside risks to growth materialize. Governments should thus stand ready to roll out new initiatives as necessary. At the same time, they need to commit to large reductions in deficits over the medium term and must start addressing mounting long-term fiscal challenges by advancing reforms to put public finances on a more sustainable path.

A major concern is that the financial shock has saddled advanced economies with a large amount of public debt just as fiscal pressures from population aging are becoming more pressing. Public debt in the advanced economies is projected to exceed 110 percent of GDP by 2014, up from about 80 percent of GDP before the crisis, even building in significant fiscal adjustment (much of which remains to be incorporated into specific measures). This reflects persistent primary deficits, mounting interest bills, and modest economic growth. Population aging will add to deficit pressures and debt trajectories, particularly after 2015. Aging-related spending could rise by about 5 percent of GDP in the European Union by 2060 and by about 4–6 percent of GDP in the United States.[18] Large increases are also expected for Japan. In emerging economies, by contrast, debt levels are expected to decline after the initial postcrisis peak, and few of these economies face a comparable expansion in aging-related spending.

The large increase in government debt is likely to put upward pressure on long-term interest rates as the recovery is sustained, crowding out private investment and some emerging economy sovereign issues.[19] This will have dampening effects on growth, but there may also be other potentially negative effects. Are there debt levels that are simply too high, that will cause investor flight even from traditionally safe assets, for example, U.S. government bonds? Within reasonable debt ranges, there is no straightforward answer to this question. It depends on an economy's growth prospects, on investor preferences and interest rates, and the room available to cut spending or raise taxes to repay the debt in the future, which also brings up political considerations. Some countries, such as Italy and Japan, have sustained very high debt levels for a while already. Fortunately, neither of them featured among the advanced economies whose financial systems were badly hit by the crisis, thus they have avoided major contingent liabilities. Nonetheless, Italy suffered a major increase in risk premiums on its debt for a period during this crisis and had to forego major fiscal stimulus, whereas Japan has been protected by its unique circumstances.[20] Looking forward, pressures on spending and debt in advanced economies will mount, and markets have a tendency to suddenly catch up with slowly increasing vulnerabilities. In the meantime, the price of much higher debt in advanced economies is diminished room for countercyclical

[18]See European Commission (2009a, 2009b), IMF (2006), and U.S. Congressional Budget Office (2005).

[19]The October 2009 GFSR presents evidence for a panel of up to 31 advanced and emerging economies over the period 1980–2007, suggesting that an increase in the fiscal deficit raises long-term government interest rates from a minimum of 10 to a maximum of 60 basis points for each percentage point of GDP increase in the fiscal deficit. The impact of debt accumulation on bond yields is smaller but still significant. A 1 percent of GDP increase in debt raises government bond yields by 5 to 10 basis points, with the effects varying depending on country-specific characteristics. However, GFSR projections through the end of 2010 suggest that in the United States and euro area net issuance of total credit (sovereign and private) will be well below the levels seen during the boom years of 2002 to 2007.

[20]Japanese savers have a very strong preference for holding domestic government debt. Also, a significant portion of the domestic debt is held by public institutions.

policy and financial support in the face of any new crises.

However, sustained fiscal support in the near term need not undercut progress toward long-run fiscal sustainability. Reforms to social spending programs—particularly if focused on measures that increase labor force participation (for example, by linking retirement ages to life expectancies) or raise the efficiency of welfare programs—could contribute significantly to lowering spending over the long term, thereby facilitating more fiscal support for the recovery. For example, lowering the growth rate of health care costs by 1 percent a year could lower government spending by about 1½ percent of GDP in the Group of Seven (G7) countries in 15 years. Raising the retirement age by one year could yield fiscal savings of up to ½ percent of GDP after 15 years. Accordingly, with progress on both fronts, up-front government financing costs connected with financial sector support operations would be recouped fairly quickly.

In practice, such reforms certainly face formidable political obstacles, and the room available for stimulus is limited. Thus, it will be crucial to ensure that stimulus spending is allocated in a way that maximizes support for recovery and accelerates a return to solid medium-term growth. This means that any new initiatives should give priority to funding financial sector repair, addressing the heavy social costs of labor market disruptions, and helping to forestall large increases in structural unemployment.

Moreover, rising concerns about fiscal sustainability imply that countries that have accumulated large amounts of debt during this crisis need to adopt ambitious medium-term adjustment targets and support their achievement with fiscal frameworks, including suitable fiscal rules and strong enforcement mechanisms. Such frameworks and rules can play a useful role in reining in spending pressures when good times return, thereby providing a degree of reassurance to investors that deficits and debt eventually will be rolled back. Many countries have already moved in this direction.[21] Encouragingly, more steps in this direction are being taken or are under consideration (for example, in Germany and the United States), but achieving the right mix of flexibility and discipline will not be straightforward.

## Healing Financial Sectors while Reforming Prudential Frameworks

Completing financial sector repair and reforming prudential frameworks are indispensable for a return to sustained growth over the medium term. In many countries, policy actions have been insufficient to return banking systems to a position from which they can sustain the recovery with solid credit growth, and remedying this shortfall must be given priority. In addition, attention must be paid to managing the exit from public support for financial operations and to reforming prudential frameworks to ensure stronger risk management.

Restructuring financial firms' activities is key for normal lending to resume. This will require balance sheet cleansing, recapitalization, and new business plans that are consistent with new funding models and new prudential frameworks. So far, there has been only very limited progress in removing impaired assets from bank balance sheets.[22] The main challenge now is ongoing deterioration of asset quality, and so public policies and financial institutions have to become more forward looking and preemptive. Official stress tests are important instruments through which the condition of banks can be diagnosed and comprehensive recapitalization programs put in place. On this front, progress across countries has been uneven, and it is a source of

[21]See Ter-Minassian and Kumar (2008).

[22]Institutional arrangements for dealing with impaired assets are in place in the United States, for example, but have hardly been utilized thus far. The European Union has adopted harmonized guidelines to deal with impaired assets, leaving it up to individual countries to decide whether to do this through a bad bank, guarantee, or hybrid approach.

concern that support for recapitalization faces important political obstacles.

Exit strategies need to be clearly articulated to help guide bank restructuring. Banks face a "wall of maturities" in the next two years, increasing the rollover risks. In this setting, there are risks associated with abrupt changes in the level of support provided to these institutions, and strict deadlines for ending such programs should be avoided—some countries that had announced deadlines for removing wholesale guarantees have had to extend them. Instead, subsidies can be gradually reduced and access terms tightened for any facilities that may need to be extended. Healthy firms should be encouraged to repay capital injections and issue nonguaranteed debt to signal their viability, whereas chronically undercapitalized firms should be resolved rather than kept on life support. Reprivatization can wait until reform is sufficiently advanced, but management of publicly owned financial institutions should focus on limiting distortions to competition or stability.

Regarding fundamental reform, the October 2009 GFSR explains the many challenges facing policymakers. Even though initiatives are getting under way to address these, the achievement of a major overhaul must not be jeopardized by growing confidence that the greatest crisis dangers are past, fears that national competitive advantages might be lost, or concerns that first-best solutions are out of reach for technical reasons. Three challenges deserve particular attention:

- The perimeter of regulation needs to be broadened and made more flexible, covering all systemically important institutions. In this regard, the challenge of dealing with the problem posed by institutions that are too big or too connected to fail will need to be addressed. Proposals have been made to strengthen resolution frameworks, including by requiring such institutions to develop resolution plans and to hold more capital to compensate for their larger contributions to systemic risk, as well as giving authorities the power to impose losses on senior creditors. Other proposals are to separate commercial from investment banking and to remove proprietary trading activity from commercial and investment banks. The costs and benefits of such proposals require further analysis, weighing potential losses from lower returns to scale and scope against potential benefits from reduced exposures to systemic risks.
- Prudential frameworks must play a greater stabilizing role over the economic cycle. Once the crisis started, mark-to-market rules and constant regulatory capital ratios forced financial institutions to take dramatic measures to reduce their balance sheets, exacerbating fire sales and deleveraging. The opposite forces were driving a credit accelerator during boom times. It is difficult to gauge the extent to which these forces are hardwired into prudential frameworks or imposed by markets. One element of procyclicality could be addressed through establishing minimum capital requirements according to stress-test scenarios and an overall leverage ratio. These could be complemented by raising supervisory risk weights for rapidly growing loan or asset classes. Other proposals include requiring countercyclical capital charges or allowing regulators to alter capital requirements (or other regulatory requirements) over the cycle just as central banks alter interest rates.[23]
- The final challenge is to improve international coordination and avoid financial protectionism. This will require greater supervisory and regulatory convergence, with a view to limiting incentives for cross-border regulatory arbitrage, and robust arrangements (including appropriate bank-specific insolvency frameworks at national levels) to resolve cross-border institutions and counter incentives for beggar-thy-neighbor approaches to addressing crises. Progress is being made on convergence under the auspices of the Financial Stability Board; progress on resolution faces major political hurdles, even within

[23]These proposals present major challenges for policymakers, not least of which is determining when buffers need to be built up and when they can be released.

the European Union, which has been debating this issue for some time.

## Structural and Social Policy Challenges

Rising unemployment will present a major challenge in many advanced economies. Chapter 4 suggests that unemployment rates tend to rise significantly and for many years after financial shocks, and this time will be no exception. Limiting the extent of job destruction will require slower wage growth or even wage cuts for many workers. The impact of the necessary adjustments on poorer segments of labor forces could be cushioned with earned income tax credits or similar programs that limit the social repercussions of wage adjustment. Subsidizing part-time work to facilitate a broad distribution of reductions in labor input and allow a more gradual reduction in wages may also be appropriate, provided there are reassurances that such programs are cut back as good times return. Those who still lose their jobs should be supported with unemployment benefit programs that are generous (to support demand and prevent hardship) but not too long in duration, appropriately means-tested social support mechanisms, and increased resources for job matching as well as better education and training. In addition, many of the structural reforms that past issues of the WEO have emphasized to improve the flexibility of labor markets remain relevant, possibly even more so to raise medium-term prospects after a damaging crisis.[24]

In some countries, product or services market reforms could help create new employment opportunities and enhance productivity growth.[25] In emerging economies with large external surpluses and tradables sectors, reforms could usefully focus on the service sectors, which tend to be less competitive and more protected, and to generate relatively slower productivity growth.[26] Completion of the Doha Round of global trade negotiations could provide a timely boost to global confidence and trade, although it remains equally critical to avoid any backsliding on trade liberalization and competition policies.

Structural reforms, together with greater exchange rate flexibility, can also make an important contribution to facilitating global demand rebalancing. In this regard, the upside scenario for rebalancing underscores the importance of measures to repair financial systems; improve corporate governance and financial intermediation; support public investment, including in green technologies; and reform social safety nets (including both health care and pension systems) with a view to fostering lower precautionary saving in some countries with large current account surpluses. Even with a strong commitment to reform along these and other lines by all countries, however, rebalancing is likely to be a drawn-out process. In the meantime, the reforms would help strengthen the resilience of a global economy that remains unusually vulnerable to renewed shocks.

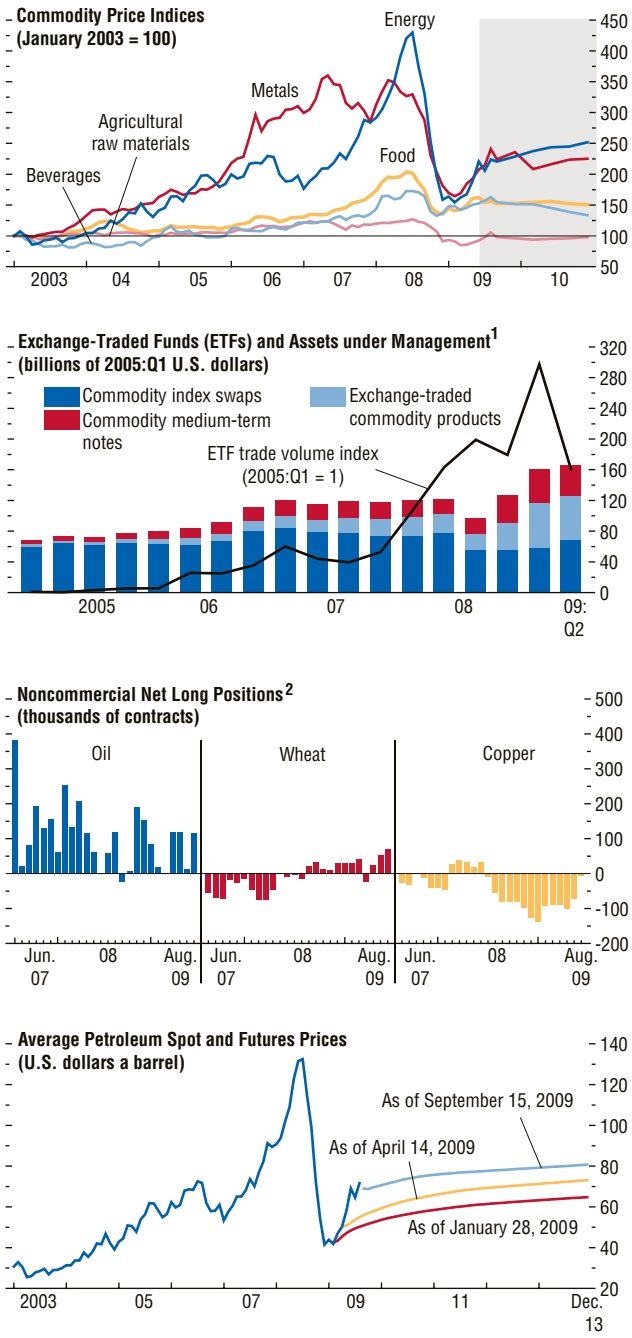
Finally, there is a risk that poverty could increase significantly in a number of developing economies, notably in sub-Saharan Africa, where real GDP per capita is contracting in 2009 for the first time in a decade. Past reforms and changes in trade and financial patterns should help soften the blow from lower growth in advanced economies in comparison with past crises. Nonetheless, continued donor support from advanced economies will be crucial

[24]Recovery from the major shocks of the 1970s and early 1980s was made more difficult by sometimes well-meaning but often ill-considered initiatives that hindered labor market adjustment, such as the introduction of early retirement programs or the abuse of support for the disabled or the poor through the provision of virtually open-ended support for able but jobless workers. See, for example, Layard, Nickell, and Jackman (1991), and Blanchard and Wolfers (2000).

[25]In fact, evidence on successful labor market reforms in response to crises in Europe suggests that it was often supported with product market reforms, because they boosted job creation and wages. See, for example, Estevão (2005) and Annett (2006).

[26]See *World Economic Outlook*, September 2006, Chapter 3.

## Figure 1.16. Commodity and Petroleum Prices




Sources: Barclays Capital; Bloomberg Financial Markets; and IMF staff estimates.
[1]Deflated by IMF Commodity Index.
[2]At the Chicago Board of Trade, New York Mercantile Exchange, and New York Commodity Exchange, respectively.

if these economies are to sustain hard-won macroeconomic stability gains. At the same time, policies need to continue to be geared toward mitigating the impact of the global recession on economic activity and poverty, while strengthening the foundations for sustained growth.

## Appendix 1.1. Commodity Market Developments and Prospects

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

After collapsing during the second half of 2008, commodity prices broadly stabilized in early 2009 and subsequently staged a strong rally in the second quarter, despite generally high inventories that resulted from the weak demand through the recession (Figure 1.16; Table 1.2). A rally this strong at such an early stage in the recovery of global industrial production contrasts with past experience.[27] In previous global downturns, prices typically continued to fall into the early phases of recovery (Figure 1.17) or rose at rates far below the increases recorded in recent months. The exception is oil prices, which recorded substantial increases early in previous recoveries as well. However, commodity

[27]Based on data through June 2009, global industrial activity is now estimated to have reached a trough in February 2009.

### Table 1.2. Commodity Price Developments, 2008–09

| | Percent Change | | |
|---|---|---|---|
| | Peak to trough | Trough to June | 2009:Q2/ 2009:Q1 |
| IMF Commodity Price Index | –55.6 | 31.1 | 15.7 |
| Fuel | –64.1 | 42.7 | 20.1 |
| Petroleum | –68.7 | 66.4 | 33.8 |
| Nonfuel | –35.5 | 17.5 | 9.5 |
| Base metals | –49.6 | 24.5 | 15.1 |
| Agricultural raw materials | –33.0 | 13.6 | 0.7 |
| Food | –33.4 | 19.6 | 10.2 |

Source: IMF, Primary Commodity Price database.

prices also fell faster and by larger magnitudes during the second half of 2008 than during previous downturns.

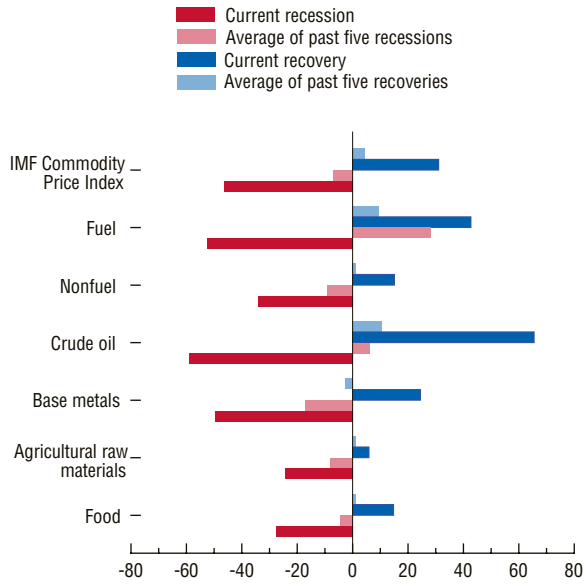
The early commodity price rebound has led to renewed discussion of whether prices are increasingly driven by commodity financial investment. The revival in investor risk appetite and improved sentiment since March 2009, together with a renewed tendency toward dollar depreciation, have led to increased financial investment in commodity assets. However, as noted in previous issues of the *World Economic Outlook*, these inflows still tend to follow changes in fundamentals. In the current circumstances, they reflect two interrelated factors. First, there was the growing consensus that the worst of the global recession and the collapse in commodity demand were over and that a recovery would begin in 2009. Second, there was increasing confidence that, with unprecedented financial sector support and macroeconomic policy stimulus, the probability of another systemic financial sector event had decreased.

The perception of an improving near-term outlook has affected physical commodity markets primarily by increasing the incentive to hold inventories. At the same time, improving financial conditions have provided for increased credit availability for inventory financing at more normal costs. The rising inflows into commodity funds, which contributed to the normalization of liquidity conditions in commodity futures markets, likely facilitated the hedging of inventory positions. Against this backdrop, additional expectations-based demand for inventories, and some stabilization in stock buildups as end-user demand bottomed out, allowed for easier absorption of the continued excess supply (current supply minus current end-user consumption). Downward pressure on spot prices eased in turn. Longer-dated futures prices have been less affected by the change in expectations about near-term market conditions, and the upward slope of commodity futures curves has flattened as spot prices have recovered.

The magnitude of recent price increases varied considerably across commodities, irrespec-

**Figure 1.17. Commodity Prices in Global Recessions and Recoveries[1]**

*(Percent change; indices, 2005 = 100)*




Sources: IMF Primary Commodity Price System; and IMF staff calculations.
[1]Global recessions and recoveries are identified on the basis of monthly peaks and troughs in the log level of a monthly index of global industrial production.

**Table 1.3. Commodity Consumption and Market Share**
*(Percent)*

| | Global | Emerging Markets |
|---|---|---|
| Crude oil | | |
| Cumulative consumption growth | | |
| 1985–2008 | 36.6 | 58.5 |
| 2002–08 | 10.8 | 24.8 |
| Market share | | |
| 1993 | . . . | 43.1 |
| 2002 | . . . | 45.8 |
| 2008 | . . . | 51.8 |
| Aluminum | | |
| Cumulative consumption growth | | |
| 1985–2008 | 92.5 | 140.6 |
| 2002–08 | 48.4 | 88.8 |
| Market share | | |
| 1993 | . . . | 32.4 |
| 2002 | . . . | 42.8 |
| 2008 | . . . | 59.2 |
| Copper | | |
| Cumulative consumption growth | | |
| 1985–2008 | 61.9 | 127.0 |
| 2002–08 | 21.4 | 53.0 |
| Market share | | |
| 1993 | . . . | 35.2 |
| 2002 | . . . | 49.3 |
| 2008 | . . . | 61.7 |
| Wheat | | |
| Cumulative consumption growth | | |
| 1985–2008 | 27.6 | 20.3 |
| 2002–08 | 7.8 | 7.7 |
| Market share | | |
| 1993 | . . . | 76.9 |
| 2002 | . . . | 70.5 |
| 2008 | . . . | 70.7 |
| *Memorandum* | | |
| Real GDP | | |
| Cumulative growth | | |
| 1985–2008 | 84.1 | 110.6 |
| 2002–08 | 29.2 | 46.3 |

Sources: International Energy Agency; U.S. Department of Agriculture; and World Bureau of Metal Statistics.

tive of the relative strength of financial inflows. Underscoring the influence of fundamentals, the variation in price changes reflects differences in the cyclical sensitivity of commodities, but also reflects commodity-specific factors, as discussed below. In particular, prices in oil markets were supported not only by recovery expectations, but also by Organization of Petroleum Exporting Countries (OPEC) supply cuts, while metal prices have been buoyed by restocking in China.

Commodity demand prospects now depend increasingly on growth in emerging and developing economies, given the steady rise in their market shares (Table 1.3). Moreover, commodity demand in these economies is more income-elastic than in advanced economies. With a buoyant recovery already under way in emerging Asia and the recovery in emerging and developing economies generally advancing ahead of that in advanced economies, commodity demand is strengthening ahead of activity in advanced economies. Commodity prices, especially in cyclically sensitive sectors, have thus responded strongly to news about an earlier-than-expected recovery under way in emerging Asia in the second quarter of 2009.

The extent of further upward price pressure will depend on the timing and strength of the global recovery. With inventories remaining above average except for food commodities and with substantial spare capacity in many commodity sectors, such pressure is likely to remain moderate for some time, unless stronger-than-expected global growth leads to a rapid drawdown of these buffers. There are also near-term risks that the largely expectation-driven price rebound could be partially reversed if the global recovery is more sluggish than currently expected in commodity markets. Probability distributions derived from the option prices of key commodities suggest that the market has become more confident that the recent rebound of commodity prices during the second quarter of 2009 will be sustained and that further price increases are likely (see Box 1.6 for further details). In particular, option pricing for a broad-based commodity index, crude oil, and copper suggests that investors anticipate higher prices during the second half of 2009 compared with the first two quarters. That said, the probability of another commodity price spike is seen

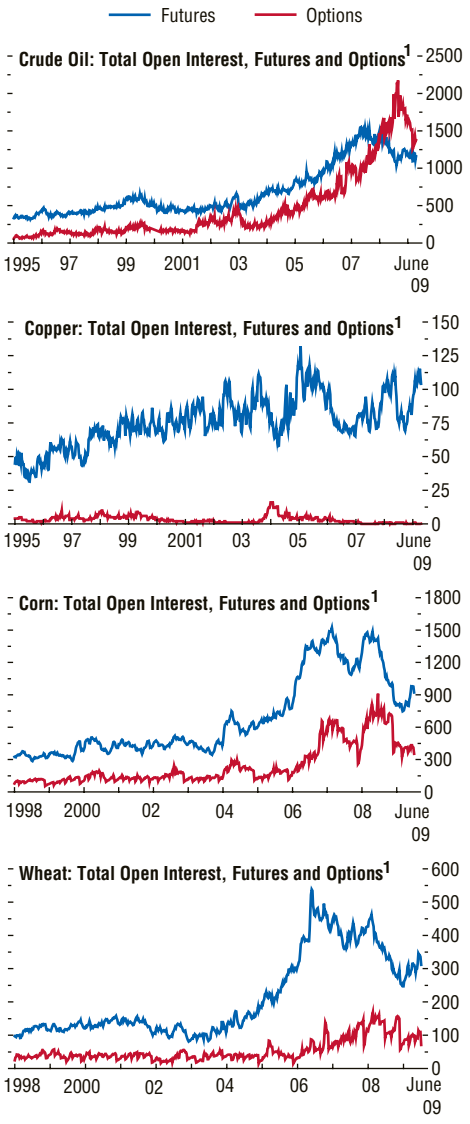
## Box 1.6. What Do Options Markets Tell Us about Commodity Price Prospects?

Over the past decade, both exchange-based and over-the-counter commodity derivative markets have grown rapidly. The growth pattern of these markets appears to vary widely across commodities and across derivative types. For example, derivative (options and futures combined) contracts for crude oil trading on the New York Mercantile Exchange grew fivefold during 1998–2008, with options outgrowing futures by five times. For other key commodities, the growth magnitude is smaller, and the divergence in growth rates between options and futures is less prominent (first figure). The number of commodity derivative contracts outstanding, however, plummeted during the second half of 2008—particularly for crude oil—although there have been signs of a rebound for some commodities more recently.

### *What Is the Logic behind the Use of Option Prices for Economic Analysis?*

The rapid growth of commodity futures and options transactions has increased the depth, liquidity, and efficiency of these derivative markets, thereby improving their information content. Indeed, it is well documented that derivatives—particularly options—contain useful information about market expectations that can enrich the analysis of economic and financial prospects.[1] The logic is that option premiums conveying the right to buy or sell an underlying asset at a certain strike price should reflect markets' views of the probability distribution of future prices, which determines the expected option payoff. For example, a bullish and forward-looking investor would be willing to pay a higher premium to exercise a call option at a strike price beyond the current spot price; similarly, a bearish and forward-looking investor would be willing to pay a higher premium to exercise a put option at a strike price below the current spot price.

**Recent Developments in Commodity Derivative Markets**
*(Thousands of contracts)*




Sources: U.S. Commodity Futures Trading Commission (CFTC); and IMF staff calculations.

[1]These are reported weekly by the CFTC. Crude oil and copper are traded on the New York Mercantile Exchange, while corn and wheat are traded on the Chicago Board of Trade.

The main author of this box is Kevin C. Cheng, with research assistance provided by Marina Rousset.

[1]See, for example, BIS (1999).

## Box 1.6 *(concluded)*

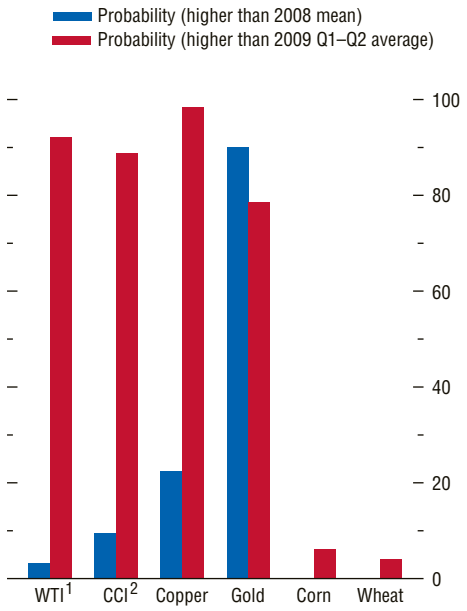
Such information extracted from options markets can help in gauging risks in the future, which can help in devising alternative scenarios or stress tests. Furthermore, unlike uncertainty measures from most econometric models that are backward looking, measures from this approach are forward looking, and thus implicitly encompass all risk factors currently considered in the market.

In this respect, the *World Economic Outlook* has presented a so-called risk-neutral probability distribution for Brent crude oil for the past few years. Recently, the IMF staff has developed a new framework that provides for more stable results and can be applied to other futures options as well.[2] The advantage of the new framework is that, unlike the old framework, which required data input of a granular set of artificial price quotes estimated by the Intercontinental Exchange, the new framework relies solely on actual market data. Furthermore, the new model allows a high degree of flexibility to capture a wide range of statistical properties.

This framework has been used to generate probability distributions for the Continuous Commodity Index—a broad-based commodity index consisting of 17 component commodities—as well as a number of key commodities including crude oil, gold, copper, and corn (second figure). The results suggest that compared with distributions estimated in early April, the probability distributions (as of early August and mid-September) of the eight-month-forward contracts for crude oil and copper have shifted to the right—suggesting a higher expected price—while their dispersion has declined—suggesting a decline in perceived volatility (third figure). This decline in dispersion also echoed a decline in the Crude Oil Volatility Index by the Chicago Board Options Exchange in the second quarter of 2009.[3] For corn, the distribution has shifted slightly to the left, but also with a slightly lower dispersion, likely reflecting improved weather conditions in corn-growing regions.

**Major Commodity Price Outlook for End-2009 as of September 15, 2009**

*(Percent)*




Source: IMF staff estimates.
[1]West Texas Intermediate crude oil.
[2]CCI = Continuous Commodity Index: 1995 Revision of the Commodity Research Bureau Index; average of 17 commodity futures prices.

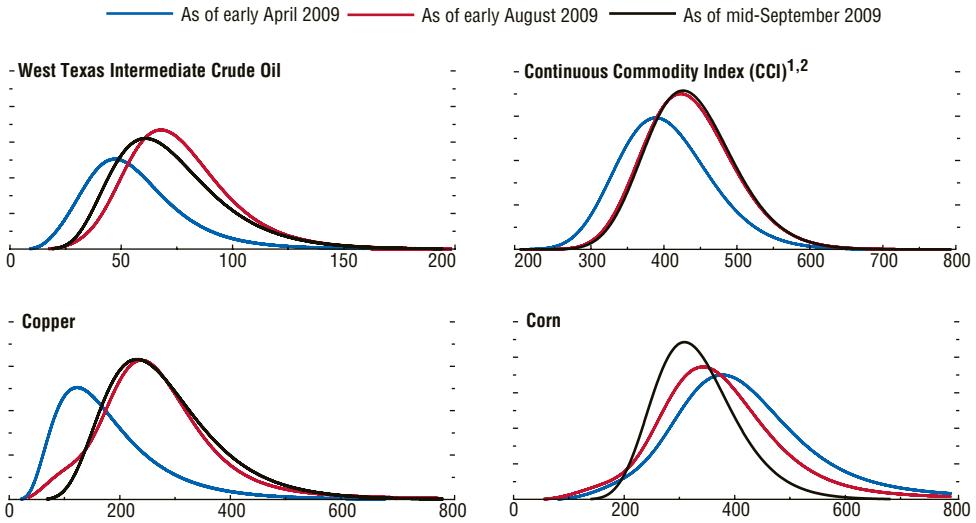
### *Caveats*

The information derived from option prices must be interpreted with some caution. Specifically, the estimated probabilities, as in any other approach, assume that markets are risk neutral. This method tends to exaggerate the likelihood of an undesirable outcome if investors are risk averse. Intuitively, a risk-averse

[2]This framework—which builds on the double-lognormal approach by Bahra (1997)—uses a mixture of multiple lognormal distributions. For a detailed discussion on the technical foundation of the framework and its advantages over other existing methodologies, see Cheng (forthcoming).

[3]In addition, the distributions have also become somewhat less skewed with a less-thick tail, although the differences are marginal.

**Probability Density Functions for Eight-Month-Forward Contracts as of Early April 2009, Early August 2009, and Mid-September 2009**




Sources: Bloomberg Financial Markets; and IMF staff calculations.
[1]1995 Revision of the Commodity Research Bureau Index; average of 17 commodity futures prices trading on the New York Board of Trade.
[2]For the CCI, the March 2010 (eight-month-forward) contract was not available, and so the February 2010 (seven-month-forward) contract was used in August. In mid-September, the May 2010 (eight-month-forward) contract was not available, and so the April 2010 (seven-month-forward) contract was used.

investor is willing to pay a higher premium to insure against an unlikely but disastrous outcome than a risk-neutral investor. If the probability of such a disastrous outcome is estimated under the assumption that the investor is risk neutral while using the *actual observed* premium paid by this risk-averse investor, the estimated probability would be higher than the *objective* probability.

as remote over the near term, with prices not expected to reach their average 2008 levels by the end of the year.

Finally, commodity prices will also partly depend on U.S. dollar developments. Empirically, there has been a generally robust negative association between commodity prices and fluctuations in the effective U.S. dollar exchange rate, both in nominal and real terms.[28] Although the direction of causality may go both ways and may vary over time, depending on the underlying disturbances, the negative correlation is consistent with incentives to hold commodity inventories to hedge against dollar fluctuations in the short term, with the dollar's effect on relative purchasing power becoming more important over the longer term.

Commodity prices are projected to remain high by historical standards through the medium term. The crisis has reduced prices somewhat below their 2008 peaks, but demand is expected to continue rising from current levels at a solid pace as industrializa-

[28]See Box 1.5 in the April 2008 *World Economic Outlook* and the references therein.

tion continues in emerging and developing economies. Accommodating this demand will eventually require a substantial further capacity expansion in many commodity sectors, with some need to tap higher-cost sources. The extent of medium-term price pressure will vary across commodities, depending on the speed of and impediments to capacity buildup, as discussed below.

## Oil Markets

Oil prices have responded strongly to perceptions that the worst of the global recession is over and to signs of a demand rebound in China. After reaching a low of $36 a barrel on February 27, 2009, oil prices started to rebound in March and climbed to $70 by midyear.[29] At the same time, oil price volatility declined to levels that were still somewhat elevated compared with pre-2008 values but well below those following the bankruptcy of Lehman Brothers in September 2008.

The strong price response to signs of an expected pickup in activity follows patterns observed during some earlier global slowdowns, notably 2000–01. However, in the current downturn, global oil consumption contracted much more deeply than in any recession since the early 1980s, by well in excess of 2 million barrels a day (mbd) from the fourth quarter of 2008 to the second quarter of 2009 (Table 1.4). The large demand declines are largely attributable to advanced economies, particularly the United States and Japan, although oil-consumption growth in emerging and other developing economies also decelerated and, in some cases, entered negative territory in the first quarter of 2009.

Faced with such demand weakness, OPEC implemented a series of production cuts to support prices. By August 2009, the reduction in OPEC production from the September 2008 base level was estimated at 2.8 mbd, some 70 percent of the target. This compliance record is broadly in line with the past record, although the downward adjustment in both OPEC production quotas and actual production was faster. Non-OPEC production has broadly stagnated through the contraction. Although excess supply has narrowed in recent months with OPEC production cuts, it remained positive through the first half of 2009, and Organization for Economic Cooperation and Development (OECD) inventories continued to increase, primarily in the United States.

Price developments will partly depend on how strongly supply responds to recovering demand. With non-OPEC supply unlikely to pick up substantially—given high decline rates in some large, mature fields, notably in the North Sea and Mexico, and given sluggish capacity buildup because of barriers to investment in many countries—this response will depend largely on OPEC production. The experience of recent episodes of deliberate production cuts suggests that OPEC members will respond gradually and with some lag to increasing demand and rising price pressure. Indeed, recent statements by key OPEC officials suggest that OPEC production increases will be predicated on a substantial drawdown of OECD inventories to more normal stock-use levels and on an oil price within the target range of $70–$80 a barrel.

Risks of a sustained price surge from current market levels during the recovery should be contained by large excess capacity and high inventories, barring any significant change to the medium-term oil market outlook. Some tightening of demand-supply balances in the second half of 2009 and in 2010 has already been priced in. Measured spare capacity is not necessarily a good indicator of actual oil market tightness in a period of price-oriented production policy decisions. Nevertheless, current spare capacity—which, as of August 2009, is estimated at some 6½ mbd, with about 3½ mbd accounted for by Saudi Arabia—is twice the average level over the past decade and will be boosted by already

[29]Unless otherwise stated, oil prices refer to the IMF's Average Petroleum Spot Price (APSP), which is a simple average of the prices for West Texas Intermediate, dated Brent, and Dubai Fateh grades.

## Table 1.4. Global Oil Demand and Production by Region[1]

*(Millions of barrels a day)*

| | | | | | | Year-over-Year Percent Change | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2008 | 2009 Proj. | 2010 Proj. | 2008 H2 | 2009 H1 | 2003–05 Avg. | 2006 | 2007 | 2008 | 2009 Proj. | 2010 Proj. | 2008 H2 | 2009 H1 |
| **Demand** | | | | | | | | | | | | | |
| OECD[2] | 47.6 | 45.4 | 45.4 | 47.0 | 45.5 | 1.3 | –0.6 | –0.7 | –3.2 | –4.7 | 0.1 | –4.8 | –5.5 |
| North America | 24.2 | 23.1 | 23.3 | 23.8 | 23.2 | 2.0 | –0.8 | 0.4 | –5.1 | –4.4 | 0.8 | –6.7 | –5.5 |
| *of which:* | | | | | | | | | | | | | |
| United States | 19.8 | 18.9 | 19.1 | 19.4 | 19.0 | 1.7 | –0.5 | –0.1 | –5.9 | –4.5 | 0.9 | –3.9 | –1.8 |
| Europe | 15.3 | 14.7 | 14.7 | 15.5 | 14.6 | 0.7 | 0.1 | –2.1 | 0.0 | –4.1 | –0.2 | –0.6 | –4.2 |
| Pacific | 8.1 | 7.5 | 7.4 | 7.8 | 7.7 | 0.4 | –1.6 | –1.0 | –3.6 | –6.8 | –1.7 | –7.0 | –7.9 |
| Non-OECD | 38.7 | 39.1 | 40.3 | 38.7 | 38.8 | 4.4 | 4.0 | 4.4 | 3.7 | 0.9 | 3.2 | 2.7 | 0.2 |
| *of which:* | | | | | | | | | | | | | |
| China | 7.9 | 8.3 | 8.6 | 7.9 | 8.1 | 10.1 | 8.3 | 4.4 | 4.3 | 4.6 | 4.0 | 3.6 | 2.5 |
| Other Asia | 9.7 | 9.7 | 10.0 | 9.4 | 9.9 | 3.2 | 2.7 | 5.7 | 1.3 | 0.6 | 2.2 | –1.0 | 0.2 |
| Former Soviet Union | 4.2 | 4.0 | 4.1 | 4.2 | 3.9 | 1.2 | 2.9 | 2.7 | 1.5 | –4.8 | 3.0 | –0.5 | –6.6 |
| Middle East | 7.1 | 7.2 | 7.5 | 7.3 | 7.0 | 4.8 | 4.4 | 3.2 | 8.5 | 1.5 | 3.8 | 10.0 | 1.2 |
| Africa | 3.2 | 3.2 | 3.3 | 3.2 | 3.2 | 4.0 | 0.5 | 4.0 | 3.8 | 0.5 | 3.5 | 3.3 | 0.9 |
| Latin America | 5.9 | 6.0 | 6.1 | 6.0 | 5.9 | 2.4 | 3.4 | 5.5 | 3.9 | 0.7 | 2.9 | 2.8 | 0.6 |
| World | 86.3 | 84.4 | 85.7 | 85.7 | 84.3 | 2.5 | 1.2 | 1.5 | –0.2 | –2.2 | 1.5 | –1.5 | –3.0 |
| **Production** | | | | | | | | | | | | | |
| OPEC (current composition)[3] | 35.9 | . . . | . . . | 35.8 | 33.5 | 6.6 | 0.8 | -0.9 | 3.0 | . . . | . . . | 1.4 | –7.1 |
| *of which:* | | | | | | | | | | | | | |
| Saudi Arabia | 10.4 | . . . | . . . | 10.4 | 9.4 | 7.5 | –1.5 | –4.4 | 4.2 | . . . | . . . | 3.0 | –9.7 |
| Nigeria | 2.2 | . . . | . . . | 2.2 | 2.1 | 7.1 | –5.2 | –4.8 | –7.9 | . . . | . . . | –7.9 | –2.3 |
| Venezuela | 2.6 | . . . | . . . | 2.6 | 2.3 | 1.6 | –5.8 | –7.8 | –1.2 | . . . | . . . | –2.0 | –10.5 |
| Iraq | 2.4 | . . . | . . . | 2.4 | 2.4 | 2.5 | 4.9 | 9.9 | 14.0 | . . . | . . . | 5.5 | –0.8 |
| Non-OPEC | 50.6 | 51.0 | 51.5 | 50.4 | 51.0 | 1.0 | 1.2 | 0.8 | -0.4 | 0.7 | 0.9 | -0.5 | 0.3 |
| *of which:* | | | | | | | | | | | | | |
| North America | 13.9 | 14.0 | 14.0 | 13.7 | 14.0 | –0.8 | 0.8 | 0.1 | –2.5 | 0.6 | 0.4 | –3.2 | –0.5 |
| North Sea | 4.3 | 4.1 | 3.7 | 4.3 | 4.3 | –5.7 | –7.6 | –5.0 | –5.1 | –6.6 | –9.5 | –4.5 | –2.6 |
| Russia | 10.0 | 10.1 | 10.2 | 10.0 | 10.0 | 7.7 | 2.2 | 2.4 | –0.8 | 1.3 | 0.4 | –0.7 | 0.7 |
| Other Former Soviet Union[4] | 2.8 | 3.0 | 3.3 | 2.7 | 2.9 | 7.7 | 3.9 | 12.1 | 2.6 | 9.5 | 8.3 | –1.4 | 2.3 |
| Other Non-OPEC | 19.6 | 19.8 | 20.3 | 19.7 | 19.7 | 1.0 | 18.6 | 0.6 | 2.1 | 1.0 | 2.5 | 2.7 | 1.0 |
| World | 86.5 | . . . | . . . | 86.1 | 84.5 | 3.2 | 1.0 | 0.1 | 1.0 | . . . | . . . | 0.3 | –2.8 |
| **Net demand[5]** | –0.2 | . . . | . . . | –0.5 | –0.2 | –0.6 | –0.4 | 1.0 | –0.3 | . . . | . . . | –0.5 | –0.2 |

Sources: IMF staff calculations; International Energy Agency; and *Oil Market Report,* August 2009.

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

[2]OECD = Organization for Economic Cooperation and Development.

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

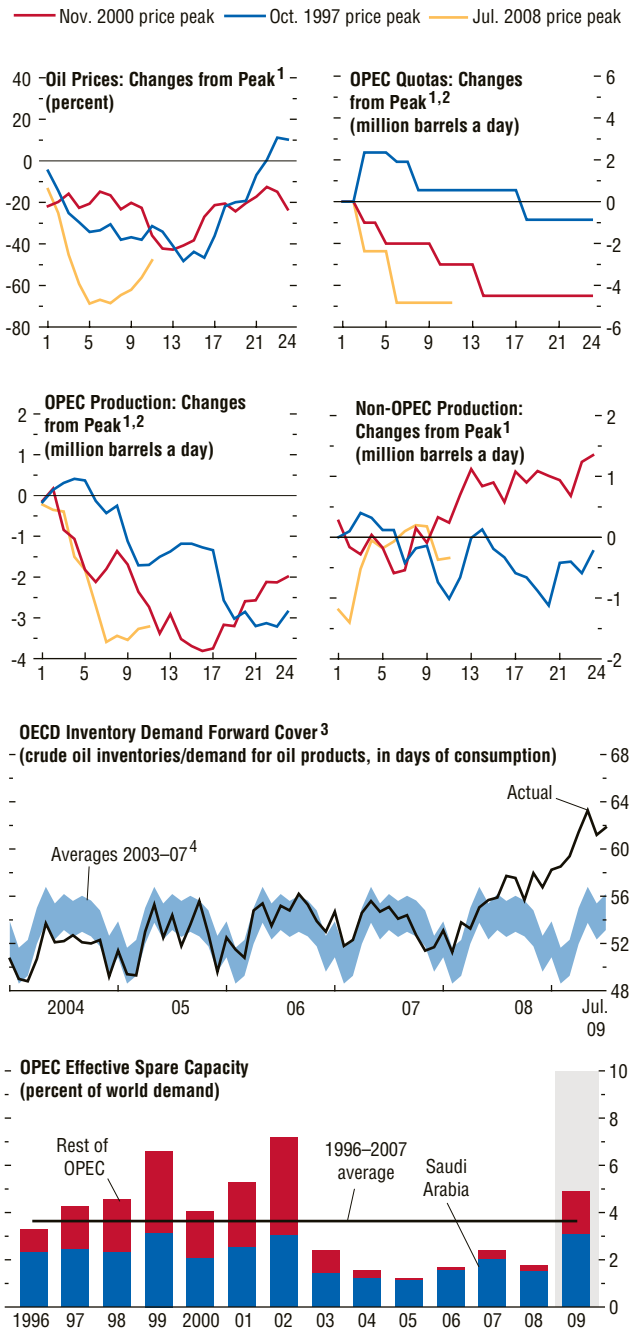
[4]Other Former Soviet Union includes Azerbaijan, Belarus, Georgia, Kazakhstan, Kyrgyz Republic, Tajikistan, Turkmenistan, Ukraine, and Uzbekistan.

[5]Difference between demand and production.

announced capacity expansion in Saudi Arabia of some 1–1.5 mbd by end-2009 (Figure 1.18). High levels of spare capacity weigh on members who have recently increased their capacity at high cost and will provide for growing incentives to increase production when prices are rising.

Looking to the medium term, the oil price outlook and risks of a renewed price spike will depend on prospects for maintaining sustainable demand-supply balances. Oil demand is expected to return to a path of robust growth in emerging economies but should remain

## Figure 1.18. World Energy Market Developments




Sources: IMF Primary Commodity Price System; International Energy Agency; U.S. Energy Information Administration; and IMF staff calculations.

[1] Months from the price peak on the x-axis.

[2] Organization of Petroleum Exporting Countries (OPEC) composition as of the month of the price peak.

[3] OECD = Organization for Economic Cooperation and Development.

[4] Band is based on averages for each calendar month during 2003–07 and a 40 percent confidence interval based on deviations during this period.

subdued in advanced economies. On the supply side, the concern is that capacity expansion will remain sluggish, as in 2005–08. The financial crisis and the oil price decline of last year have already delayed some projects and led to the suspension of others. Nonetheless, the recession-related setback to capacity expansion is likely to be temporary. Oil prices have already recouped some of the losses of 2008 and are now well above the average price over the past decade. The costs of oil investment have also declined in recent quarters, which should support exploration and development.

The main supply-side concerns, however, continue to be oil investment regimes and geological and technical constraints. First, the deterioration in incentives provided by investment regimes in some producer countries remains a concern.[30] Second, new oil fields are smaller in size and present greater technological and geological challenges, and the decline rates of many existing fields have risen by more than expected. As a result, more investment is needed just to maintain current capacity.

### Metals

In line with broad commodity market developments, most metal prices rebounded in the second quarter of 2009. By end-July, the IMF metal daily index had risen by nearly 60 percent from its trough earlier in the year—led by copper, lead, and nickel (Figure 1.19, upper right-hand panel). Besides the improvement in near-term global economic and financial prospects—which elicited strong price responses from the cyclically sensitive base metals—the price rebound also reflected metal-specific factors.

#### *Supply Retrenchment*

As metal prices approached or fell below marginal costs, key metal producers began cutting production runs to save costs. Indeed, unlike in the 2001 global downturn, when metal production moved sideways despite a strong decline in

[30] See Box 1.5 in the April 2008 *World Economic Outlook*.

demand, supply cuts were prompt and much more prominent (Figure 1.19). Global production of a few key metals—such as aluminum, tin, and zinc—declined by about or more than 10 percent (seasonally adjusted annual rate) during April 2008–February 2009, when global industrial production was contracting.

### *Restocking in China*

As part of China's fiscal stimulus package, the country's Strategic Reserve Bureau started to boost its inventories to support domestic smelters and refiners. Private metal demand in China also started to increase because of a rebound in industrial production. Along with a rising price differential at the Shanghai Futures Exchange relative to the London Metal Exchange, this boosted net imports to China (Figure 1.19, middle and lower panels).

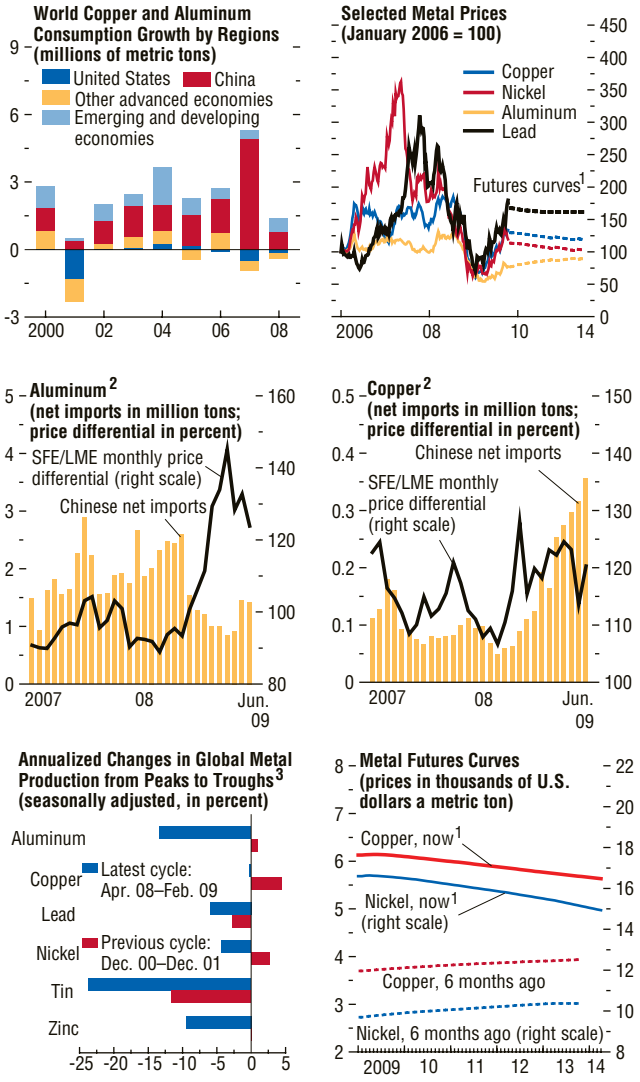
The impetus from restocking in China will be temporary, and metal price prospects depend on the speed at which activity in China strengthens and on the pace of recovery in the rest of the world. As in the case of oil, a good part of the recovery in metal demand has already been priced in, and further strong price increases in the near term seem unlikely at this point because of substantial excess capacity.

## Food

On signs of improving global economic and financial conditions in March, food prices enjoyed a broad-based, albeit modest, recovery. More recently, however, commodity-specific factors—including stabilizing weather conditions and expanded acreage in some major crop producers—have led to wide divergence in price changes across the major global crops. The overall food price index increased by 15 percent through the first seven months of 2009, but corn prices declined by 5 percent and soybean prices rose 20 percent. Corn has been affected by declining demand for industrial usage, including ethanol, while projected harvests for 2009–10 are higher.

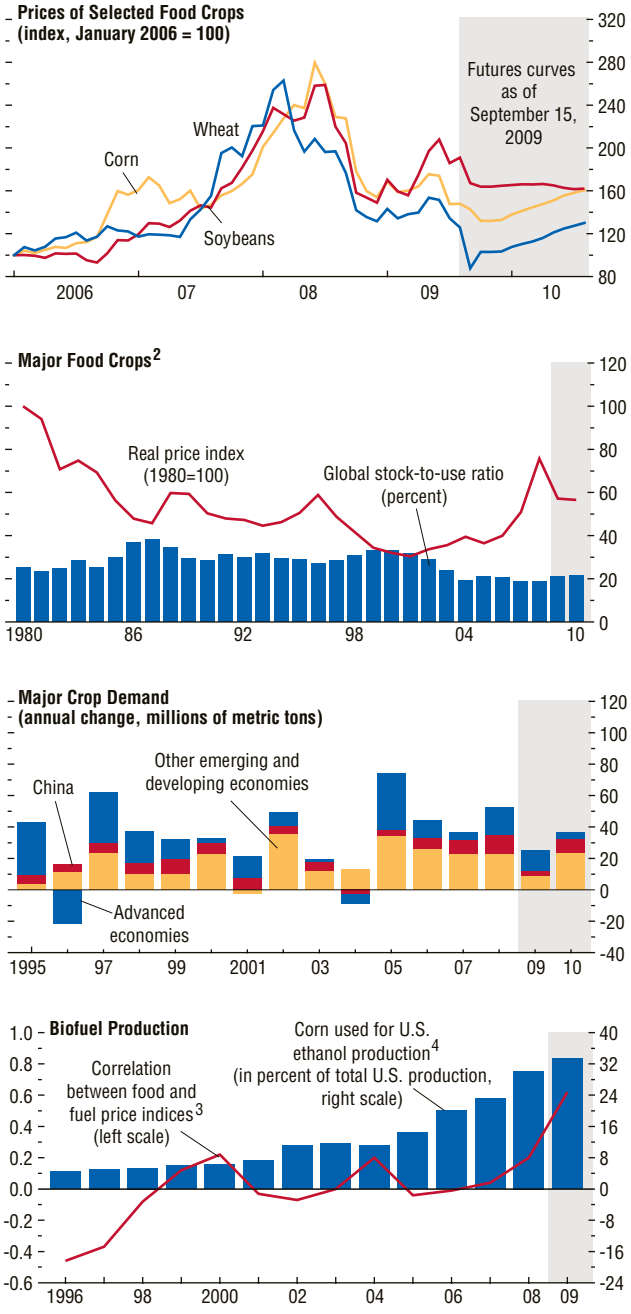
Looking ahead, as reflected in futures prices, food prices are expected to rise only gradu-

### Figure 1.19. Developments in Metal Markets




Sources: Bloomberg Financial Markets; World Bureau of Metal Statistics; and IMF staff calculations.
[1]Prices as of September 15, 2009.
[2]LME: London Metal Exchange; SFE: Shanghai Futures Exchange.
[3]The troughs and peaks are based on purchasing-power-parity-weighted global industrial production.

## Figure 1.20. Recent Developments in Markets for Major Food Crops[1]




Sources: Bloomberg Financial Markets; U.S. Department of Agriculture; and IMF staff estimates.

[1]Major food crops are wheat, corn, rice, and soybeans.

[2]Projections for 2009 and 2010 are from the U.S. Department of Agriculture.

[3]Rolling window of 36 months of monthly price changes.

[4]Refers to marketing years (e.g., 2009 refers to September 2009 through August 2010).

ally throughout the global economic recovery. Demand is relatively insensitive to the business cycle compared with other commodities, and future harvests are expected to be fairly abundant, although there is the prospect that the El Niño weather pattern may affect production of some crops, particularly soybeans, through 2010 (Figure 1.20, first panel).

However, there are upside risks to prices. Agricultural supply-demand balances remain relatively tight, with the global stock-to-use ratio for the major crops of corn, rice, soybeans, and wheat expected to remain below their average levels over recent decades (Figure 1.20, second panel). Low inventory ratios are a result, in part, of food demand in emerging economies, which rose quickly during 2001–07 (Figure 1.20, third panel). The renewed pickup in growth in these economies over the coming years will keep market balances tight, and risks are that the increases in food price volatility observed over the past decade or so will be sustained (see Box 1.7).

Another risk concerns the higher cost of energy, particularly as oil prices remain well above their decade averages. Higher energy prices drive up the cost of farming through fuel inputs and fertilizer prices. An indirect effect of higher oil prices is the increased incentive to divert food crops toward biofuel production. Acreage dedicated to biofuel production has increased significantly in recent years—helped by high oil prices and, particularly in advanced economies, by policy incentives. In the United States, the fall in the oil price has led to a sharp decline in ethanol-refining margins and to industry consolidation. However, the U.S. Department of Agriculture projects that the proportion of U.S. corn production used for ethanol will still rise in 2009–10, albeit at a slower pace than had been projected in 2008 (Figure 1.20, fourth panel). These emerging biofuel linkages have led to an increase in the correlation between food and energy prices, and although these prices were possibly inflated by the effects of the extreme volatility of 2008, they will likely remain higher than in the past.

## Box 1.7. What Explains the Rise in Food Price Volatility?

The sharp rise and fall of food prices during 2005–08 was associated with a significant increase in price volatility. For the IMF food price index, realized volatility—measured by the annualized standard deviation of monthly price changes—increased from about 8 percent for the decade through 2007 to more than 22 percent since 2008 (first figure, first panel). Although still lower than for other commodities, the volatility of prices for most major crops reached record or multidecade highs during this latest period.

This box presents evidence that long-term real price volatility—variability that is expected to prevail on average over very long time horizons—has risen for most major crops in recent years.[1] Market-determined food prices will always be subject to short-term variability because factors such as weather and crop pests affect harvests, and there is little that policies can do to reduce these effects. Over longer time horizons, stretching beyond the next harvest, other factors could have more persistent effects on longer-term volatility. This box identifies four such factors, including the volatility of U.S. inflation, the volatility of the U.S. dollar exchange rate, the volatility of global economic activity, and changes in futures market trading volumes. Volatility spillovers from energy prices may have only just begun to exert a significant influence.

The macroeconomic effects of elevated food price volatility can be broad and far-reaching, particularly when increases persist for long periods. The direct effects are felt through the balance of payments of importers and exporters, inflation, and poverty levels (food can account for a large share of consumption expenditure in low-income countries). Volatility can also complicate the response of policymakers, including through the effects on budgets and the planning decisions of food producers, processors, and consumers.

### *Estimating Long-Term Food Price Volatility*

Almost all methods to estimate price volatility assume that the long-term level of variation (also known as unconditional volatility) is constant, a restrictive assumption considering the shifts in commodity price volatility observed over long horizons. An alternative approach outlined by Engel and Rangel (2008) is to allow for gradual changes in long-term volatility over time.[2] Applying this method to six major crops—corn, palm oil, rice, soybeans, sugar, and wheat—suggests that although long-term real price volatility moves much more gradually than total volatility (which includes seasonal factors), it has been increasing in recent years (second panel, which shows wheat as an example). The increase for rice has been modest, but for the other five commodities, estimated long-term volatility in annualized terms had increased by between 7 and 13 percentage points as of June 2009 compared with the levels of the mid-1990s and now ranges from 23 to 26 percent for corn, soybeans, and wheat, the most traded commodities (third panel). For most crops, these increases reflects a steady rise in real price variability that predates the most recent boom and bust.

### *Factors Affecting Unconditional Volatility*

Previous research suggests a range of factors that may influence long-term food price volatility. A number of models posit a strong role for the level of inventories, with periods of low stocks characterized by higher volatility as market participants react quickly to the prospects of physical shortages. Macroeconomic factors such as the level and volatility of U.S. inflation, U.S. real interest rates, and the U.S. dollar exchange rate are also potential influences. Commodities are often regarded as stores of wealth, and the incentive to hold them—as financial assets or inventory—increases with inflation and lower

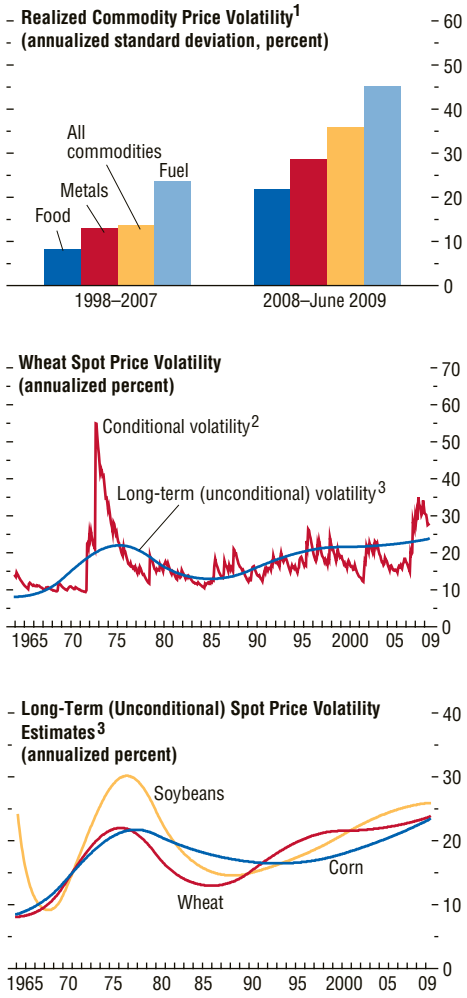
The author of this box is Shaun Roache.

[1]Food commodity prices are denominated in U.S. dollars and have been deflated by the U.S. consumer price index for this analysis.

[2]This model uses a nonparametric approach—an exponential quadratic spline—to generate a smooth curve describing long-term volatility based exclusively on data evidence.

## Box 1.7 *(concluded)*

### An Overview of Food Price Volatility




Source: IMF staff estimates.
[1]Annualized standard deviation of monthly percent changes in the spot price included in the IMF Commodity Index.
[2]Conditional volatility estimated from a GARCH(1,1) model.
[3]Long-term volatility estimated from a spline-GARCH model.

inventory financing costs (interest rates).[3] The exchange rate can affect prices through a number of channels, including international purchasing power and the effect on margins for producers with non-U.S.-dollar costs. Changes in global economic activity affect commodity demand, and demand volatility is likely to spill over to food price volatility. Crude oil price volatility may play a role, because of the impact on input costs and, more recently, the demand for food crops as biofuels. Global stock market volatility could be influential as a result of its role as a barometer of investor risk aversion and uncertainty. Futures market activity, such as changes in open interest and trading volumes (measured in percentage terms to remove trends) may also affect variability, particularly if new market participants follow price momentum strategies and amplify price movements.[4] The study also includes a measure of the effect of El Niño weather patterns, because some studies have shown that these have a significant influence on commodity prices (Brunner, 2002).[5] One important factor missing from this analysis is the impact of farm policy, which has been shown to be important for some crops during certain periods but which is difficult to measure.

To assess the importance of these factors, long-term real food price volatility was estimated as a function of these factors using harvest year data from 1968 through 2008. The results identified four factors as exerting a significant influence on long-term volatility.[6] U.S. infla-

[3]There is a focus on U.S. inflation as most commodities are priced in U.S. dollars.

[4]All variables were tested for endogeneity. Only open interest exhibited endogeneity for most commodities. All regressions were rerun using lags as instruments for open interest, and the results were not qualitatively different.

[5]To take account of the impact of periodic shifts in global weather patterns caused by shifts in Pacific Ocean atmospheric pressure and the resultant El Niño effect, the Southern Oscillation Index and El Niño region 3.4 sea surface temperature anomalies measured by the U.S. National Oceanic and Atmospheric Administration are included as explanatory variables.

[6]Two sets of regressions were estimated: for all commodities on a single factor, and for all commodities on all the factors. This second regression imposed restrictions such that the coefficients on all the factors were the same across commodities, with the excep-

tion volatility has a strong effect, which may reflect commodities' role as a store of wealth. For example, one standard deviation increase in annualized inflation volatility (about 70 basis points) increases long-term real food price volatility by between 3 and 7 percentage points, depending on the commodity. Increased variability in global economic activity, as measured by an index of real shipping costs constructed by Kilian (2009), leads to higher food price volatility, which underscores the long-lasting impact of changing demand.[7] U.S. dollar volatility is significant, but only after controlling for the influence of the real interest rate, because the two variables were highly collinear.[8] Of the financial market measures, only the change in trading volume is significant, with higher futures market activity raising real price volatility. However, the effect is small; for example, the average 68 percent increase in volume over 2008 would lead to an increase in long-term volatility of less than 1½ percentage points.

In summary, the evidence suggests that changes in some macroeconomic and financial variables can have a lasting impact on food price volatility. Other factors included in the study, including El Niño weather patterns and inventories, appear to have only short-term effects. For the two potential sources of volatility that have come to the fore recently—financial speculation and oil prices—there is less evidence of significant effects. However, in the case of energy prices, the linkage process may be at an early stage, and the role of biofuels may strengthen this volatility transmission mechanism in the future.

tion of inflation measures, whereas coefficients on the volatility of oil prices, equity prices, and open interest were zero, which was accepted by log-likelihood ratio tests. Rice was excluded from the analysis because it exhibited significantly different behavior from all other commodities. The level of U.S. inflation was highly significant only for sugar.

[7]As noted by Kilian (2009), this provides a direct measure of global economic activity that does not require exchange rate weighting and aggregates activity in all countries, incorporating changes in the composition of real output, or changes in the propensity to import industrial commodities for a given unit of real output. Levels of activity also had an influence, but the sign changed based on the estimation, which makes these results less robust.

[8]The exchange rate variable was a residual from an ordinary least squares regression of monthly log changes on real interest rates.

## References


Alichi, Ali, Charles Freedman, M. Johnson, Ondra Kamenik, Turgut Kisinbay, Douglas Laxton, Kevin Clinton, and Huigang Chen, 2009, "Inflation Targeting under Imperfect Policy Credibility," IMF Working Paper 09/94 (Washington: International Monetary Fund).

Annett, Anthony, 2006, "Enforcement and the Stability and Growth Pact: How Fiscal Policy Did and Did Not Change under Europe's Fiscal Framework," IMF Working Paper 06/116 (Washington: International Monetary Fund).

Bahra, Bhupinder, 1997, "Implied Risk-Neutral Probability Density Functions from Option Prices: Theory and Application," Bank of England Working Paper No. 66 (London).

Balakrishnan, Ravi, Stephan Danninger, Selim Elekdag, and Irina Tytell, 2009, "The Transmission of Financial Stress from Advanced to Emerging Economies," IMF Working Paper 09/133 (Washington: International Monetary Fund).

Bank for International Settlements (BIS), 1999, "Estimating and Interpreting Probability Density Functions," Proceedings of a Workshop held on June, 14, 1999 (Basel, Switzerland). http://www.bis.org/publ/bisp06.htm.

Benes, J., K. Clinton, R. Garcia-Saltos, M. Johnson, D. Laxton, and T. Matheson, forthcoming, "The Global Financial Crisis and Its Implications for Potential Output," IMF Working Paper (Washington: International Monetary Fund).

Blanchard, Olivier, and Justin Wolfers, 2000, "The Role of Shocks and Institutions in the Rise of Euro-

pean Unemployment: The Aggregate Evidence," *Economic Journal,* Vol. 110, pp. 1–33.

Brunner, Allan D., 2002. "El Niño and World Primary Commodity Prices: Warm Water or Hot Air?" *Review of Economics and Statistics,* Vol. 84, No. 1, pp. 176–83.

Bruno, Michael, and Jeffrey D. Sachs, 1985, *Economics of Worldwide Stagflation* (Cambridge, Massachusetts: Harvard Univerity Press).

Cardarelli, Roberto, Selim Elekdag, and Subir Lall, 2009, "Financial Stress, Downturns, and Recoveries," IMF Working Paper 09/100 (Washington: International Monetary Fund).

Cheng, Kevin, forthcoming, "The Information Content Embedded in Future Options of Commodities and Other Assets—A New Framework to Estimate the Probability Density Functions," IMF Working Paper (Washington, International Monetary Fund).

Čihák, Martin, Wim Fonteyne, Thomas Harjes, Emil Stavrev, and Erlend Nier, 2009, *Euro Area Policies: Selected Issues,* IMF Country Report No. 09/224 (Washington: International Monetary Fund).

Collyns, Charles, Deniz Igan, and Prakash Loungani, 2009, "House Prices: Global Correction, Local Consequences" (unpublished; Washington: International Monetary Fund).

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

Elekdag, Selim, and Prakash Kannan, 2009, "Incorporating Market Information into the Construction of the Fan Chart," IMF Working Paper 09/178 (Washington: International Monetary Fund).

Engle, Robert F., and Jose Gonzalo Rangel, 2008, "The Spline-GARCH Model for Low-Frequency Volatility and Its Global Macroeconomic Causes," *Review of Financial Studies,* Vol. 21, No. 3, pp. 1187–22.

Estevão, Marcello M., 2005, "Product Market Regulation and the Benefits of Wage Moderation," IMF Working Paper 05/191 (Washington: International Monetary Fund).

European Commission, 2009, "Ageing Report: Economic and Budgetary Projections for the EU-27 Member States (2008–2060), *European Economy,* Vol. 2.

Feinman, Joshua N., 1993, "Reserve Requirements: History, Current Practice, and Potential Reform," *Federal Reserve Bulletin,* Vol. 79, pp. 569–89.

Freund, Caroline, 2009, "The Trade Response to Global Downturns: Historical Evidence," World Bank Policy Research Working Paper No. 5015 (Washington: World Bank).

Horton, Mark, Manmohan Kumar, and Paolo Mauro, 2009, "The State of Public Finances: A Cross-Country Fiscal Monitor," IMF Staff Position Note 09/21 (Washington: International Monetary Fund).

Igan, Deniz, and Marcelo Pinheiro, 2009, "Exposure to Real Estate Losses: Evidence from the U.S. Banks," IMF Working Paper 09/79 (Washington: International Monetary Fund).

International Monetary Fund (IMF), 1987, *Report on the World Current Account Discrepancy* (Washington).

———, 2006, "Euro Area Policies," IMF Country Report No. 06/287 (Washington).

———, 2008, *Global Financial Stability Report*: *Financial Stress and Deleveraging Macro-Financial Implications and Policy* (Washington, October).

———, 2009a, *Global Financial Stability Report: Responding to the Financial Crisis and Measuring Systemic Risks* (Washington, April).

———, 2009b, "Is the Canadian Housing Market Overvalued? A Tale of Two Regions," in *Canada: Selected Issues,* IMF Country Report No. 09/163 (Washington).

Jarocinski, Marek, and Frank R. Smets, 2008, "House Prices and the Stance of Monetary Policy," Federal Reserve Bank of St. Louis *Review,* Vol. 90, No. 4, pp. 339–66.

Kilian, Lutz, 2009, "Not All Oil Price Shocks Are Alike: Disentangling Demand and Supply Shocks in the Crude Oil Market," *American Economic Review,* Vol. 99, No. 3, pp. 1053–69.

Klyuev, Vladimir, Phil de Imus, and Krishna Srinivasan, forthcoming, "Unconventional Choices for Unconventional Times: Credit and Quantitative Easing in Advanced Economies," IMF Working Paper (Washington: International Monetary Fund).

Layard, Richard, Stephen Nickell, and Richard Jackman, 1991, *Unemployment* (Oxford: Oxford University Press).

Lipsey, Robert, 2009, "Measuring International Trade in Services," in *International Trade in Services and Intangibles in the Era of Globalization,* ed. by Marshall Reinsdorf and Matthew Slaughter (Chicago: University of Chicago Press).

Marquez, Jaime, and Lisa Workman, 2001, "Modeling the IMF's Statistical Discrepancy in the Global Current Account," *IMF Staff Papers,* Vol. 48, No. 43 (Washington: International Monetary Fund).

McAndrews, James, Asani Sarkar, and Zhenyu Wang, 2008. "The Effect of the Term Auction Facility on the London Inter-Bank Offered Rate," Staff Reports No. 335 (New York: Federal Reserve Bank).

Meier, André, 2009, "Panacea, Curse, or Nonevent: Unconventional Monetary Policy in the United Kingdom," IMF Working Paper 09/163(Washington: International Monetary Fund).

Oksanen, Heikki, 2009, "Setting Targets for Government Budgets in the Pursuit of Intergenerational Equity," *Economic Papers 2009,* No. 358 (Brussels: European Commission).

Romer, Christina, and David Romer, 1989, "Does Monetary Policy Matter? A New Test in the Spirit of Friedman and Schwartz," in *NBER Macroeconomics Annual,* Vol. 4, ed. by Olivier Jean Blanchard and Stanley Fischer (Cambridge, Massachusetts: National Bureau of Economic Research).

Taylor, John, 2009, "The Financial Crisis and the Policy Responses: An Empirical Analysis of What Went Wrong," NBER Working Paper No. 14631 (Cambridge, Massachusetts: National Bureau of Economic Research).

Taylor, John B., and John C. Williams, 2009, "A Black Swan in the Money Market," *American Economic Journal: Macroeconomics,* Vol. 1, No. 1, pp. 58–83.

Ter-Minassian, Teresa, and Manmohan Kumar, 2008, "Promoting Fiscal Discipline" (Washington: International Monetary Fund).

Trichet, Jean-Claude, 2009, "The ECB's Enhanced Credit Support," speech at the University of Munich, July 13 (Frankfurt: European Central Bank). www.ecb.int/press/key/date/2009/html/sp090713.en.html.

U.S. Congressional Budget Office, 2005, "Menu of Social Security Options" (Washington). www.cbo.gov/doc.cfm?index=6377.