CHAPTER 1

GLOBAL PROSPECTS AND POLICIES

The global expansion is losing speed in the face of a major financial crisis. The slowdown has been greatest in the advanced economies, particularly in the United States, where the housing market correction continues to exacerbate financial stress. The emerging and developing economies have so far been less affected by financial market turbulence and have continued to grow at a rapid pace, led by China and India, although activity is beginning to moderate in some countries. In the baseline, the U.S. economy will tip into a mild recession in 2008 as a result of mutually reinforcing housing and financial market cycles, with only a gradual recovery in 2009, reflecting the time needed to resolve underlying balance sheet strains. Activity in the other advanced economies will be sluggish in both 2008 and 2009 in the face of trade and financial spillovers. Growth in the emerging and developing economies is also projected to slow, although it should remain above long-term trends in all regions. Risks to the global projections are tilted to the downside, especially those related to the possibility of a full-blown credit crunch, while emerging and developing economies will not be insulated from a serious downturn in the advanced economies. Against this background, policymakers in the advanced economies must continue to grapple with the task of restoring stability to housing and financial markets while addressing downside risks to growth, without jeopardizing inflation performance or longer-term policy goals. Many emerging and developing economies still face the challenge of avoiding overheating or any buildup in vulnerabilities, but policymakers should be ready to respond judiciously to a deteriorating external environment.

Overview of Recent Developments and Prospects: Divergence but Not Decoupling

The course of the global economy over the past six months has been shaped by the interaction of two powerful but opposing forces: the burgeoning financial crisis that has shaken the advanced economies and the rising tide of the rapidly globalizing emerging economies. Overall, global GDP measured at purchasing-power-parity weights is estimated to have increased 4.9 percent in 2007—well above trend for the fourth consecutive year (Table 1.1 and Figure 1.1).[1] Following a stronger-than-expected third quarter, activity in the advanced economies decelerated quite sharply toward the end of the year, particularly in the United States, as the debacle in the U.S. subprime mortgage market had knock-on effects across a broad range of financial markets and institutions (Figure 1.2).

By contrast, the emerging and developing economies continued to grow robustly, notwithstanding some slowing in activity toward the end of the year. China and India—which grew 11.4 percent and 9.2 percent, respectively, in 2007—continued to lead the way, but all regions maintained robust rates of growth. The growth momentum is being provided by strong productivity gains as these countries progressively integrate into the global economy, by terms-of-trade increases for commodity producers as oil and other raw material prices continue to soar, and by strengthened policy frameworks.

Headline inflation has increased around the world, boosted by the continuing buoyancy of food and energy prices (Figure 1.3). Rapid increases in commodity prices have mainly reflected continued strong demand growth in the emerging economies, which has accounted

[1]Global and regional aggregates use country weights calculated from the new purchasing-power-parity (PPP) data published by the International Comparison Program (ICP) in December 2007. This has resulted in a downward shift in estimates of global growth in recent years by about ½ percentage point relative to estimates in the October 2007 *World Economic Outlook*. See Appendix 1.1 for more details.

Table 1.1. Overview of the *World Economic Outlook* Projections[1]

(Annual percent change unless otherwise noted)

			Current Projections		Difference from January 2008 WEO Update	
	2006	2007	2008	2009	2008	2009
World output	**5.0**	**4.9**	**3.7**	**3.8**	**–0.5**	**–0.6**
Advanced economies	3.0	2.7	1.3	1.3	–0.6	–0.8
United States	2.9	2.2	0.5	0.6	–1.0	–1.2
Euro area	2.8	2.6	1.4	1.2	–0.2	–0.7
Germany	2.9	2.5	1.4	1.0	–0.1	–0.7
France	2.0	1.9	1.4	1.2	–0.1	–1.0
Italy	1.8	1.5	0.3	0.3	–0.5	–0.7
Spain	3.9	3.8	1.8	1.7	–0.6	–0.8
Japan	2.4	2.1	1.4	1.5	–0.1	–0.2
United Kingdom	2.9	3.1	1.6	1.6	–0.2	–0.8
Canada	2.8	2.7	1.3	1.9	–0.5	–0.5
Other advanced economies	4.5	4.6	3.3	3.4	–0.4	–0.4
Newly industrialized Asian economies	5.6	5.6	4.0	4.4	–0.4	–0.4
Emerging and developing economies	7.8	7.9	6.7	6.6	–0.2	–0.4
Africa	5.9	6.2	6.3	6.4	–0.7	–0.2
Sub-Sahara	6.4	6.8	6.6	6.7	–0.3	–0.2
Central and eastern Europe	6.6	5.8	4.4	4.3	–0.2	–0.8
Commonwealth of Independent States	8.2	8.5	7.0	6.5	—	–0.1
Russia	7.4	8.1	6.8	6.3	0.2	–0.2
Excluding Russia	10.1	9.6	7.4	7.0	–0.6	0.2
Developing Asia	9.6	9.7	8.2	8.4	–0.4	–0.4
China	11.1	11.4	9.3	9.5	–0.7	–0.5
India	9.7	9.2	7.9	8.0	–0.5	–0.2
ASEAN-5	5.7	6.3	5.8	6.0	–0.2	–0.2
Middle East	5.8	5.8	6.1	6.1	0.2	0.1
Western Hemisphere	5.5	5.6	4.4	3.6	0.1	–0.4
Brazil	3.8	5.4	4.8	3.7	0.3	–0.3
Mexico	4.8	3.3	2.0	2.3	–0.6	–0.7
Memorandum						
European Union	3.3	3.1	1.8	1.7	–0.3	–0.7
World growth based on market exchange rates	3.9	3.7	2.6	2.6	–0.4	–0.7
World trade volume (goods and services)	**9.2**	**6.8**	**5.6**	**5.8**	**–0.8**	**–1.1**
Imports						
Advanced economies	7.4	4.2	3.1	3.7	–1.3	–1.2
Emerging and developing economies	14.4	12.8	11.8	10.7	—	–1.1
Exports						
Advanced economies	8.2	5.8	4.5	4.2	–0.4	–0.9
Emerging and developing economies	10.9	8.9	7.1	8.7	–1.3	–1.0
Commodity prices (U.S. dollars)						
Oil[2]	20.5	10.7	34.3	–1.0	13.0	1.3
Nonfuel (average based on world commodity export weights)	23.2	14.0	7.0	–4.9	7.1	1.2
Consumer prices						
Advanced economies	2.4	2.2	2.6	2.0	0.2	–0.1
Emerging and developing economies	5.4	6.4	7.4	5.7	1.0	0.3
London interbank offered rate (percent)[3]						
On U.S. dollar deposits	5.3	5.3	3.1	3.4	–0.9	–1.0
On euro deposits	3.1	4.3	4.0	3.6	–0.2	–0.4
On Japanese yen deposits	0.4	0.9	1.0	0.8	–0.1	–0.2

Note: Real effective exchange rates are assumed to remain constant at the levels prevailing during January 30–February 27, 2008. See the Statistical Appendix for details on groups and methodologies.

[1]Country weights used to construct aggregate growth rates for groups of countries were revised from those reported in the October 2007 *World Economic Outlook* to incorporate updated PPP exchange rates released by the International Comparison Program.

[2]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 $70.95 in 2007; the assumed price is $95.50 in 2008 and $94.50 in 2009.

[3]Six-month rate for the United States and Japan; three-month rate for the euro area.

for the bulk of the increase in commodity consumption in recent years, and a sluggish supply response, with financial factors also playing some role (Appendix 1.2). In the advanced economies, core inflation has edged upward in recent months despite slowing growth. In the emerging economies, headline inflation has risen more markedly, reflecting both strong demand growth and the greater weight of energy and particularly food in consumption baskets.

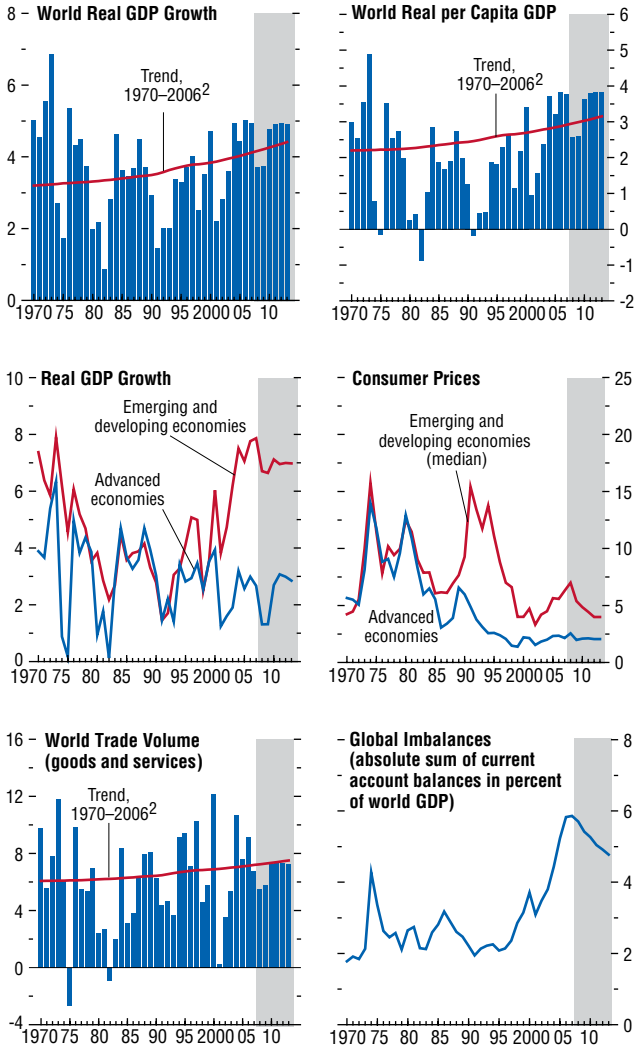
Global growth is projected to drop to 3.7 percent in 2008 and to continue at about the same pace in 2009. Financial market conditions are likely to remain extremely difficult until there is greater clarity about the extent and distribution of losses on structured securities, until core financial institutions are able to rebuild capital and strengthen balance sheets, until the framework for structured finance and related investment vehicles is made more robust, and until the risk of widespread deleveraging and associated asset price declines is more clearly contained. The continuing housing correction in the United States will remain a drag on demand and a source of uncertainty for financial markets. As a result, the U.S. economy is projected to tip into mild recession in 2008, despite the substantial monetary and fiscal support that is now in train. Other advanced economies will also slow in the face of trade and financial spillovers, with housing markets a source of drag in some European countries. Emerging and developing economies are also expected to decelerate, reflecting efforts to prevent overheating in some countries, as well as spillovers from the advanced economies and some moderation in commodity prices, although growth will continue to be above trend in all regions. The risks around this lower baseline remain tilted to the downside, particularly from possible further negative financial developments.

The next sections of this chapter examine two key issues: first, the likely magnitude of the impact of financial turbulence on economic activity, focusing on the advanced economies, and second, the extent to which emerging and developing economies can decouple from a

Figure 1.1. Global Indicators[1]

(Annual percent change unless otherwise noted)

While the global economy continued to grow robustly in 2007, for the fourth consecutive year, performance has diverged: activity in the advanced economies slowed, while emerging and developing economies continued to grow rapidly. Looking ahead, growth is expected to decline in 2008 and 2009 in both advanced and emerging and developing economies.



Source: IMF staff estimates.

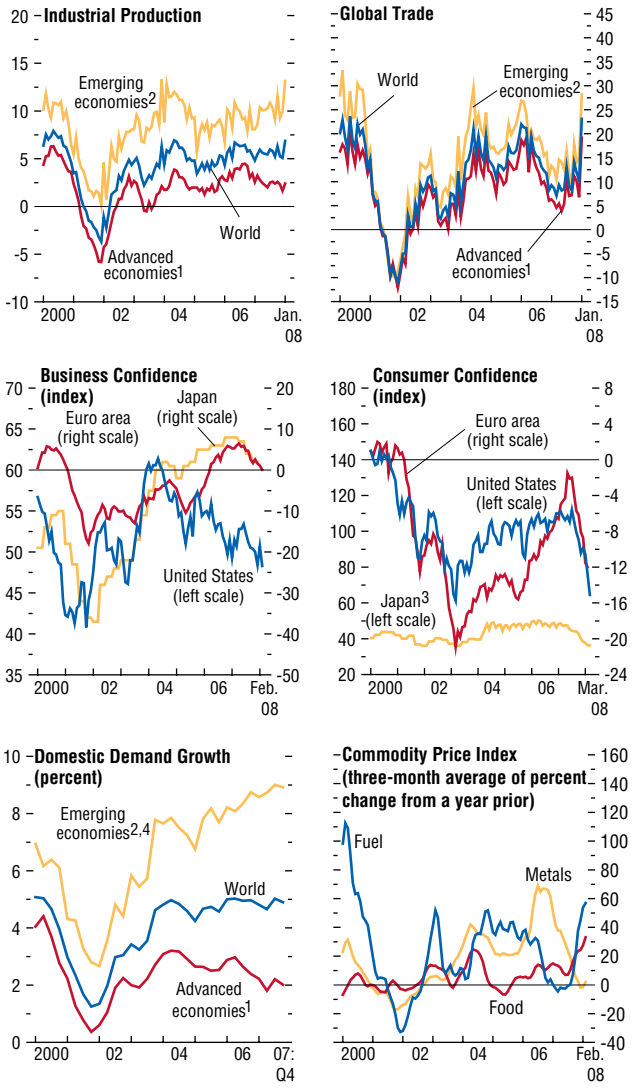
[1]Shaded areas indicate IMF staff projections. Aggregates are computed on the basis of purchasing-power-parity (PPP) weights unless otherwise noted.

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

Figure 1.2. Current and Forward-Looking Indicators

(Percent change from a year ago unless otherwise noted)

Industrial production has moderated in the advanced economies, where there has also been a marked deterioration in business and consumer confidence indicators in recent months. Activity indicators for emerging economies have remained buoyant, while trade has rebounded in early 2008 as a result of commodity price increases.



Sources: Business confidence for United States, Institute for Supply Management; for euro area, European Commission; for Japan, Bank of Japan. Consumer confidence for United States, Conference Board; for euro area, European Commission; for Japan, Cabinet Office; for all others, Haver Analytics.

[1]Australia, Canada, Denmark, euro area, Japan, New Zealand, Norway, Sweden, Switzerland, United Kingdom, and United States.

[2]Argentina, Brazil, Bulgaria, Chile, China, Colombia, Czech Republic, Estonia, Hong Kong SAR, Hungary, India, Indonesia, Israel, Korea, Latvia, Lithuania, Malaysia, Mexico, Pakistan, Peru, Philippines, Poland, Romania, Russia, Singapore, Slovak Republic, South Africa, Taiwan Province of China, Thailand, Turkey, Ukraine, and Rep. Bolivariana de Venezuela.

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

[4]Data for China, India, Pakistan, and Russia are interpolated.

downturn in the United States and western Europe. The chapter then discusses the risks to the outlook and the policy implications.

Financial Market Turbulence: Rocky Ride for the Advanced Economies

The financial market crisis that erupted in August 2007 has developed into the largest financial shock since the Great Depression, inflicting heavy damage on markets and institutions at the core of the financial system. The turmoil was initiated by rapidly rising defaults on subprime mortgages in the context of a major U.S. housing correction (discussed in Chapter 2) and the consequent blowout in spreads on securities backed by such mortgages, including on collateralized debt obligations structured to attract high credit ratings. However, the fallout rapidly spread through an excessively leveraged financial system to curtail liquidity in the interbank market, to weaken capital adequacy and force the emergency resolution of major financial intermediaries, to deeply disrupt structured credit markets, and to prompt a repricing of risk across a broad range of instruments, as described in more detail in the April 2008 *Global Financial Stability Report*.

One of the most dramatic aspects of this crisis has been an unprecedented loss of liquidity, with three-month interbank rates shooting up far in excess of policy targets for overnight rates (Figure 1.4). This occurred as banks sought to conserve their own liquidity in the face of pressures to absorb assets from off-balance-sheet vehicles for which they were no longer able to obtain funding and amid rising uncertainty about the extent and distribution of banks' losses on holdings of subprime-mortgage-related securities and other structured credits. Liquidity shortages spread more broadly as increasingly cautious banks cut back on credit lines and increased haircuts and margin calls on other financial intermediaries.

Major central banks responded aggressively to the loss of liquidity by providing large-scale access to short-term funding through exist-

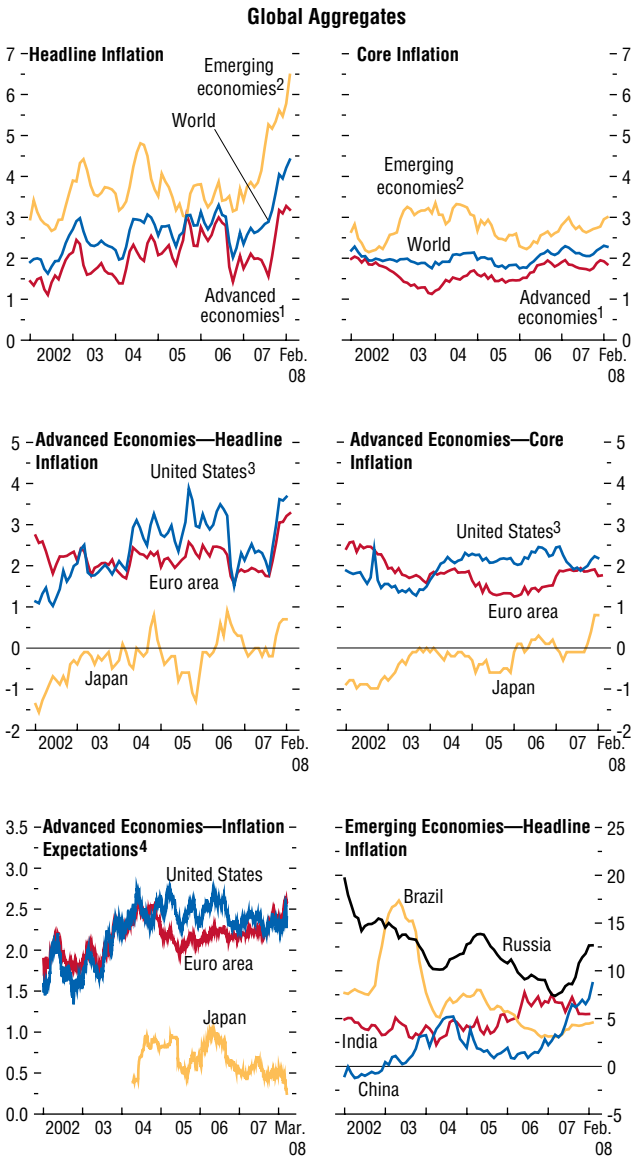
ing facilities, with mixed initial success. With liquidity premiums remaining at high levels, in December the European Central Bank (ECB) further expanded its operations, the Federal Reserve and the Bank of England substantially broadened both the range of collateral accepted and the range of borrowers with access to central bank funds, and major central banks announced a coordinated initiative to ensure adequate liquidity, including the provision of swap lines by the Federal Reserve to allow European central banks to extend dollar liquidity. The Federal Reserve took further actions in March, including opening an effective discount window for prime dealers. A number of central banks have also eased monetary policy stances in reflection of increasing downside risks to the growth outlook over this period. Most dramatically, the Federal Reserve has lowered the federal funds rate by 300 basis points since August 2007, while the Bank of Canada and the Bank of England have also reduced policy rates and the ECB and the Bank of Japan have forgone further interest rate increases. In the United Kingdom, the authorities also provided a full deposit guarantee to help restore depositor confidence after the collapse of a major mortgage provider. Term premiums remain substantially higher than usual more than seven months after the initial outbreak of turbulence.

The persistence of liquidity problems has been due in large part to increasing concerns about credit risks. Credit spreads have continued to widen in recent months, amid increasing gloominess about the outlook as well as mounting concern about the general soundness of structured products and investment vehicles (Figure 1.5). With continuing deterioration of U.S. housing market conditions, particularly in the subprime market segment, prices of mortgage-related securities have continued to fall. Moreover, spreads have risen sharply across other related market segments, including securities backed by credit cards, auto loans, student loans, and commercial mortgages, as a result of concerns about rising default rates, excessive leverage, and questionable securitization tech-

Figure 1.3. Global Inflation

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

Headline inflation spiked in late 2007 and early 2008, reflecting the impact of rising energy and, particularly, food prices. Core inflation and inflation expectations have edged upward.

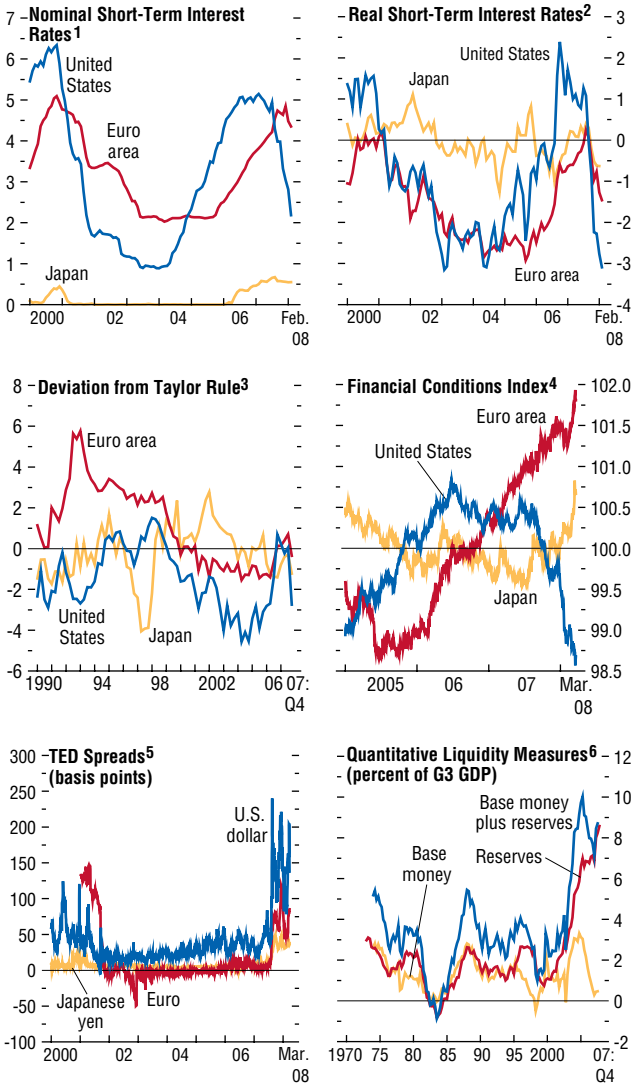


Sources: Haver Analytics; and IMF staff calculations.
[1]Australia, Canada, Denmark, euro area, Japan, New Zealand, Norway, Sweden, United Kingdom, and United States.
[2]Brazil, Bulgaria, Chile, China, Estonia, Hong Kong SAR, Hungary, India, Indonesia, Korea, Malaysia, Mexico, Poland, Singapore, South Africa, Taiwan Province of China, and Thailand.
[3]Personal consumption expenditure deflator.
[4]Ten-year government bond yield minus ten-year inflation-linked government bond yield.

Figure 1.4. Measures of Monetary Policy and Liquidity

(Interest rates in percent unless otherwise noted)

Central banks have responded aggressively to a drying up of liquidity in interbank markets by providing large-scale access to short-term funding. The Federal Reserve responded to increasing downside risks to activity by cutting the federal funds rate rapidly, while the European Central Bank and the Bank of Japan have kept policy rates on hold.



Sources: Bloomberg Financial Markets; Eurostat; Haver Analytics; Merrill Lynch; OECD *Economic Outlook*; and IMF staff calculations.

[1]Three-month treasury bills.

[2]Relative to headline inflation. Measured as deviations from 1990–2007 average.

[3]The Taylor rate depends on (1) the neutral real rate of interest, which in turn is a function of potential output growth, (2) the deviation of consumer price inflation from the inflation target, and (3) the output gap. See Chapter 2 of the September 2004 *World Economic Outlook*.

[4]Weighted average of change in nominal effective exchange rate, overnight LIBOR, three-month LIBOR, 10-year government bond, and corporate high-yield bond rates. Weights estimated by IMF staff.

[5]Three-month LIBOR rate minus three-month government bill rate.

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

niques. In this context, there has been intensified concern about counterparty risk as banks have been only partially successful in sustaining capital in the face of mounting losses, with a major U.S. investment bank being sold on an emergency basis with support from the Federal Reserve. Moreover, a number of hedge funds and other highly leveraged institutions have run into serious difficulties as banks increased margin calls on their lines of credit, raising the threat of forced asset sales. At the same time, there are rising questions about the soundness of the credit-default-swap market, particularly given the weakening financial positions of the monoline insurers that provide cover for credit defaults.

Equity prices also have retreated, particularly in early 2008 when signs of economic weakness intensified, and financial sector stocks have been hit particularly hard (Figure 1.6). Measures of volatility in equity and currency markets have remained elevated. By contrast, rates on government bonds have declined sharply, and investment in commodity markets has escalated, as investors seek alternative asset classes.

What will be the overall economic impact of these financial market dislocations? Recent episodes of turbulence in securities markets generally have not had a major impact on activity (see Box 1.2 of the October 2007 *World Economic Outlook*). There is somewhat more evidence to suggest that episodes of banking distress have put a squeeze on credit, but even in these cases it is hard to disentangle the consequences of restraints on credit supply from those of the declining credit demand that accompanies recession (Box 1.1). During previous periods of turbulence, various segments of the financial system have been able, at least partly, to compensate for difficulties experienced in others.

However, experience during these episodes may not provide much guidance for the current unprecedented situation. Of particular concern, the global economy is now facing a widespread deleveraging as mechanisms for credit creation have been damaged in both the banking system

and the securities markets—that is, both of the financial system's twin engines are faltering at the same time (Tucker, 2007). Moreover, further broad erosion of financial capital in a climate of uncertainty and caution could cause the present credit squeeze to mutate into a full-blown credit crunch, an event in which the supply of financing is severely constrained across the system.

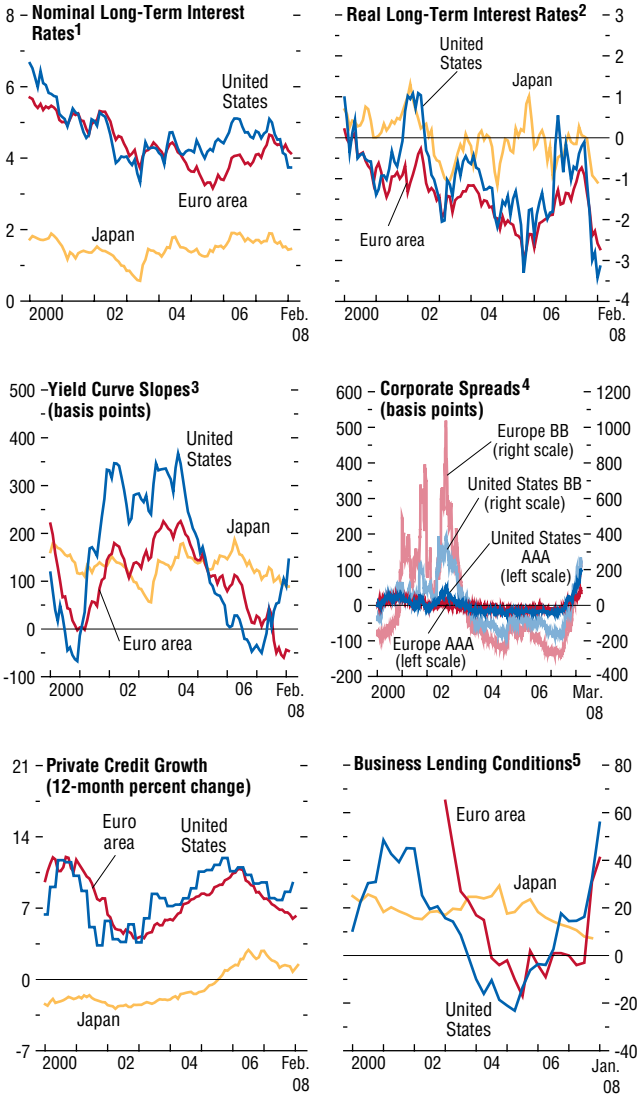
Looking first at the banking system, the IMF staff estimates reported in the April 2008 *Global Financial Stability Report* suggest that potential losses to banks from exposure to the U.S. subprime mortgage market and from related structured securities, as well as losses on other U.S. credit classes such as consumer and corporate loans, could be on the order of $440–$510 billion out of total potential losses of $945 billion. Such losses would put significant pressure on the capital adequacy of U.S. and European banks, and in fact, losses of this magnitude have already been priced into capital market valuations and rising credit spreads on major financial institutions. Capital adequacy and leverage ratios are also being adversely affected by the reintermediation onto bank balance sheets of off-balance-sheet structures such as conduits and leveraged buyout financing underwritten by major banks.

To be sure, the impact on bank lending need not be calibrated one for one with the deterioration in capital adequacy. U.S. banks in particular have been active in raising capital—about $85 billion relative to declared losses of $190 billion to date—including from sovereign wealth funds, although the cost of raising new capital is increasing rapidly as concerns about bank balance sheets have mounted. Most banks hold sizable capital cushions in excess of regulatory requirements and have some ability to rebuild capital by lowering dividends and costs, although they are likely to be under pressure from markets to restore their capital positions relatively quickly. As described in Box 1.1, lending standards have tightened considerably throughout the advanced economies, which is likely to constrain loan growth.

Figure 1.5. Developments in Mature Credit Markets

(Interest rates in percent unless otherwise noted)

Risk spreads have continued to widen in recent months as financial market uncertainties have continued amid intensifying concerns about the outlook. At the same time, rates on long-term government paper have come down further.



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

[1]Ten-year government bonds.

[2]Ten-year government bonds relative to headline inflation. Measured as deviations from 1990–2007 average.

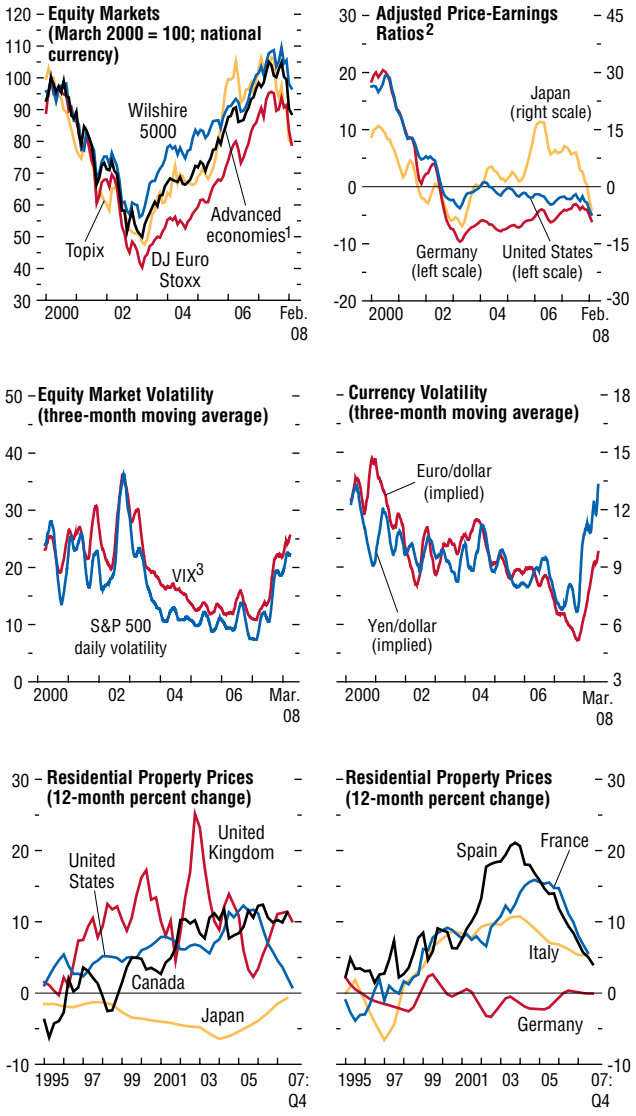
[3]Ten-year government bond minus three-month treasury bill rate.

[4]Measured as deviations from 2000–07 average.

[5]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; average of changes in credit standards for small, medium-size, and large firms for Japan.

Figure 1.6. Mature Financial and Housing Market Indicators

Broader financial market indicators reflect the impact of continuing market uncertainties and increasing concern about the economic outlook. Equity markets have turned downward while volatility measures have remained elevated. Residential property prices have moderated in a number of major markets.



Sources: Bloomberg Financial Markets; CEIC Data Company Limited; Datastream; Haver Analytics; IMF, *International Financial Statistics;* OECD, *Economic Outlook;* and IMF staff calculations.

[1]Morgan Stanley Capital Index for industrial countries.

[2]Adjusted price-earnings ratio is the ratio of stock prices to the moving average of the previous 10 years' earnings, adjusted for nominal trend growth. Adjusted price-earnings ratios are measured as the three-month moving average of deviations from the 1990–2008 (January) average.

[3]VIX is the Chicago Board Options Exchange volatility index. This index is calculated by taking a weighted average of implied volatility for the eight S&P 500 calls and puts.

Although the impact may be at least partly offset in the United States by the sharp lowering of the policy interest rate, this effect has been mitigated because reduced possibilities for securitization of bank credits—including even conforming mortgages—have widened loan spreads considerably.

Turning to securities markets, the most straightforward measure of financial tightening relevant for business conditions is the rise in spreads on corporate securities. As shown in Figure 1.5, such spreads have widened noticeably in recent months. For higher-risk borrowers, the rise has still been somewhat less pronounced to date than during the 2001 recession following the collapse of the dot-com bubble. Spreads facing prime corporate borrowers are close to 2002 highs, although overall yields still remain lower given the decline in government benchmarks. Issuance of complex structured credits is likely to be very limited until underlying weaknesses in the securitization process can be adequately addressed, and former activity levels are unlikely to be recovered even afterward.

The other key factor affecting the macroeconomic impact of tightening financial conditions relates to the financial situations of household and corporate borrowers. The recent slowdown in personal consumption in the United States likely reflects to some degree the diminished ability of households to borrow using home equity as collateral in the face of softening house prices, wider spreads, and tightening lending standards. The pressures on household finances in the United States are likely to be augmented by the correction in equity prices in early 2008 and by deteriorating labor market conditions. Although net assets still remain high, levels of gross indebtedness relative to income are significantly higher than in western Europe. By contrast, U.S. corporates show generally strong balance sheets and robust profitability, which puts them in a position to self-finance investment if needed to avoid high borrowing costs. This safety valve may be less available in parts of Europe (outside Germany

Box 1.1. Is There a Credit Crunch?

Credit conditions in financial markets have tightened and there has been a weakening of the capital positions of many major banks in the wake of recent financial market turbulence. These developments raise the question of whether a "credit crunch"—a severe decline in the supply of credit—is looming in the United States and other advanced economies and, if so, what adverse impact this will have on economic activity. Past periods of financial market stress have not generally had a major impact on broader economic activity, largely because different segments of the financial system have been able, at least partly, to compensate for difficulties in others. However, there have been episodes associated with major bank strains and sharp declines in asset prices when activity has been more seriously affected. In the current context, an overarching concern is that credit creation may have been impaired because of the faltering of the twin engines of the financial system—the banking system and the securities markets.

This box provides a historical perspective on the issue. Because banks remain at the core of financial intermediation, it first examines key features of bank credit cycles in major advanced economies in recent decades, making a clear distinction between bank credit squeezes and credit crunches. This helps assess whether the current financial market turmoil portends risks of a bank credit crunch. Second, the box examines recent developments in capital market financing, notably related to the corporate debt market, with a view toward assessing whether there is a risk of a broader credit crunch.

Bank Credit Cycles and Lending Premiums

Bank credit cycles arise naturally as a result of business cycles. Specifically, bank lending typically rises during an expansion and declines during a contraction. In a downturn, firms' demand for credit normally declines, reflecting a curtailing of investment plans in response to weaker economic prospects and greater spare capacity. Similarly, demand for credit by households moderates if consumption is reduced in response to lower expected real incomes and wealth. The price of bank credit also varies with the business cycle because it incorporates a risk premium. During a growth slowdown, the risk of insolvency increases in both the corporate and household sectors. Banks typically respond by charging higher risk premiums and tightening lending standards, particularly for riskier borrowers.[1] Hence, expansion of bank credit is typically procyclical, whereas risk premiums and lending standards are countercyclical (see Weinberg, 1995).

Simple correlations illustrate these relationships. Specifically, based on data over the last five decades, bank lending growth is positively correlated with real GDP growth, whereas lending premiums—proxied by the difference between an average lending rate and an average of future short-term interest rates—in most cases exhibit a negative correlation (first figure).[2] U.S. lending survey data going back to 1990 show even more clearly these relationships, with current changes in lending standards, demand, and spreads exhibiting patterns in line with the historical experience (first figure, lower panel).

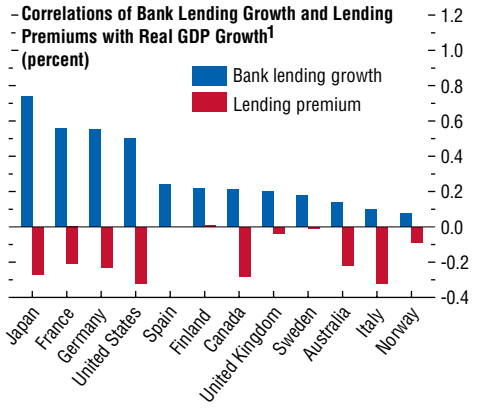
Note: The main authors of this box are Gianni De Nicolò and Selim Elekdag.

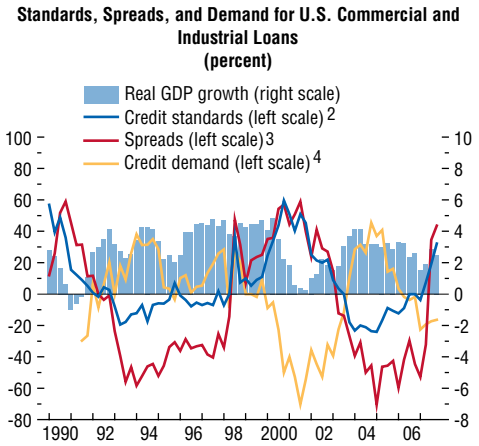
[1]Lending standards include all the "nonprice" conditions stipulated in lending arrangements, such as the size and type of collateral requirements and the size, limits, frequency, and duration of drawdowns against credit lines.

[2]Bank credit growth is measured in nominal terms. As discussed in Bernanke and Lown (1991), this measure is most appropriate in proxying the real value of credit extensions in the context of long-term bank-borrower relationships, where the effective maturity of loans is very long.

Box 1.1 *(continued)*

Bank Lending and Growth





Sources: Board of Governors of the Federal Reserve System, Senior Loan Officer Survey; and IMF staff calculations.

[1]The sample for the entire period starts in 1957:Q1, except for Italy and Sweden (1970:Q1), Spain (1972:Q1), United Kingdom (1962:Q1), and United States (1952:Q1).

[2]Percent of respondents reporting that credit standards have tightened either "considerably" or "somewhat" minus those reporting standards have eased "considerably" or "somewhat" over the previous three months.

[3]Percent of respondents reporting that loan spreads over cost of funds have tightened either "considerably" or "somewhat" minus those reporting spreads have eased "considerably" or "somewhat" over the previous three months.

[4]Percent of respondents reporting demand for loans as either "substantially" or "moderately" stronger minus those reporting demand as either "substantially" or "moderately" weaker over the previous three months.

Bank Credit Squeezes and Crunches

There can be episodes when the growth of bank credit fluctuates significantly more than is commonly associated with a given phase of the business cycle. This can occur when large swings in asset prices have a significant impact on collateral valuations and the balance sheets of firms and households, inducing borrowers to contract credit demand and banks to rapidly adjust the provision of credit in response to significant changes in borrowers' creditworthiness.[3] In the context of the current financial market turbulence, a particularly relevant issue is the significant increase in (and persistence of) uncertainty concerning asset valuations and borrowers' creditworthiness. Accordingly, a bank *credit squeeze* can be defined as a *slowdown in the growth rate of the bank credit-to-GDP ratio sharper than that experienced during a normal business cycle downturn*.

The amplification of economic downturns triggered by a bank credit squeeze can be particularly severe if banks' access to funds and capital is impaired—either because widespread losses incurred by many banks impair their overall capital position or because large systemic shocks damage depositors' confidence in the banking system. In particular, the inability of banks to either retain or collect deposits and issue debt or equity could constrain the lending capacity of important portions of the banking system, making banks either unwilling or unable to extend credit. In turn, the inability of creditworthy borrowers to tap bank credit in the absence of substitute sources of finance could amplify a growth slowdown and/or lengthen its

[3]The role of collateral valuations, balance-sheet effects, and information asymmetries in amplifying credit cycles is at the heart of the financial accelerator mechanism modeled by Bernanke, Gertler, and Gilchrist (1999) and is the focus of the models of Kiyotaki and Moore (1997), Suarez and Sussman (1997), Cordoba and Ripoll (2004), and Matsuyama (2007).

duration.[4] In the extreme, even a temporary failure by the banking system to channel savings to investment could have longer-lasting, adverse real effects. Thus, a bank *credit crunch* can be defined as a *severe bank credit squeeze driven by a significant decline in the banking system's supply of credit.*[5] Factors that could limit the banking system's supply of credit, and therefore transform a squeeze into a crunch, include banks' inability to raise core funding or retain them due to a run, as well as banks' inability to raise funds through debt or equity issuance on capital markets.

Historically, particularly sharp declines in real GDP growth have been associated with bank credit squeezes, here identified as occurring in all quarters during which the growth rate of the bank credit-to-GDP ratio was in the lowest decile of its distribution over the last few decades (table). In all cases, bank credit squeezes are associated with sharp downturns in real activity, suggesting their potential role in amplifying growth slowdowns. Moreover, large drops in real GDP took place in almost all credit squeeze episodes in which the banking system was in distress, and especially in Finland, Japan, Norway, and Sweden, which all experienced systemic banking crises.

Identifying bank credit crunches is difficult, however, particularly because many factors simultaneously affect supply and demand. However, using a simple diagram of the demand and supply of bank lending indicates whether a decline in bank lending is underpinned by demand or supply factors. If a decline in bank lending is primarily demand driven, there are declining lending rates, whereas lending rates rise if it is driven by supply factors. It is evident that in most cases of a credit squeeze, lending rates have tended to decline, suggesting that adverse shocks to the demand for credit have been the dominant factor underpinning bank credit squeezes (see table).

A word of caution is warranted. A decline in lending rates does not necessarily imply that supply factors play no role in the decline of credit, notably because underlying policy rates may have been lowered in response to weakening growth prospects in the economy. Moreover, evidence based on aggregate data on lending may also mask credit crunches for particular sectors of the economy or for particular borrowers. For example, the credit squeeze in the United States in the early 1990s turned into a credit crunch for bank lending to commercial real estate.[6] Similarly, during the Japanese banking crisis in the early 1990s, capital impairment of banks that incurred large losses on real estate exposures—following the large decline in land prices of the late 1980s—led to a localized credit crunch for firms that were dependent on these banks for financing and were unable to find credit in capital markets.[7]

Where Are We Now?

Signals that a credit squeeze is now under way include tightening bank lending standards and lending spreads, a large increase in

[4]Green and Oh (1991) describe a model emphasizing inefficiencies potentially associated with a credit crunch.

[5]This definition is similar to that used by Bernanke and Lown (1991), who define a bank credit crunch as "a significant leftward shift in the supply of bank loans, holding constant both the real interest rate and the quality of potential borrowers" (p. 207).

[6]See Bernanke and Lown (1991) and Owens and Shreft (1995).

[7]See Gan (2007); Peek and Rosengren (2005) also document the absence of a shortage of bank capital leading to a credit crunch in Japan during the 1990s. They also stress that one important factor explaining the persistence of the crisis's real effects was banks' continued financing of borrowers in distress, a kind of credit crunch in reverse.

Box 1.1 *(continued)*

Credit and Real GDP Growth during Bank Credit Squeezes

	Entire Sample Period[1]		Periods of Bank Credit Squeezes			
	Annual growth in bank credit-to-GDP ratio	Annual real GDP growth	Annual growth in bank credit-to-GDP ratio	Annual real GDP growth	Average quarterly change in lending rates	Average quarterly change change in policy rates
Australia	9.2	3.8	1.2	1.2	–0.5	–0.4
Canada	6.8	3.9	–4.2	1.7	–0.1	–0.2
Finland	7.7	3.1	–10.6	1.2	–0.2	–0.2
France	7.3	2.5	–2.2	0.7	–0.1	–0.1
Germany	5	2.8	–1.7	0.9	0.2	0.1
Italy[3]	8.2	1.8	–0.6	0.8	–0.1	0.0
Japan	4.3	4.8	–6.4	0.5	0.0	0.0
Norway[3]	8.3	3.5	–3.4	1.6	–0.2	0.3
Spain[3]	11.2	3.2	0.6	0.8	–0.5	–0.2
Sweden[3]	6.7	2.3	–12.1	1.1	–0.4	–0.3
United Kingdom[3]	11.7	2.5	–0.2	0.8	–0.1	–0.2
United States[3]	5.1	3.4	–2.2	0.8	–0.2	–0.2
Average	**7.6**	**3.1**	**–3.5**	**1.0**	**–0.2**	**–0.1**

Source: IMF staff calculations.
[1]The sample for all countries ends in 2007:Q2.
[2]The banking distress and (systemic) banking crises (Finland, Japan, Norway, and Sweden) dates and classifications are based on Caprio and others (2005).
[3]The sample for the entire period starts in 1957:Q1, except for Italy and Sweden (1970:Q1), Spain (1972:Q1), United Kingdom (1962:Q1), and United States (1952:Q1).

risk premiums in capital markets, and sharp contractions in both bank and capital market credit relative to real GDP growth. The mutation of a squeeze into a crunch could be indicated by an increase in risk premiums for all categories of borrowers, including those typically considered the most creditworthy, reflecting a significant leftward shift in the supply of credit by both financial institutions and investors.

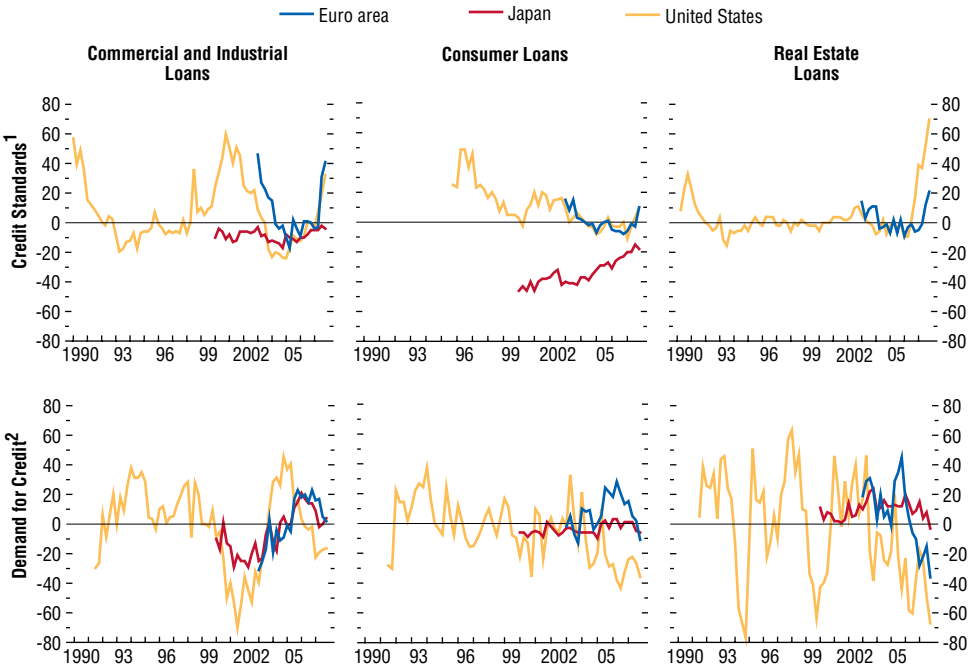
Following the onset of the current financial market turbulence in August 2007, bank

Periods of Bank Credit Squeezes					
Periods of banking distress and crises		Periods of bank credit squeezes without distress			
Annual growth in bank credit-to-GDP ratio	Annual real GDP growth	Annual growth in bank credit-to-GDP ratio	Annual real GDP growth	Credit squeeze quarters	Credit squeeze quarters with banking distress or banking crisis (indicated in bold)[2]
1.67	0.75	1.03	1.38	1961:Q4–1962:Q4 1970:Q2–1970:Q4 1991:Q4–1993:Q2	1991:Q4–1992:Q4
–3.18	1.50	–4.22	1.74	1958:Q2–1958:Q4 1983:Q2–1984:Q1 1998:Q4–1999:Q4 2001:Q1–2001:Q2	1983:Q2–1984:Q1
–13.79	0.75	–8.95	1.49	1993:Q4–1997:Q4	**1993:Q4–1994:Q4**
–2.01	0.47	–1.69	0.80	1993:Q4–1995:Q2 1996:Q3–1997:Q4	1993:Q4–1994:Q4
—	—	–1.7	0.9	2003:Q4–2005:Q4 2006:Q3–2007:Q2	
–0.96	1.00	1.15	–0.30	1993:Q4–1996:Q2	1993:Q4–1995:Q4
–2.82	0.22	–6.51	0.44	1999:Q2–2001:Q2 2002:Q3–2004:Q4	**1999:Q2–2004:Q4**
–4.68	1.05	0.04	2.06	1991:Q2–1991:Q4 1993:Q3–1994:Q4	**1991:Q2–1993:Q4**
3.05	0.71	–0.15	0.86	1984:Q3–1985:Q2 1993:Q3–1995:Q4	
–9.65	0.51	–6.36	1.60	1992:Q1–1992:Q2 1993:Q3–1995:Q4	**1992:Q1–1992:Q2** **1993:Q3–1995:Q4**
13.13	0.23	–0.12	0.68	1966:Q4–1967:Q3 1975:Q4–1976:Q1 1991:Q2–1992:Q3 1993:Q2–1994:Q4	1975:Q4–1976:Q1
1.01	0.50	–2.25	1.15	1975:Q4–1976:Q1 1983:Q2–1983:Q3 1990:Q2–1994:Q3	1990:Q2–1991:Q4
–1.7	**0.7**	**–2.5**	**1.1**		

lending standards, based on surveys of loan officers, tightened sharply in the United States and the euro area, and somewhat more modestly in Japan (second figure). In the United States and the euro area, tightening standards are particularly noticeable for lending to the real estate sector (which accounts for more than half of bank lending). Although standards have tightened for bank lending to enterprises and households, notably in the United States, it appears that demand for such credit has

Box 1.1 *(continued)*

Lending Standards and Demand for Bank Loans



Sources: Board of Governors of the Federal Reserve System, Senior Loan Officer Survey; and IMF staff calculations.
[1]Percent of respondents reporting that credit standards have tightened either "considerably" or "somewhat" minus those reporting standards have eased "considerably" or "somewhat" over the previous three months.
[2]Percent of respondents reporting that demand for loans is either "substantially" or "moderately" stronger minus those reporting demand is either "substantially" or "moderately" weaker over the previous three months.

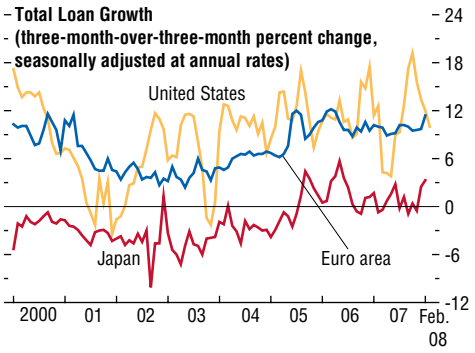
also declined considerably. How does this evidence match quantitative information on bank lending?

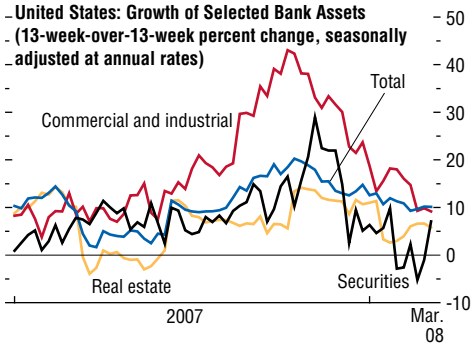
Although slowing, bank credit growth in the United States and the euro area has remained robust thus far, whereas in Japan, the decline in credit growth began at end-2006 and predates the recent global turmoil (third figure). The data are hard to interpret. In the United States, credit growth spiked after August 2007, owing to a surge in commercial and industrial (C&I) loans, which reflected in part the disbursement of leveraged-buyout-related credits that banks had underwritten before the financial market turmoil but were unable to syndicate or sell afterward. However, since then credit growth has declined, led by a noticeable decline in lending to the real estate sector, although it remains broadly in line with average growth rates observed during the past five years. At the same time, growth in bank security holdings has significantly increased, in part owing to banks' absorption of assets from off-balance-sheet entities back onto their balance sheets.

Is There a Squeeze in Capital Market Financing?

Although the evidence is mixed as to whether a credit squeeze is emerging in bank lending, the dislocations in capital market

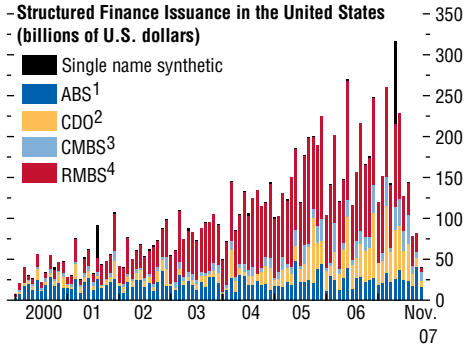
Loan Growth

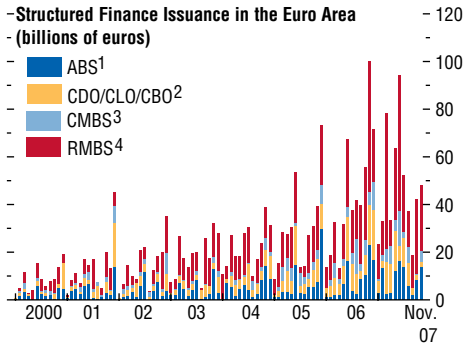


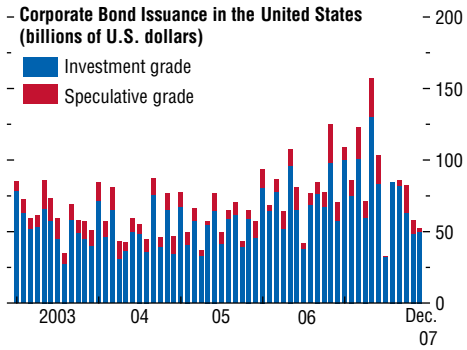


Sources: Bank of Japan; Board of Governors of the Federal Reserve System; European Central Bank; and IMF staff calculations.

Structured Finance and Corporate Bond Issuance







Source: Standard & Poor's.
[1]Asset-backed securities other than CDO/CLO/CBO, RMBS, and CMBS.
[2]Collateralized debt obligations; collateralized loan obligations; and collateralized bond obligations.
[3]Commercial mortgage-backed securities.
[4]Real estate mortgage-backed securities.

financing could portend a broader credit squeeze. What is the evidence?

The current market turmoil has been accompanied by a more general repricing of risk, reflected in a sharp rise in risk premiums across a range of credit markets (Figure 1.5 in main text). In particular, continuing financial market strains as well as uncertainty about growth prospects have led to a severe contraction in the issuance of structured finance products and to higher spreads and reduced issuance of corporate bonds. The loss of confidence in the securitization model has been particularly severe in

Box 1.1 *(concluded)*

certain sectors. Notably, losses in residential mortgage-backed securities have negatively affected other structured products, with new issuances—particularly those linked to commercial real estate—declining sharply both in the United States and Europe (fourth figure).[8]

At the same time, uncertainty surrounding the growth prospects of the United States and the euro area have adversely affected longer-term capital market financing.

- Risk premiums in corporate bond markets have widened markedly across the entire credit-quality spectrum, suggesting the emergence of a capital market credit squeeze in longer-term debt finance (Figure 1.5 in main text). Although wider spreads on lower-rated bonds can be expected during an economic downturn, spreads on mid-quality and investment-grade bonds have also increased significantly. If this trend continues, a credit crunch in longer-term bond financing could be in the making.
- Turning to quantity indicators, U.S. corporate issuance has also declined, amid a complete drying up of speculative-grade bond issuance (see fourth figure). It is important to recognize that demand conditions have changed as well, as a result of the aggregate conditions of nonfinancial firms' and households' balance sheets.

[8]Furthermore, during August 2007, and again three months later, spreads on asset-backed commercial paper—particularly paper backed by U.S. nonprime mortgages—widened markedly and with a trend decline in issuances, whereas issuance and spreads of financial and nonfinancial entities were largely unaffected.

Conclusions

There are now clear signs of a broad credit squeeze affecting a wide range of financing from both banks and securities markets. Evidence to date of a credit crunch is more localized—limited to the U.S. real estate sector and to structured finance products. However, rising uncertainty about growth prospects and asset valuations, further steep declines in asset prices, and—most important—an abrupt reduction in the lending capacity of systemically important segments of the banking system could transform a credit squeeze into a credit crunch, with potentially severe consequences for growth.

in particular) where corporate positions are generally less strong.

Recent financial strains are also affecting foreign exchange markets. The real effective exchange rate of the U.S. dollar has declined sharply since mid-2007 as foreign investment in U.S. securities has been dampened by reduced confidence in liquidity and returns on such assets, as well as by the weakening of U.S. growth prospects and interest rate cuts (Figure 1.7). The progressive decline in the value of the dollar since 2001 has boosted net exports—a key support to the U.S. economy in 2007—and has helped to bring the U.S. current account deficit down to less than 5 percent of GDP by the fourth quarter of 2007, down more than 1½ percent of GDP from its peak in 2006 (Box 1.2). Nevertheless, the U.S. dollar is still judged to be somewhat on the strong side. Given the limited upward flexibility in the currencies of a number of countries that have large current account surpluses—notably China and oil-exporting countries in the Middle East—the main counterpart of the decline in the U.S. dollar has been appreciation of the euro, the yen, and other floating currencies such as the Canadian dollar and some emerging economy currencies. As a result, the euro is now also judged to be on the

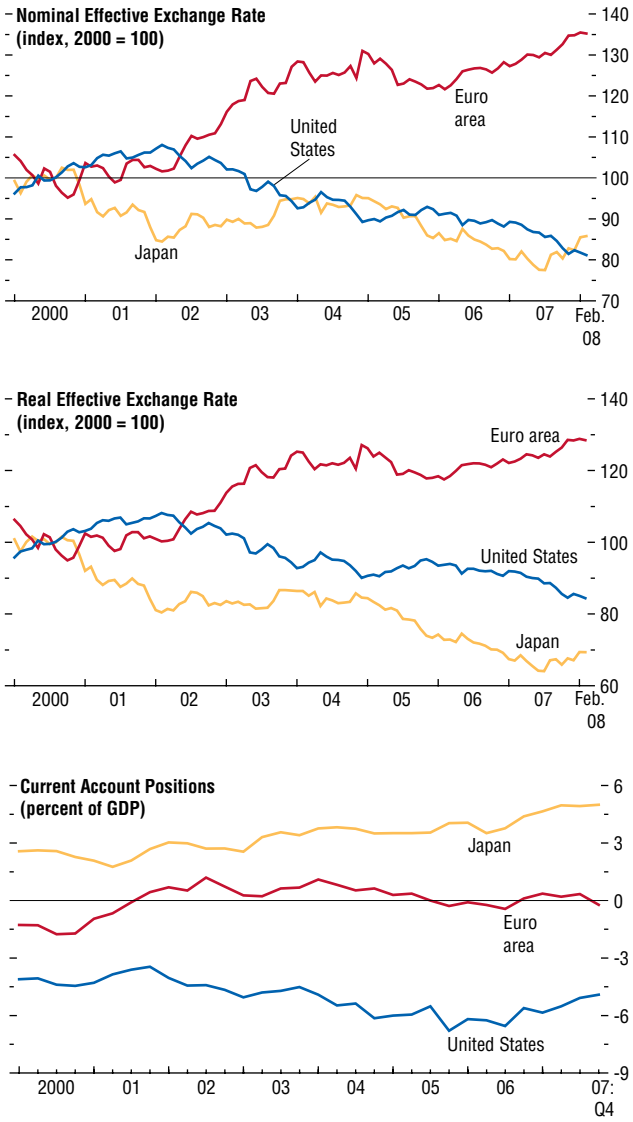
strong side, although the yen still remains somewhat undervalued. This experience contrasts strongly with that during 1985–91, a period of rapid external adjustment, when the patterns of exchange rate adjustment and current account imbalances were more closely matched (see Box 1.2).

What then is the bottom line? The pervasive impact of financial market turbulence on both banks and securities markets, coming on top of the continuing housing correction, clearly represents a broad credit squeeze that had already dampened activity in the United States toward the end of 2007 and has prompted an aggressive policy response, although the initial strength of corporate and household balance sheets has provided some protection. The financial conditions index (FCI) shown in Figure 1.4 suggests that the combination of exchange rate depreciation, easing by the Federal Reserve, and declining long-term rates on government securities should be supportive of future activity, notwithstanding rising spreads. However, such a measure does not take account of rapidly tightening bank lending standards and the collapse of complex structured credit markets, which had been supporting credit growth. On balance, adverse financial conditions are likely to have a continuing negative impact on activity in the United States, notwithstanding the Federal Reserve's strong response.

Western Europe is also being affected by the losses incurred by banks with U.S. exposures, spillover effects on interbank and securities markets, and upward pressure on the euro—reflected in a tightening of the FCI. Although the impact on demand has been less evident to date, activity is likely to face considerable drag from tighter bank lending standards and wider spreads for riskier borrowers. By contrast, Japan's financial institutions have been much less directly affected by the financial turbulence, and the economic impact seems likely to be felt through broader spillovers from a global slowdown. However, all the advanced economies are expected to face serious consequences if deepening losses to bank capital and a further

Figure 1.7. External Developments in Selected Advanced Economies

The U.S. dollar has continued to depreciate, helping to bring down the U.S. current account deficit in recent quarters. The yen's value has rebounded since August 2007 as turbulent financial conditions led to some reversal of "carry trade" flows. The euro has remained on an appreciating trend.



Sources: Haver Analytics; and IMF staff calculations.

Box 1.2. Depreciation of the U.S. Dollar: Causes and Consequences

The U.S. dollar has depreciated by about 25 percent in real effective terms since early 2002, in what has been one of the largest dollar depreciation episodes in the post–Bretton Woods era (first figure). At the same time, the U.S. current account deficit remains above 5 percent of GDP, still leaving considerable uncertainty about the prospects for the resolution of global current account imbalances. Against this backdrop, this box reviews the main factors behind the current episode of dollar adjustment and discusses associated risks and policy challenges.

What Has Contributed to the Dollar's Depreciation?

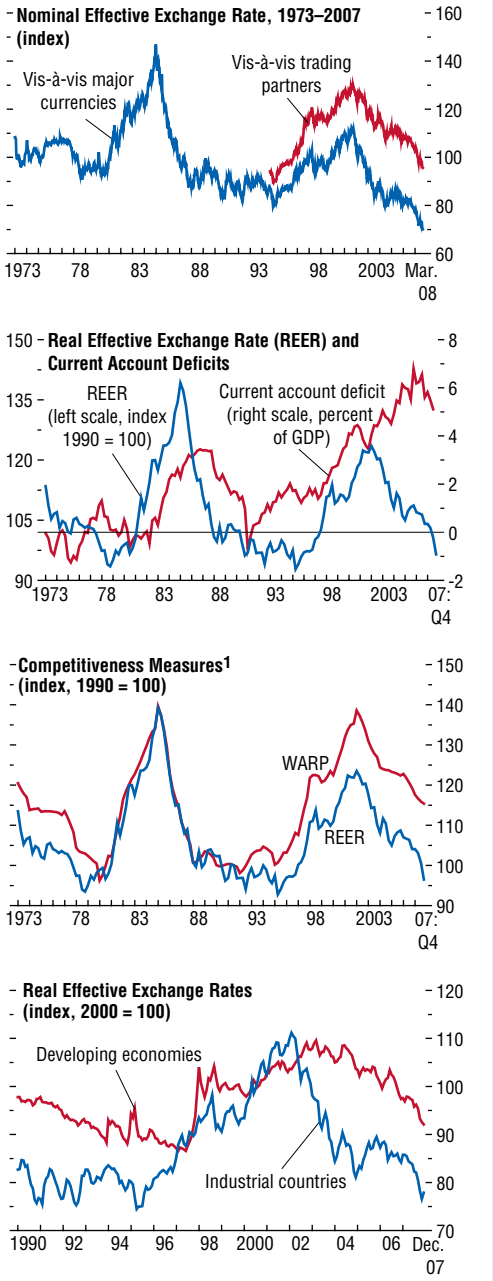
Similar to the previous major depreciation episode during 1985–91, the current decline in the dollar started against the background of a large U.S. current account deficit and has spanned several years. During both episodes, the pace of depreciation was gradual and orderly, with daily changes below 2–3 percent in nominal effective terms. However, there is a clear contrast between the evolution of U.S. current account balances during the two episodes. During 1985–91, the current account deficit had begun to narrow within two years of the initial depreciation and reached near-balance by 1991. In contrast, during the recent episode starting in 2002, the current account deficit initially continued to widen, reaching an all-time high of almost 7 percent of GDP in late 2005. It began to moderate only in 2006, and remained at 5½ percent of GDP in 2007.

What factors have contributed to the large and widening U.S. current account deficit despite the sustained dollar depreciation since 2002?

- The rise of emerging economies: The dollar's real effective depreciation may exaggerate the improvement in U.S. competitiveness by failing to capture fully the erosion of U.S. competitiveness caused by the rapid shift in trade toward low-cost emerging and developing economies since the 1990s. The

Note: The main authors of this box are Selim Elekdag, Kornélia Krajnyák, and Jaewoo Lee.

Dollar Cycles



Sources: Board of Governors of the Federal Reserve System; Haver Analytics; and IMF staff calculations.

[1]REER: CPI-based, real effective exchange rate; WARP: weighted average relative price.

weighted average relative price (WARP), which better reflects the growing importance of low-cost trading partners, shows a trend erosion of U.S. competitiveness compared to real exchange rate indices (Thomas, Marquez, and Fahle, 2008).

- The U.S. business cycle: Until 2006, the U.S. economy had a more robust growth performance than other advanced economies—spurred by buoyant consumption reflecting the rising value of housing wealth (see Chapter 3)—and this boosted U.S. imports over this period.
- Oil prices: Driven by strong global growth, including in emerging economies, oil prices have soared to historic highs in recent years, adding to the current account deficits of oil-importing countries, including the United States.
- Financial market factors: Large current account deficits have been financed by steady capital inflows into the United States, mostly through fixed-income instruments, including asset-backed securities. These inflows included large purchases of corporate and agency bonds by private investors attracted by the perceived liquidity and innovativeness of U.S. financial markets, as well as significant official purchases of U.S. Treasury and agency bonds.

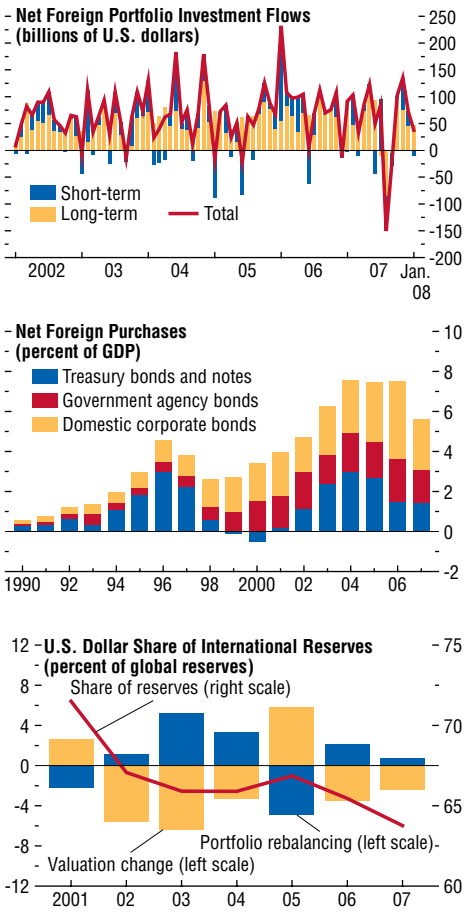
Since mid-2007, however, financial and cyclical developments have intensified the dollar's depreciation. Market turbulence has increased uncertainty about the valuation and liquidity of U.S. securitized assets, leading to sharp declines in private demand for corporate and agency bonds (previous areas of strength), depressing net portfolio inflows, and increasing pressure on the dollar (second figure). At the same time, the increasing cyclical weakness of U.S. growth, interest rate cuts, and expectations of further monetary easing have also weighed on the dollar.

Is the Dollar's Adjustment Complete?

With the dollar now close to its historic low in real effective terms, is the adjustment now complete, or perhaps excessive? The analysis of the Consultative Group on Exchange Rate Issues (CGER) of the IMF suggests that the U.S. dollar has now moved closer to its medium-term equilibrium level but still remains somewhat on the strong side. The CGER analysis is based on three complementary approaches (Lee and others, 2008):

- The macroeconomic balance (MB) approach still finds some misalignment, based on the difference between the projected medium-

United States: Portfolio Flows



Sources: Currency Composition of Official Foreign Exchange Reserves (COFER); Haver Analytics; and U.S. Treasury, International Capital System.

Box 1.2 *(continued)*

term current account balance and a "sustainable" level of current account. The sustainable current account of the United States is estimated to be a deficit in the range of 2 to 3 percent of GDP, determined as a function of medium-term fundamentals including demographics and the structural fiscal position. The U.S. current account deficit is projected to come down to about 4 percent of GDP in 2013, but will still exceed the estimated sustainable deficit level. This gap is substantially reduced relative to estimates made a year ago but still suggests that further real depreciation may be needed to bring the current account deficit to a sustainable level.

- The external sustainability (ES) approach indicates a substantial misalignment. For the United States, this approach is based on the difference between the projected medium-term trade balance and the level of trade balance that would stabilize the U.S. net foreign assets (NFA) position at its 2006 level. The NFA-stabilizing trade balance is calculated to be a deficit of about 2 percent of GDP, well below the projected 2013 trade deficit of almost 4 percent of GDP. This gap suggests that sizable real depreciation may be needed to bring down the trade deficit to the NFA-stabilizing level.
- The reduced-form equilibrium real exchange rate regression (ERER) approach finds that the dollar is closer to its medium-term equilibrium value than under the MB or ES approaches. Under this approach, an equilibrium value is estimated directly as a function of medium-term fundamentals including productivity, NFA, and the terms of trade. The real effective depreciation since 2002 reduced the larger overvaluation estimate for the early 2000s, as actual exchange rate depreciation outpaced the more gradual decline in the equilibrium exchange rate that reflected the deterioration in the U.S. NFA and terms of trade.

The CGER analysis thus suggests that the U.S. dollar still remains somewhat on the strong side. However, two mitigating factors could limit the exchange rate pressure. The first is valuation gains that could moderate the decline in U.S. external indebtedness—measured by the NFA position—implied by current account projections. According to preliminary estimates, the U.S. NFA position at end-2007 was broadly unchanged from its end-2006 level, despite a current account deficit of 5½ percent of GDP, owing to valuation gains on U.S. holdings of foreign equities and the depreciation of the currency. Indeed, favorable valuation gains have supported the U.S. NFA position for many years, offsetting a large part of the cumulative current account deficit.[1] Given historical experience, valuation gains—albeit smaller than in the past few years—may continue to support the U.S. NFA position in the future.

The second mitigating factor is uncertainty regarding the pace and size of the current account adjustment that will follow from the recent depreciation. The narrowing of the deficit since 2006 may well be the beginning of a belated but full-scale adjustment. For example, changing trade and financial practices, including extensive outsourcing and currency hedging, may have delayed adjustment to exchange rate changes relative to lags in earlier trade equations.[2] Thus, the current account deficit could narrow more significantly over time, even with the dollar staying near the current low level. During the adjustment phase, however, the still-large deficit would continue to be a potential source of further downward pressure on the dollar.

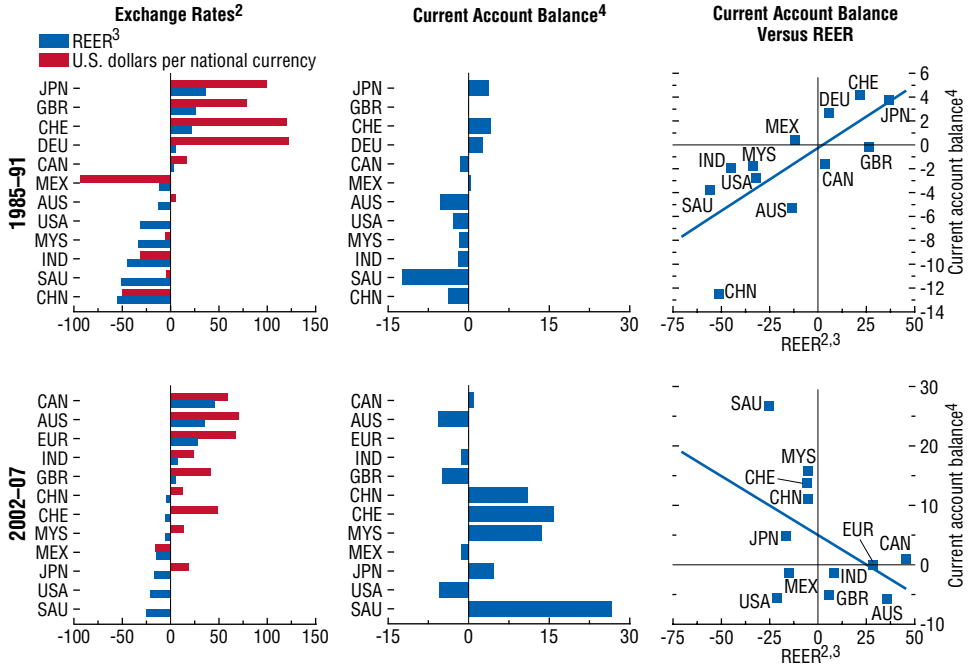
What Are the Risks from a Weak Dollar?

The continued perception of downside risk to the dollar has rekindled concerns about the dollar's role as the world's primary reserve currency and has drawn attention to the decline in the dollar's share in official reserve holdings since 2002. In fact, the bulk of this decline is

[1]For further details, see Box 3.1 in the April 2007 *World Economic Outlook*.

[2]For related discussions, see Greenspan (2005) and Chapter 3 of the April 2007 *World Economic Outlook*.

Current Account and Exchange Rate Developments, 1985–91 Versus 2002–07[1]



Source: IMF staff calculations.

[1]AUS: Australia; CAN: Canada; CHE: Switzerland; CHN: China; DEU: Germany; EUR: euro area; GBR: United Kingdom; IND: India; JPN: Japan; MEX: Mexico; MYS: Malaysia; SAU: Saudi Arabia; USA: United States.

[2]Percent change from February 1985 to February 1991 for 1985–91 and from February 2002 to December 2007 for 2002–07.

[3]Real effective exchange rate index. A positive value represents an appreciation.

[4]Percent of GDP in 1985 for 1985–91 and 2007 for 2002–07.

estimated to reflect valuation changes from the dollar depreciation rather than active diversification away from the dollar by official reserve managers (see second figure). Nonetheless, further dollar weakness could diminish the appeal of dollar assets sufficiently to encourage more active portfolio reallocation away from dollar assets, including by U.S. investors.[3] Given the continued large external financing needs of the United States, even a gradual diversification away from dollar assets could trigger a sharp dollar depreciation, particularly in the context of continued uncertainty and turbulence in financial markets.

Sovereign wealth funds, whose assets have grown to a significant size in many countries, have helped stabilize financial markets and support the dollar by means of capital injections into several financial institutions since summer 2007. Because they are likely to have longer investment horizons than many private funds, sovereign wealth funds could continue to be a stabilizing force in global financial markets. At the same time, managers of these funds could put greater weight on investment returns than do managers of official reserves, and the increase in (reserve) assets under their manage-

[3]Currently, U.S. investors display significant home bias, especially with respect to bonds. However, if concerns about securitization and the quality of U.S. assets linger, there could be sizable U.S. outflows.

Box 1.2 *(concluded)*

ment could facilitate diversification of official assets away from dollar assets and add to the downward pressure on the dollar.

Another concern stems from the fact that, though orderly, the current episode of dollar depreciation has been disconnected from the pattern of global imbalances in several cases. Bilateral and multilateral exchange rate movements since 2002 have borne little semblance to the distribution of current account surpluses, in contrast to the previous dollar depreciation episode over the late 1980s, when the currencies of the major surplus countries all went through larger appreciations than other currencies (third figure). In the current episode, a number of countries with large current account surpluses have linked their currencies tightly to the dollar, thereby hindering adjustment. A continued mismatch in this regard could result in a reallocation of—rather than a reduction in—global imbalances and could eventually produce new imbalances.

loss of confidence in structured financing were to transform the current credit squeeze into a full-blown credit crunch.

Can Emerging and Developing Economies Decouple?

In strong contrast to earlier periods of global financial disruption, the direct spillovers to emerging and developing economies have been largely contained so far. Issuance activity by these economies has moderated since August 2007, compared with the very high rates experienced during the previous year, but overall foreign exchange flows have been largely sustained, and international reserves have continued to rise (Figures 1.8 and 1.9). Foreign direct investment and portfolio equity flows have generally remained strong, although there have been sharp portfolio outflows during periods of market nervousness. Most emerging markets have significantly outperformed those in advanced economies since last summer, even though spreads on emerging economies' sovereign and corporate debt have widened and equity prices retreated in early 2008.

Within this broad picture, a number of countries that had been heavily reliant on short-term cross-border borrowing—either lending by foreign banks or offshore borrowing by domestic banks—were affected more dramatically by the tightening of liquidity conditions in August 2007, and many faced disruptions in local interbank markets. The immediate dislocations were handled effectively, but capital inflows slowed in some countries—including Kazakhstan and Latvia—constraining domestic credit and slowing GDP growth. To date, none of these economies has faced an external crisis of the sort seen in previous episodes of emerging economy turbulence.

Similarly, on the trade side, spillovers from slowing activity in the advanced economies have been limited to date. There has been some impact on exports by a number of economies that trade heavily with the United States. Moreover, export revenues for metals exporters have flattened as prices have come down from their peaks in mid-2007. Overall trading activity has been well sustained, however, with important support from the strong growth of domestic demand in emerging economies' trading partners.

Against this background, although there were signs of slowing activity in some emerging and developing economies in the latter part of 2007, for the year as a whole growth remained a robust 7.9 percent, even faster than the rapid pace achieved in 2006. Moreover, as in recent years, the strong growth has been maintained across all regions, including Africa and Latin America, as discussed in greater detail in Chapter 2. Indeed, many countries continue to face the challenge of dealing with rising infla-

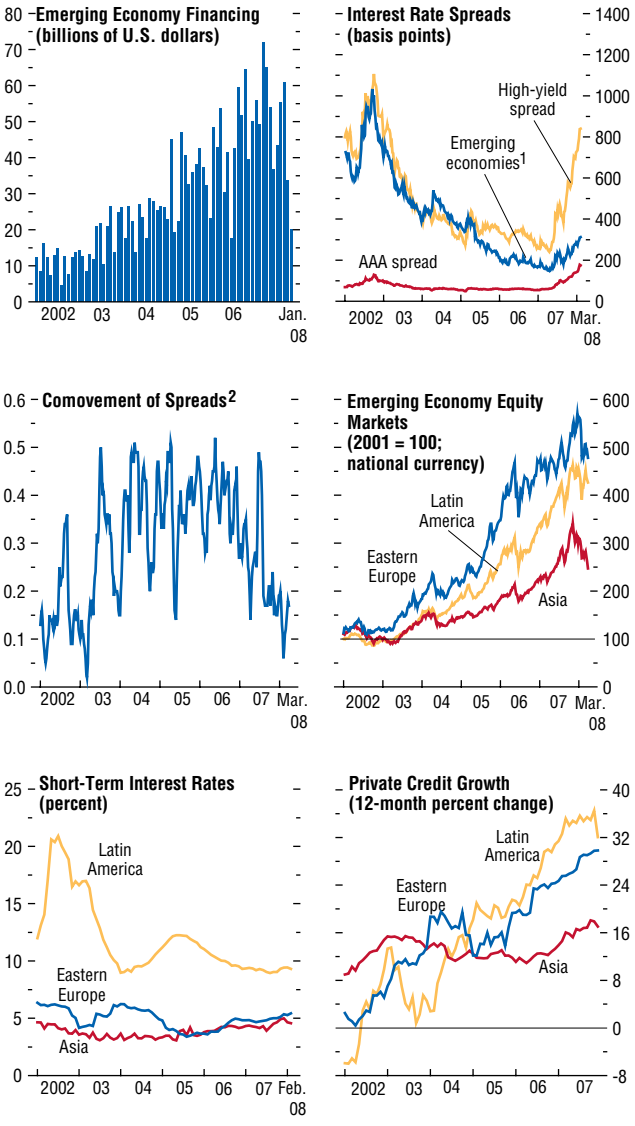
tion rates, driven by strong domestic demand, rapid credit growth, and the heavy impact of buoyant food and energy prices. Thus, central banks have generally continued to tighten monetary policy in recent months (Chile, China, Colombia, Mexico, South Africa, Peru, Poland, Russia, and Taiwan Province of China have all raised interest rates since the October 2007 *World Economic Outlook*), although some central banks have begun to unwind earlier tightening (the Philippines, Turkey). For some countries, however—notably China and the Middle Eastern oil exporters—monetary tightening has been constrained by the relative inflexibility of their currencies vis-à-vis the weakening U.S. dollar. In China, the renminbi's rate of appreciation against the dollar has increased appreciably since August, but its movement has been more modest in effective terms, and the currency is judged to be still substantially undervalued.

What explains the resilience of the emerging and developing economies? Will they be able to effectively decouple from the substantial slowdown—and possible recession—in the advanced economies in 2008? There are two main sources of support for these economies: strong growth momentum from the productivity gains from their continuing integration into the global economy and stabilization gains from improved macroeconomic policy frameworks. What is important is not just how these factors have evolved in individual countries, but also how they have interacted across countries to change the dynamics of global growth.

Previous issues of the *World Economic Outlook*, as well as a growing literature more broadly, have analyzed in some detail how a combination of market reforms and advances in technology have allowed an unbundling of the production process and a global harnessing of underutilized labor resources, particularly in China, India, and emerging Europe. In turn, this process has promoted the sustained rapid increases in productivity that have underpinned the striking divergence in GDP growth performance between advanced economies and developing economies since 2000.

Figure 1.8. Emerging Economy Financial Conditions

Capital flows to emerging economies have moderated since August 2007, coming down from previous very high rates. Prices on emerging economies' sovereign bonds and equities have softened, but by less than the drop in advanced economies' securities.

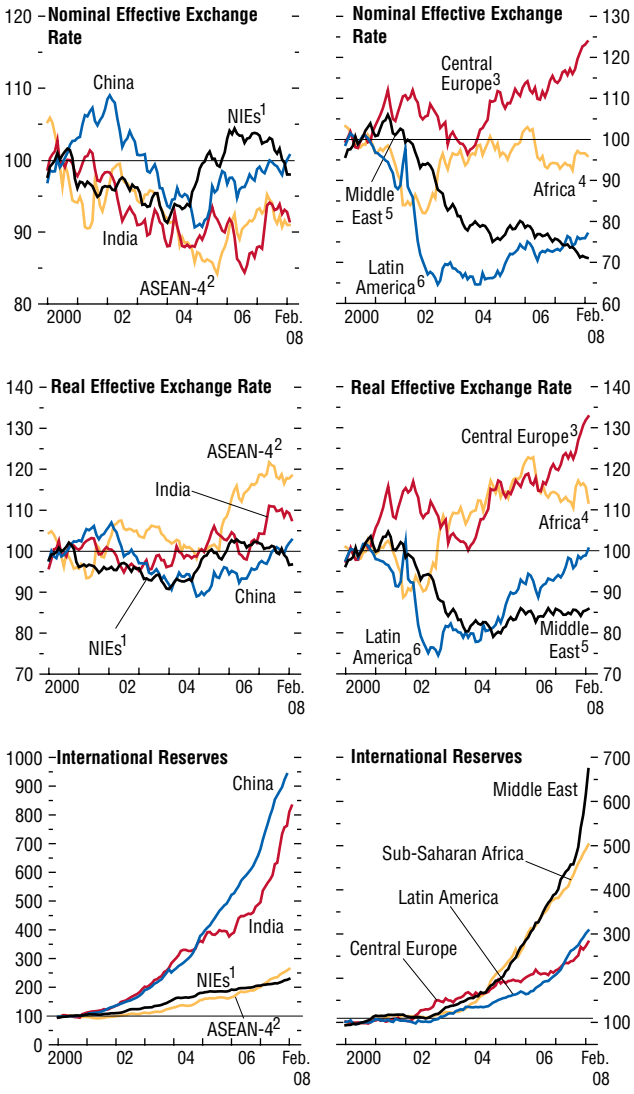


Sources: Bloomberg Financial Markets; Capital Data; IMF, *International Financial Statistics;* and IMF staff calculations.
[1]JPMorgan EMBI Global Index spread.
[2]Average of 30-day rolling cross-correlation of emerging economy debt spreads.

Figure 1.9. External Developments in Emerging and Developing Economies

(Index, 2000 = 100)

Exchange rates in emerging and developing economies have generally continued to appreciate, in the face of strong foreign exchange inflows and despite heavy intervention, which has pushed reserves up to record levels.



Sources: IMF, *International Financial Statistics;* and IMF staff calculations.

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

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

[3]Czech Republic, Hungary, and Poland.

[4]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.

[5]Bahrain, Egypt, I.R. of Iran, Jordan, Kuwait, Lebanon, Libya, Oman, Qatar, Saudi Arabia, Syrian Arab Republic, United Arab Emirates, and Republic of Yemen.

[6]Argentina, Brazil, Chile, Colombia, Mexico, Peru, and Rep. Bolivariana de Venezuela.

As a result, there have been two important shifts in the growth dynamic of the global economy. The first is that growth in global activity over the past five years has been dominated by the emerging and developing economies—China has accounted for about one-quarter of global growth; Brazil, China, India, and Russia for almost one-half; and all the emerging and developing economies together for about two-thirds, compared with about one-half in the 1970s (Figure 1.10). Growth in these economies also is more resource-intensive, given their patterns of production and consumption (see Chapter 5 of the September 2006 *World Economic Outlook*). One consequence of these trends is that the increasing demand for key commodities such as oil, metals, and foodstuffs is now driven by growth in these economies—they account for more than 90 percent of the rise in consumption of oil products and metals and 80 percent of the rise in consumption of grains since 2002 (with biofuels representing most of the remainder). This has contributed to the sustained strong increase in commodity prices observed over the past year, despite moderating growth in the advanced economies, and has been an important factor behind the strong recent performance of commodity-exporting countries in Africa and Latin America, as well as oil exporters in the Middle East.

The second, related shift is the growing importance of emerging and developing economies in the structure of global trade. These economies now account for about one-third of global trade and more than one-half of the total increase in import volumes since 2000. Moreover, the pattern of trade has changed. Almost one-half of exports from emerging and developing economies is now directed toward other such economies, with rising intraregional trade within emerging Asia most notable. And, as explored in more detail in Chapter 5, countries in Africa and Latin America are also achieving some success in diversifying the destinations of their exports and in broadening their export bases, leveraging more successfully than in the past the benefits of the present commodity

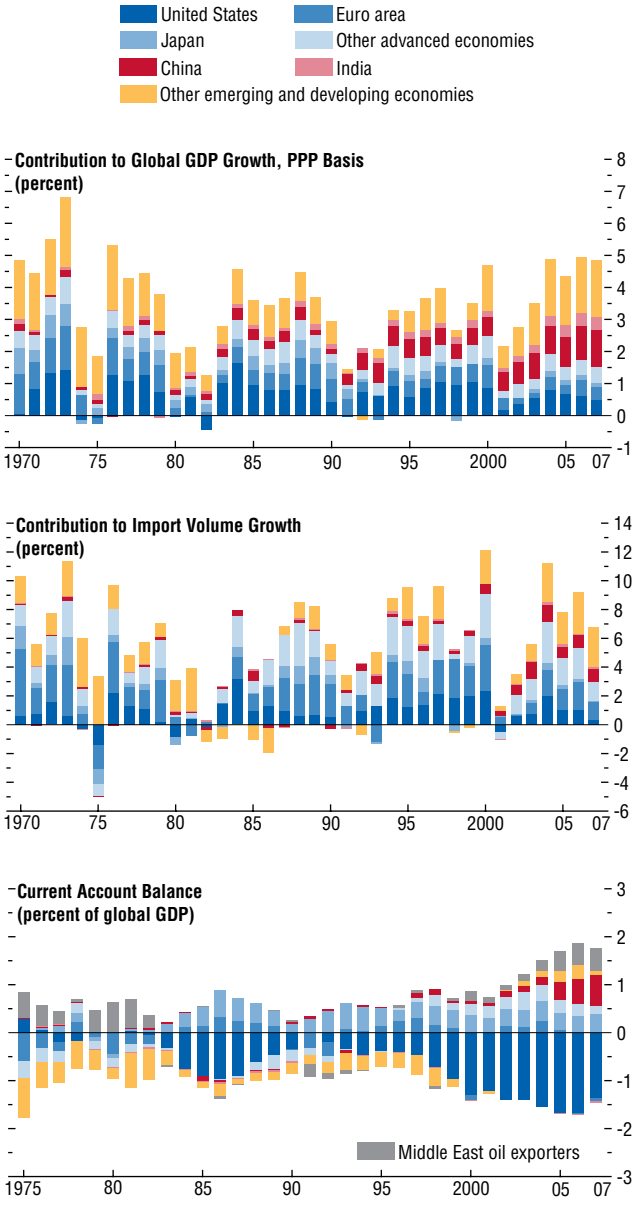
price boom to increase exports of higher-value-added manufactured products. As a result, the advanced economy business cycle may play a less-dominant role in driving swings in activity for the emerging and developing economies, even as these economies become increasingly open to trade.

Turning to policies, most emerging and developing economies have maintained disciplined macroeconomic policies in recent years, bringing down fiscal deficits and reducing inflation. Public balance sheets have been strengthened, and external vulnerabilities have been substantially reduced as international reserves have risen to historic highs and reliance on external borrowing has been largely contained—for example, see Chapter 2 for a more detailed discussion of Latin America, a region that had been heavily affected by sudden stops in capital flows. Indeed, in the aggregate, these economies have become significant exporters of savings, in strong contrast to the decades before 2000. To be sure, concerns remain, including that government spending has been allowed to rise too quickly on the basis of rapidly rising tax revenues that may be unsustainable when growth slows, that domestic credit booms could weaken financial institutions' balance sheets, and that some countries, particularly in emerging Europe, have built up large current account deficits financed at least in part by short-term and debt-related flows (again, see Chapter 2). But, although pockets of vulnerability certainly remain, the overall framework of macroeconomic policy has been substantially improved in these economies.

The combination of strong internal growth dynamics, a rising share of the global economy, and more-resilient policy frameworks seems to have helped reduce the dependence of emerging and developing economies on the advanced economy business cycle—but spillovers have not been eliminated. This overall assessment is supported by recent work by Akin and Kose (2007), which estimates that growth spillovers from advanced economies to emerging and developing economies have decreased substantially since

Figure 1.10. Growing Global Role of Emerging and Developing Economies

Emerging and developing economies have contributed about two-thirds of growth in output (in purchasing-power-parity terms) and more than one-half of growth in import volumes since the recent upswing in 2002. These economies have also registered large current account surpluses, in contrast to the usual collective deficit prior to 2000.



Source: IMF staff calculations.

the mid-1980s, but remain sizable (about 35 percent pass-through for emerging economies and 45 percent pass-through for more commodity-reliant developing economies). Similarly, work on spillovers in the April 2007 *World Economic Outlook* concluded that spillovers remain substantial, particularly for highly open economies, and that spillovers are nonlinear—mild during advanced economy slowdowns but more severe during recessions. One cause of this nonlinearity may lie in the importance of financial channels, including the high synchronization of global equity prices during a correction and the potential for "sudden stops" in financial flows to emerging economies that are seen to be vulnerable at times of financial stress.

The shift to a multipolar world that is much less dependent on the United States as the locomotive for global growth has affected the dynamics of the global economy and carries implications for the analysis of risks to the outlook and policy responses, which are taken up later in this chapter. Three trends are particularly striking:

- The strong dynamism of domestic demand in emerging and developing economies has provided a "trade shock absorber," enabling a robust expansion of U.S. exports over the past year even as U.S. domestic demand has slowed. These same factors, however, have muted the "commodity price shock absorber" that in the past has effectively cushioned the impact of downturns in aggregate demand in the advanced economies. Most strikingly, the rise of oil prices to record highs in early 2008, despite slowing demand in the advanced economies, has simultaneously dampened consumption and raised inflation concerns in the advanced economies, thus constraining the potential for a monetary policy response.
- The shift of the emerging and developing economies as a group to become net savers has contributed to the increasing global availability of savings and has put downward pressure on real interest rates. Arguably, the resulting abundance of liquidity helped to spur the rapid financial innovations and fund the excesses in global financial markets witnessed in recent years, thereby sowing the seeds for the current financial market turbulence. Recently, the infusion of financial resources from sovereign wealth funds from emerging and developing economies to recapitalize U.S. banks has provided a valuable "financial shock absorber." Looking ahead, an important issue is whether the dislocations in U.S. financial markets could boost the flow of funds into other markets, contributing to the development of asset price bubbles or market excesses elsewhere. For example, little is known about how the large petrodollar surpluses of recent years have been invested. Box 2.2 presents evidence that a substantial portion of these resources has been channeled to emerging economies, particularly emerging Europe. Such flows could rise further, particularly if energy prices stay high, but they could also dwindle if a global downturn were to bring oil prices down.
- The processes of external adjustment and policy coordination have become more multifaceted and complex. An effective response to a deepening downturn in global activity would need to involve the large emerging economies as well as the advanced economies, in recognition of both their increasing share of global aggregate demand and the policy space they have earned through disciplined policy implementation. Similarly, unlike in the 1980s, global current account imbalances are no longer an issue relevant only to the large advanced economies—the Multilateral Consultation on Global Imbalances organized by the IMF last year involved China and Saudi Arabia in addition to the major advanced economies in recognition of this development. Progress is being made to implement policy plans discussed during the Multilateral Consultation, but the coexistence of flexible with more heavily managed and fixed exchange rate regimes among major economies has compromised the effectiveness of exchange rate movements in reducing global imbalances (Box 1.3).

Box 1.3. Multilateral Consultation on Global Imbalances: Progress Report

In the nine months since the report on the Multilateral Consultation on Global Imbalances (MC) was published, the global economy has been buffeted by a series of shocks that were not fully anticipated at the time of the consultations.[1] Most notably, financial turmoil—precipitated by the U.S. subprime mortgage crisis—has gripped money and credit markets in the United States and Europe since summer 2007. Concerns about a credit crunch and a sharper slowdown in the economy have drawn policy attention to monetary easing and fiscal stimulus in the United States. At the same time, with a weaker dollar and moderating growth, the U.S. current account deficit has narrowed and its outlook has markedly improved. Against this backdrop, is the MC policy framework still relevant, or has it been overtaken by recent events?

Although financial market dislocations raise important issues for policymakers, the policy objectives of the MC remain relevant to help mitigate the risks attached to still-high global imbalances. If anything, the dual objectives of the MC—to help facilitate an orderly unwinding of imbalances and to do so in a manner supportive of global growth—have gained increased relevance in light of recent financial market disruptions and a possible slowdown in global growth. The U.S. slowdown, for example, highlights the importance of ensuring strong domestic demand elsewhere to support growth in the global economy. In addition, the abrupt and unexpected nature of recent financial disruptions underscores concerns of a disorderly market adjustment that IMF policy advice has long sought to avoid. Against this background, this box reviews recent progress made in implementing MC policy plans. It also assesses the outlook for adjustment in global imbalances and the evolving risks in light of recent economic and policy developments. Although the outlook has improved, the continuing risks associated with still-large imbalances—particularly at present—argue for continuing progress on the relevant policy plans to mitigate such risks, but with the flexibility to take due account of the changing global context.

What Progress Has Been Made?

A key achievement of the MC was the set of policy plans set out in some detail by participants, which were congruent with their domestic objectives and the International Monetary and Financial Committee (IMFC) strategy to narrow imbalances.[2] Given the continued relevance and importance of these policy plans, what steps have been taken?

China has made some progress in rebalancing growth toward domestic consumption, including through increased public spending on social programs and financial sector reforms, and has taken incremental steps toward greater currency flexibility.

- Public spending continues to be reoriented toward social programs, which are anticipated to be a major focus of the 2008 budget. This includes the continued rollout of the rural cooperative health system, free-of-charge rural compulsory education, and several enhanced social security programs.
- Financial reforms include easing some restrictions on foreign participation in domestic securities companies, streamlining the process

Note: The main author of this box is Hamid Faruqee.

[1]The Staff Report on the Multilateral Consultation on Global Imbalances was publicly released on August 7, 2007, and is available at www.imf.org (see Public Information Notice (PIN) No. 07/97). Background information is summarized in Box 1.3 of the October 2007 *World Economic Outlook*.

[2]As stated in the IMFC Communiqué of September 17, 2006, this strategy comprises "steps to boost national saving in the United States, including fiscal consolidation; further progress on growth-enhancing reforms in Europe; further structural reforms, including fiscal consolidation, in Japan; reforms to boost domestic demand in emerging Asia, together with greater exchange rate flexibility in a number of surplus countries; and increased spending consistent with absorptive capacity and macroeconomic stability in oil-producing countries." Country-specific policy plans consistent with the IMFC strategy were jointly announced by MC participants on April 14, 2007; plans can be found in the appendix to the MC Staff Report.

Box 1.3 *(continued)*

for bond issuances for listed companies, and allowing foreign invested companies (that is, companies that are locally incorporated) to issue bonds and equities in China.[3] Tax reform in the external sector includes lower tariffs on imports of several raw materials and agricultural products, higher export taxes on energy-intensive industries, and a unified corporate tax rate for domestic and foreign-funded enterprises.

- Exchange rate flexibility has increased incrementally. Since the currency band for daily exchange rate fluctuations was widened (from 0.3 percent to 0.5 percent) in mid-2007, the renminbi has shown a greater degree of bilateral appreciation against the dollar, albeit less so in effective terms given the dollar's multilateral depreciation. Since last summer, China's currency has appreciated by about 4 percent against the dollar and about 1 percent in real effective terms.[4]

In Saudi Arabia, the authorities have ramped up spending on needed social and economic infrastructure. Total spending in the 2007 budget increased by 11 percent relative to 2006. Staff projections suggest that the 2008 budget outturn will be more expansionary. Outlays in economic infrastructure include oil-related investment aimed at boosting production and refining capacity and public-private partnership projects, for which medium-term plans have been expanded by 60 percent since 2006. There is a high import content associated with these projects. With domestic inflation pressures rising, it will be important to prioritize spending in areas such as infrastructure to help relieve supply bottlenecks.

Japan has made progress in reforming product markets, and fiscal consolidation has also advanced faster than anticipated.

- Some reforms have been introduced to liberalize product markets. Japan-Post became a joint-stock company in 2007. With respect to trade openness, several economic partnership agreements were also signed.
- Some steps have been taken to level the playing the field for inward foreign direct investment. The government removed a perceived impediment by granting capital gains tax deferrals in "triangular" mergers (through which a foreign company acquires a Japanese target via a local unit).

In the euro area, member states have taken measures to accelerate financial integration and to better align incentives in labor markets. Progress in product market liberalization has been more limited, although implementation of the Services Directive is ongoing.

- There has been notable progress at the EU level in reducing national barriers to a single market in financial services, including passage of the Payment Services Directive, which is needed to create a single European payments area. A new code of conduct has been introduced to help address fragmented clearing and settlement services in Europe.
- EU member states have moved on recommendations to improve flexibility and security in labor markets. Wage-bargaining systems in some countries are gradually moving in the direction of greater wage and working-time flexibility through less-centralized bargaining and more differentiated agreements.[5] However, there has been much less progress (with a few exceptions) on promoting cross-border labor mobility.
- Progress to enhance competition in services is visible, though in a limited number of countries.[6] Some measures have been carried out to open up network industries in the rail, tele-

[3]The quotas for the Qualified Domestic Institutional Investor program and for the Qualified Foreign Institutional Investor program were also substantially increased in 2007.

[4]Based on the average January 2008 exchange rate versus the August 22–September 19 period average (October 2007 *World Economic Outlook* reference period).

[5]Related initiatives include limiting minimum wage increases and relaxing the 35-hour-workweek restriction in France and lowering payroll taxes in Germany.

[6]In France, initiatives include a reduction in legal barriers to the establishment of large retail shops, restaurants, and hotels.

com, and energy sectors in several member states. Fewer countries have taken measures in the retail sector.

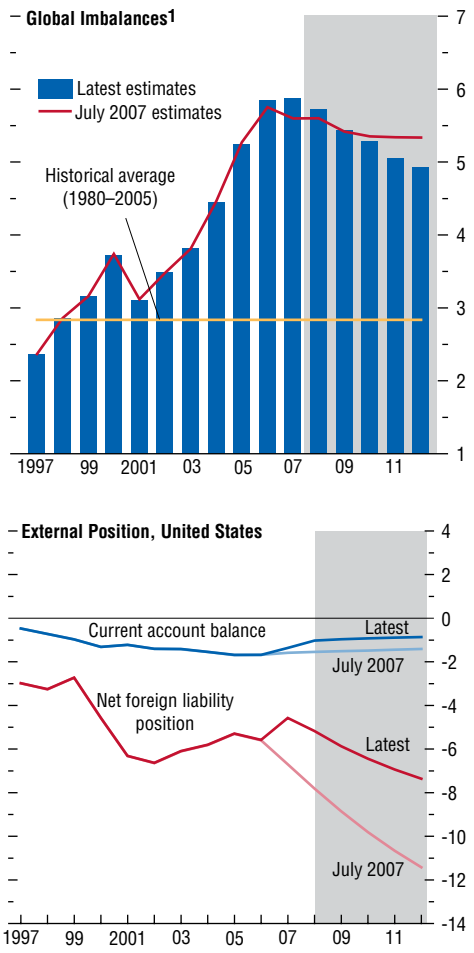
In the United States, alongside a narrowing current account deficit, the major advance has been the continued decline in the federal budget deficit, ahead of earlier projections. The unified federal budget deficit was reduced to 1.2 percent of GDP in fiscal year (FY) 2007, significantly smaller than originally budgeted. Looking ahead, the deficit is expected to widen temporarily to 3¼–3½ percent of GDP in FY2008 and FY2009, as a result of the cyclical downturn and the $170 billion temporary stimulus package and other spending increases (mainly security related). The administration's budget aims to bring down the deficit and to achieve a small surplus in FY2012, although attaining this will require very tight control in the face of serious budgetary challenges. The IMF staff's medium-term projections foresee the budget gap narrowing modestly toward the administration's goal—which remains an essential objective for addressing longer-term pressures on public finances.

What Are the Outlook and Risks for Global Imbalances?

Overall, MC partners have made welcome progress on several fronts with respect to their policy plans. Reflecting various economic and policy factors, the outlook for global imbalances has also moved in the right direction (see figure). Global imbalances appear to have peaked in 2006–07 and are projected to narrow somewhat faster than earlier projected, although they remain large by historical standards.

Looking specifically at the United States, its current account position and trajectory have improved markedly since the MC. As discussed in more detail in Box 1.2, with moderating growth and a weaker dollar, the U.S. external current account deficit has narrowed faster than expected (to about 5½ percent of GDP in 2007), while the U.S. net foreign asset position has remained remarkably stable. The improvement in the current account's projected trajectory over the medium term partly reflects weaker residential investment and some gradual recovery in personal saving rates amid tighter credit availability and slower growth. The improved trajectory for U.S. net external assets reflects smaller flow deficits, as well as a stronger starting point, given strong valuation gains and return differentials in favor of U.S. foreign investment.

Outlook for Global Imbalances
(Percent of global GDP)



Source: IMF staff estimates.
[1]Sum of absolute value of all current account balances.

Box 1.3 *(concluded)*

Counterparts to the U.S. external adjustment include China's shift to a modestly lower trajectory for its current account surplus compared with earlier projections, given that domestic consumption is projected to strengthen over the medium term (from 51 percent to 57 percent of GDP). In addition, reflecting exchange rate appreciation and weaker growth in partners, the euro area's current account deficit is projected to widen. And external surpluses in Saudi Arabia are expected to moderate, reflecting higher investment and infrastructure spending that raise the non-oil trade deficit.

However, risks related to imbalances have not dissipated. Indeed, some risks have become more acute in light of economic developments and recent financial disruptions. Key reasons include the following:

- In a period of fragile market confidence, risks of a disorderly market adjustment remain a clear concern. Although dollar depreciation has been orderly thus far, the level of imbalances remains much larger than in past episodes of significant dollar adjustment (see Box 1.2). Moreover, sustained large losses on foreign holdings of U.S. external assets, together with reduced confidence in some securitized assets and structured finance products, suggest that foreign financing could be less forthcoming.
- The recent asymmetric pattern of currency movements against the U.S. dollar—which has depreciated noticeably less against the currencies of some key surplus countries—continues to underscore the need for a broad-based adjustment (see Box 1.2). Disproportionate adjustment, on the other hand, could fuel protectionist sentiments, especially in the context of slowing global growth.[7]
- In the United States, tighter lending standards, declining house prices, and slower growth may support some normalization in household saving from low levels. But prospects for softer U.S. demand would need to be offset by stronger domestic demand elsewhere to avert a deeper global slowdown.
- Despite some slowing in advanced economies, volatile oil prices—which have ascended to new highs—could slow any narrowing of global imbalances. Given strong demand growth from emerging markets and ongoing concerns of supply disruptions, tight market conditions imply continued risks of oil price spikes which could add to the imbalance problem.

This suggests that the MC road map for policies remains relevant and argues for continuing progress on these plans, though with the flexibility to account for the changing global context. From a global perspective, against the background of ongoing financial turmoil and a clouded outlook for the global economy, tangible further progress on these policy plans by all participants would facilitate a smoother shift in the global pattern of demand to ease global risks attached to imbalances and provide needed support to the global economy at a time of heightened market uncertainty.

[7]For analysis on the countercyclical nature of trade protection, see Bagwell and Staiger (1997) and the references cited therein. Beyond tariff and nontariff barriers, Leidy (1996) finds that a weaker macroeconomy may also spur antidumping measures and countervailing duties.

Outlook and Risks for the Global Economy

The spreading crisis in financial markets has further dampened the global outlook since the publication of the January 2008 *World Economic Outlook Update*. Under the IMF's current baseline projection, conditions in financial markets will stabilize only gradually during the course of 2008 and 2009, risk spreads will remain substantially wider than the exceptionally low levels that prevailed prior to August 2007, and bank lending standards will continue to tighten. Commodity prices will remain roughly at the high levels of end-2007. Under the baseline, global growth will slow from 4.9 percent in 2007 to 3.7 percent in 2008 and 3.8 percent in 2009.

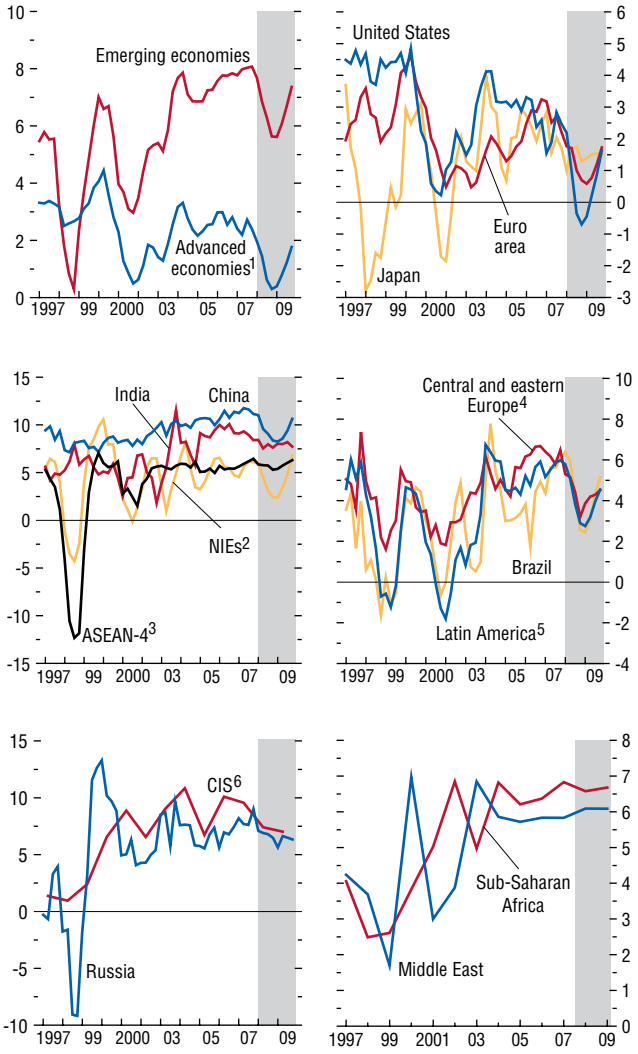
Among the major advanced economies, the United States is projected to tip into a mild recession in 2008, despite aggressive rate cuts by the Federal Reserve and timely implementation of a fiscal stimulus package. The restraint on demand from the housing cycle, as falling home prices prompt rising foreclosures and further price declines, is being reinforced by an interconnected financial cycle: pressure on capital and credit forces asset sales, which lowers market values and further intensifies the downward swing of the credit cycle. As macroeconomic and financial weakness feed off each other, residential investment will continue to fall; consumption will decline as households retrench in the face of falling home prices, reduced employment, and tighter credit; and business investment will also take a hit. The incipient recovery in 2009 is likely to be slow, held back by continued household and financial balance sheet strains, consistent with the historical experience after major housing busts (Figure 1.11 and Chapter 2 of the April 2003 *World Economic Outlook*). Other advanced economies, particularly in Western Europe, will slow to well below potential, dampened by both trade and financial channels. Growth in emerging and developing economies will also ease but will remain robust during both 2008 and 2009. Headline inflation will remain elevated in the first half of 2008, but will moderate gradually thereafter, reflecting the receding impact of recent increases in commodity prices and the emergence of slack in some economies.

Although these projections now incorporate some of the negative risks identified earlier, the overall balance of global risks remains tilted to the downside. As shown in the global outlook fan chart, the IMF staff now sees a 25 percent chance of growth slowing to 3 percent or less in 2008 and 2009, equivalent to a global recession (Figure 1.12). The greatest uncertainty comes from the still-unfolding events in financial markets, particularly the potential for the deep losses related to the U.S. subprime mortgage sector and other structured credits to further impair financial system capital and cause the

Figure 1.11. Global Outlook

(Real GDP; percent change from a year ago)

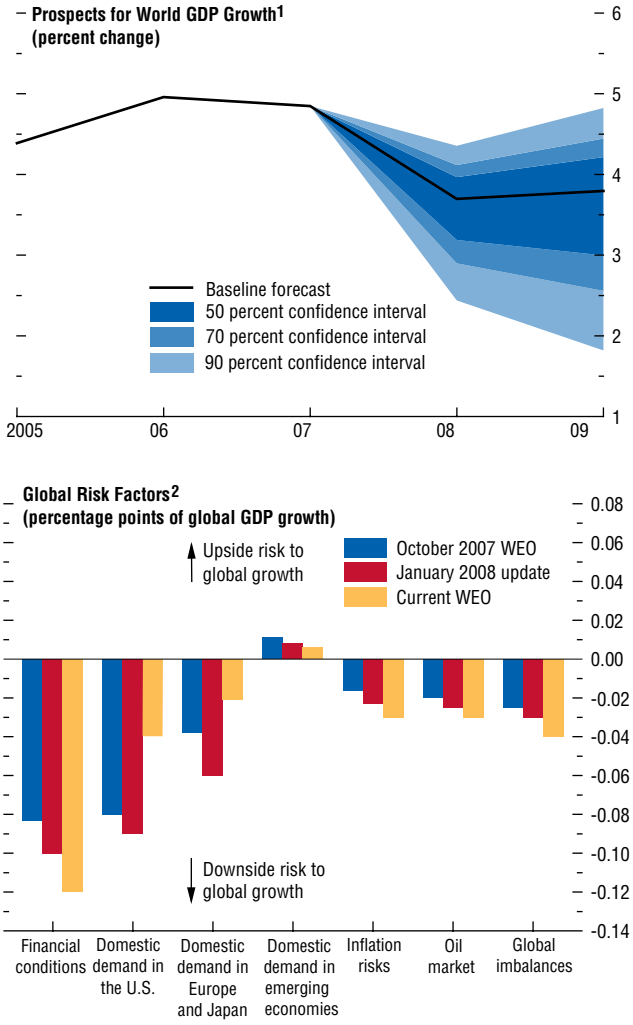
The global economy is projected to cool in 2008, before staging a modest recovery in 2009. Among the advanced economies, growth would slow the most in the United States, dipping into recession, but activity in the euro area and Japan would also moderate. Growth in emerging and developing economies would ease but remain at a rapid pace, with continued strength across all regions.



Sources: Haver Analytics; and IMF staff estimates.
[1]Australia, Canada, Denmark, euro area, Japan, New Zealand, Norway, Sweden, Switzerland, United Kingdom, and United States.
[2]Newly industrialized Asian economies (NIEs) comprise Hong Kong SAR, Korea, Singapore, and Taiwan Province of China.
[3]Indonesia, Malaysia, Philippines, and Thailand.
[4]Czech Republic, Estonia, Hungary, Latvia, Lithuania, and Poland.
[5]Argentina, Brazil, Chile, Colombia, Mexico, Peru, and Rep. Bolivariana de Venezuela.
[6]Commonwealth of Independent States.

Figure 1.12. Risks to the Global Outlook

Risks to the global outlook remain on the downside with about a 25 percent risk that global growth will fall to 3 percent or less. The largest adverse risks relate to global financial conditions and domestic demand in the United States. Global imbalances remain a concern.



Source: 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 Box 1.3 in the April 2006 *World Economic Outlook* for details.

[2]The chart shows the contributions of each risk factor to the overall balance of risks to global growth, as reflected by the extent of asymmetry in the probability density for global GDP growth shown in the fan chart. The balance of risks is tilted to the downside if the expected probability of outcomes below the central or modal forecast (the total "downside probability") exceeds 50 percent (Box 1.3 in the April 2006 *World Economic Outlook*). The bars for each forecast vintage sum up to the difference between the expected value of world growth implied by the distribution of outcomes (the probability density) shown in the fan chart and the central forecast for global GDP growth. This difference and the extent of asymmetry in the probability density in the fan chart also depend on the standard deviation of past forecast errors—which, among other factors, varies with the length of the forecasting horizon. To make the risk factors comparable across forecast vintages, their contributions are rescaled to correct for differences in the standard deviations.

current credit squeeze to mutate into a credit crunch. The interaction between negative financial shocks and domestic demand, particularly through the housing market, remains a concern for the United States and to a somewhat lesser degree for western Europe and other advanced economies. There is some upside potential for domestic demand in the emerging economies, although these economies are exposed to negative external risks through both trade and financial channels. At the same time, there are increased risks related to inflationary pressures and high oil prices, despite slower projected growth, reflecting prospects for continued tight conditions in commodity markets and the recent upward drift of core inflation. Finally, risks related to global imbalances remain a concern.

Turning first to financial risks, the increasingly protracted market turmoil poses the key downside risk for the global economy. Estimates of expected losses from the U.S. mortgage market have been revised upward repeatedly since the outbreak of turbulence, and they could escalate further if the U.S. housing sector continues to deteriorate more than currently expected under pressure from a slowing economy and the resetting of variable-rate mortgages. Moreover, financial system losses from other structured credits are also rising and could multiply if other market segments suffer subprime-like damage. As discussed in the April 2008 *Global Financial Stability Report*, rising pressure on the capitalization of monoline credit insurers related to the falling prices of structured securities has disrupted the U.S. municipal bond market and raised concerns about counterparty risks in the credit-default-swap market, where they are substantial net sellers of protection. More generally, the cyclical slowdown is raising default rates, and there are increasing concerns about the possible deterioration of creditworthiness in other markets, including consumer credit, commercial property, and corporate debt. There is also potential for losses on exposure to housing markets outside the United States, including in western Europe and emerging Europe.

A crucial question is whether there is a serious credit crunch on the horizon. The baseline projections already reflect a substantial tightening of lending standards as U.S. and European banks work to rebuild their capital bases. However, total losses could rise substantially above current estimates—particularly if other market segments suffer extreme damage and capital in the core of the financial system is seriously impaired. Moreover, markets for complex structured products could remain heavily disrupted and well-established market sectors could come under further strain from global deleveraging. In such an event, higher-risk corporates and households in the advanced economies would indeed be faced with a sustained credit crunch involving both higher borrowing costs and constraints on market access that could have a seriously detrimental impact on growth.

Relative to the lower growth baseline—with the U.S. economy now projected to grow 1 percent a year more slowly than at the time of the January *World Economic Outlook Update*—the potential for further downside surprises to domestic demand in the United States has moderated. The substantial policy stimulus now in train should provide support for the economy in 2008. However, downside risks remain a concern, especially for 2009, when the projected recovery could be stifled by a confluence of continuing financial strains, a deep housing market correction, and the deteriorating financial position of U.S. consumers. Although U.S. residential construction has been contracting for almost two years, private consumption remained resilient until recently. However, with house prices declining and labor market conditions deteriorating, household finances are becoming more of a concern. Chapter 3 examines past housing cycles and finds that the increasing ability of households to borrow against housing equity as mortgage markets have evolved has increased the sensitivity of consumption to house prices. A sharp drop in house prices—going well beyond the 14–22 percent decline built into the baseline for 2008–09—could have serious repercussions, both through a direct impact on household net wealth but also through the impact on bank capital of mortgage-related losses from rising default rates as an increasing proportion of householders' equity becomes negative.[2]

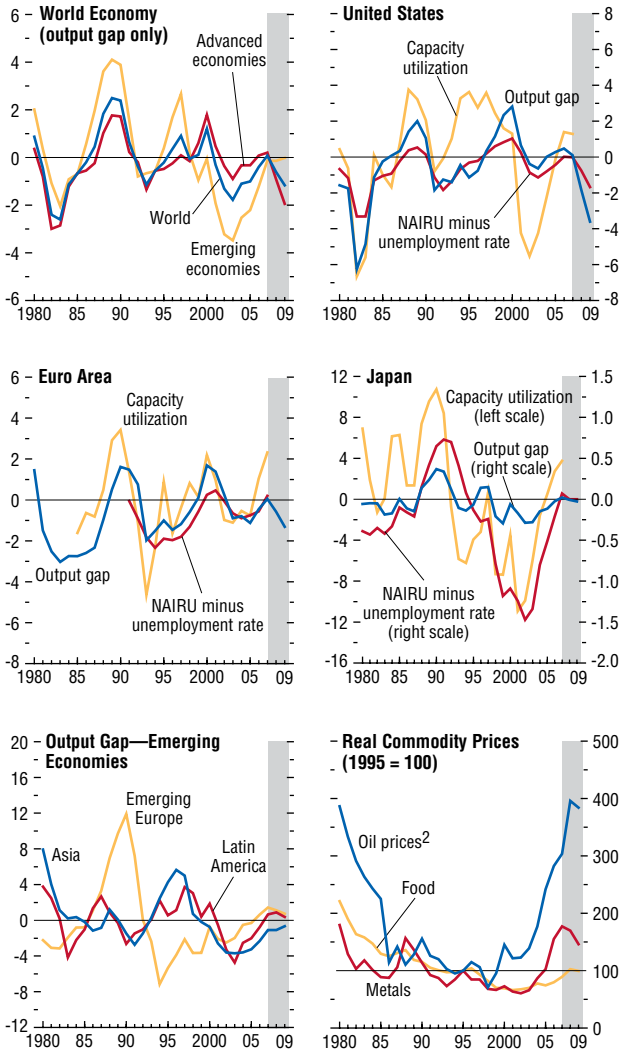
Risks for other advanced economies also have been partly incorporated in the baseline since the January 2008 *World Economic Outlook Update* but remain tilted to the downside, particularly for 2009. Western Europe is subject to spillovers from slowing trade with the United States and will also be vulnerable to deteriorating financial market conditions, given the substantial exposure of banks—notably British, French, German, and Swiss banks—to structured products originated in U.S. markets. Domestic risks are now judged to be on the upside relative to the new baseline, because domestic demand could remain more resilient than projected, supported by a moderation in energy and food price increases and a relatively strong labor market. At the same time, however, several countries, including Ireland, the United Kingdom, and Spain, have experienced their own housing booms, and these are starting to turn (see Box 3.1). A sharp deceleration in house price growth in these countries has clouded the outlook for residential construction and has increased financial sector vulnerabilities. Moreover, although European households are less heavily leveraged than their U.S. counterparts, corporate balance sheets and profitability are less strong in Europe than in the United States, increasing the potential impact on business investment of a tightening of credit. In Japan, both external and domestic risks remain tilted to the downside, mainly owing to concerns about external demand, tighter financial conditions, and weakening consumer confidence.

Overall, risks to the emerging economies seem on the downside, with some residual upside risks to domestic demand but larger downside risks from the external side through

[2]Different indices have different coverage, implying different rates of change. Specifically, the projections assume a 14 percent decline as measured on the U.S. Office of Federal Housing Enterprise Oversight (OFHEO) index and a 22 percent decline according to the Case-Shiller index of 20 metropolitan areas.

Figure 1.13. Measures of the Output Gap and Capacity Pressures[1]

Various measures of the output gap suggest that gaps largely closed during 2007, in both advanced and emerging economies. However, the projected slowdown in the United States and other advanced economies would lead to rising slack in 2008, helping to counter price pressures. Elsewhere, resource constraints are projected to remain more binding, although moderating commodity prices should take the edge off inflation pressures.



Sources: OECD, *Economic Outlook;* and IMF staff estimates.

[1]Estimates of the nonaccelerating inflation rate of unemployment (NAIRU) come from the OECD. Estimates of the output gap, in percent of potential GDP, are based on IMF staff calculations. Capacity utilization measured as deviations from 1980–2007 averages for the United States (percent of total capacity) and Japan (operation rate index for manufacturing sector), and deviations during 1985–2007 for the euro area (percent of industry capacity).

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

trade and financial channels. Increasing concern about asset quality in advanced economies and high external surpluses in some economies, including oil exporters, could spur—rather than depress—capital flows to some emerging and developing economies in the short term as investors search for new opportunities. This could fuel continued rapid growth of credit and domestic demand. More generally, growth in the large emerging economies in Asia and Latin America could slow by less than projected, carried by the robust momentum of domestic demand. However, a protracted weakening of growth in the advanced economies would have negative effects on the growth prospects of emerging and developing economies. Significantly weaker global growth would likely slow their exports and trigger a decline in commodity prices, with knock-on effects on domestic demand and especially investment. Moreover, the financial market crisis could constrain financial flows to emerging economies that are considered particularly vulnerable. In particular, countries in emerging Europe that have benefited from large banking inflows in recent years could face difficulties if western European banks curtail lending to the region in response to rising pressure on their balance sheets.

Growth risks from inflation and the oil market have intensified, notwithstanding the slowing trajectory of the global economy. The concern is that persistent inflation in the advanced economies may reduce the room to maneuver in response to slowing output and that sustained inflation pressures in rapidly growing emerging economies could require policies to be tightened further. Rising commodity prices have been an important source of inflation pressure in both advanced and developing economies. Global oil markets remain very tight. With spare capacity still limited, supply shocks or heightened geopolitical concerns could cause oil prices to rise further from current high levels, unless there is a significant softening in demand in the emerging as well as the advanced economies (see Appendix 1.2). Similarly, food prices may continue to rise in response to strong

demand growth in emerging economies and increased biofuel production.

In the advanced economies, slowing growth has somewhat alleviated the pressure on resources, but rising inflation remains a concern. In the United States, unemployment is rising and the output gap is projected to widen further in the year ahead, but headline inflation has jumped in recent months and core inflation has edged above the Federal Reserve's implicit comfort zone (Figure 1.13). In the euro area, the unemployment rate is now at its lowest level since the early 1990s, raising concerns that rising headline inflation could push up wage settlements. Inflation risks are of continuing concern in many emerging and developing economies, where food and oil account for a large share of consumption baskets and where rapid growth has reduced output gaps and brought capacity utilization to high levels.

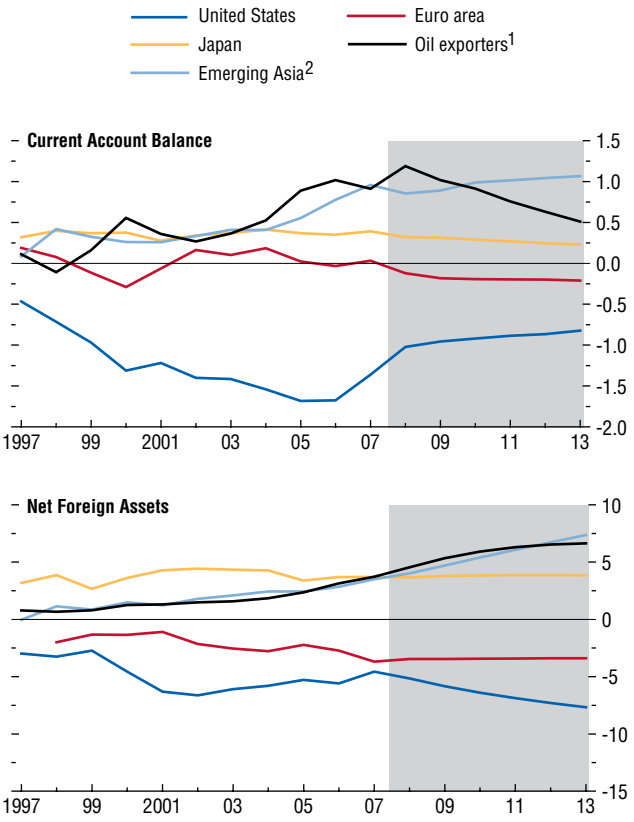
Finally, large global imbalances remain a worrisome downside risk for the global economy. On the plus side, the projected path for the net foreign assets (NFA) of the United States is now less extreme than it had been (Figure 1.14). The U.S. current account deficit declined to 5½ percent of GDP in 2007, owing largely to the depreciation of the U.S. dollar and a more balanced pattern for global demand growth, and it is projected to come down further, nearing 4 percent of GDP by 2013. In fact, the U.S. NFA position has not deteriorated in recent years despite the large current account deficits—owing to valuation effects related to U.S. dollar depreciation and the underperformance of U.S. equity markets relative to those abroad. Thus, under the latest projections, with a lower starting point and smaller continuing deficits, U.S. net foreign liabilities rise from an estimated 5 percent of global GDP at end-2007 to 7½ percent of global GDP in 2012, compared with the 12 percent of GDP in 2012 projected in the April 2007 *World Economic Outlook*.

Against this, the disproportionate pattern of adjustment in exchange rates since the summer means that certain emerging economy currencies remain overvalued and that new

Figure 1.14. Current Account Balances and Net Foreign Assets

(Percent of global GDP)

Assuming unchanged real effective exchange rates, the U.S. current account deficit is projected to continue to moderate over the medium term, but to remain above 1 percent of global GDP in 2013. As a result, U.S. net foreign liabilities would rise to about 8 percent of global GDP. The main counterpart would be rising net foreign asset positions in emerging Asia and oil-exporting countries.



Sources: Lane and Milesi-Ferretti (2006); and IMF staff estimates.

[1]Algeria, Angola, Azerbaijan, Bahrain, Republic of Congo, Ecuador, Equatorial Guinea, Gabon, I.R. of Iran, Kuwait, Libya, Nigeria, Norway, Oman, Qatar, Russia, Saudi Arabia, Syrian Arab Republic, Turkmenistan, United Arab Emirates, Rep. Bolivariana de Venezuela, and Republic of Yemen.

[2]China, Hong Kong SAR, Indonesia, Korea, Malaysia, Philippines, Singapore, Taiwan Province of China, and Thailand.

misalignments may be emerging. At the same time, as discussed in Box 1.2, there is a concern that financial market dislocations have reduced confidence in liquidity and risk-management characteristics of U.S. assets and institutions. Coming on top of prolonged weak returns in U.S. markets relative to those elsewhere, investors and fund managers (including of international reserves and sovereign wealth funds) may increasingly seek to diversify their portfolios. This would make it more difficult to obtain the flows needed to finance the U.S. current account deficits and may even trigger a disorderly adjustment. There are also concerns about increasing protectionist sentiment in the advanced economies, particularly in the context of deteriorating labor market conditions.

To further explore the downside risks to the global economy, the IMF staff has constructed an alternative scenario based on a combination of negative shocks, using a new multicountry general equilibrium model, the Global Integrated Monetary and Fiscal Model. Assessing the impact of multiple shocks is difficult because of significant interactions between sectors within an economy, across economies, and over time. These interactions generate positive and negative feedback, leading to nonlinear reactions. A model-based approach allows a more systematic examination of these interactions and of the potential effects of alternative policy responses, although of course no single model can possibly capture all aspects of a situation.

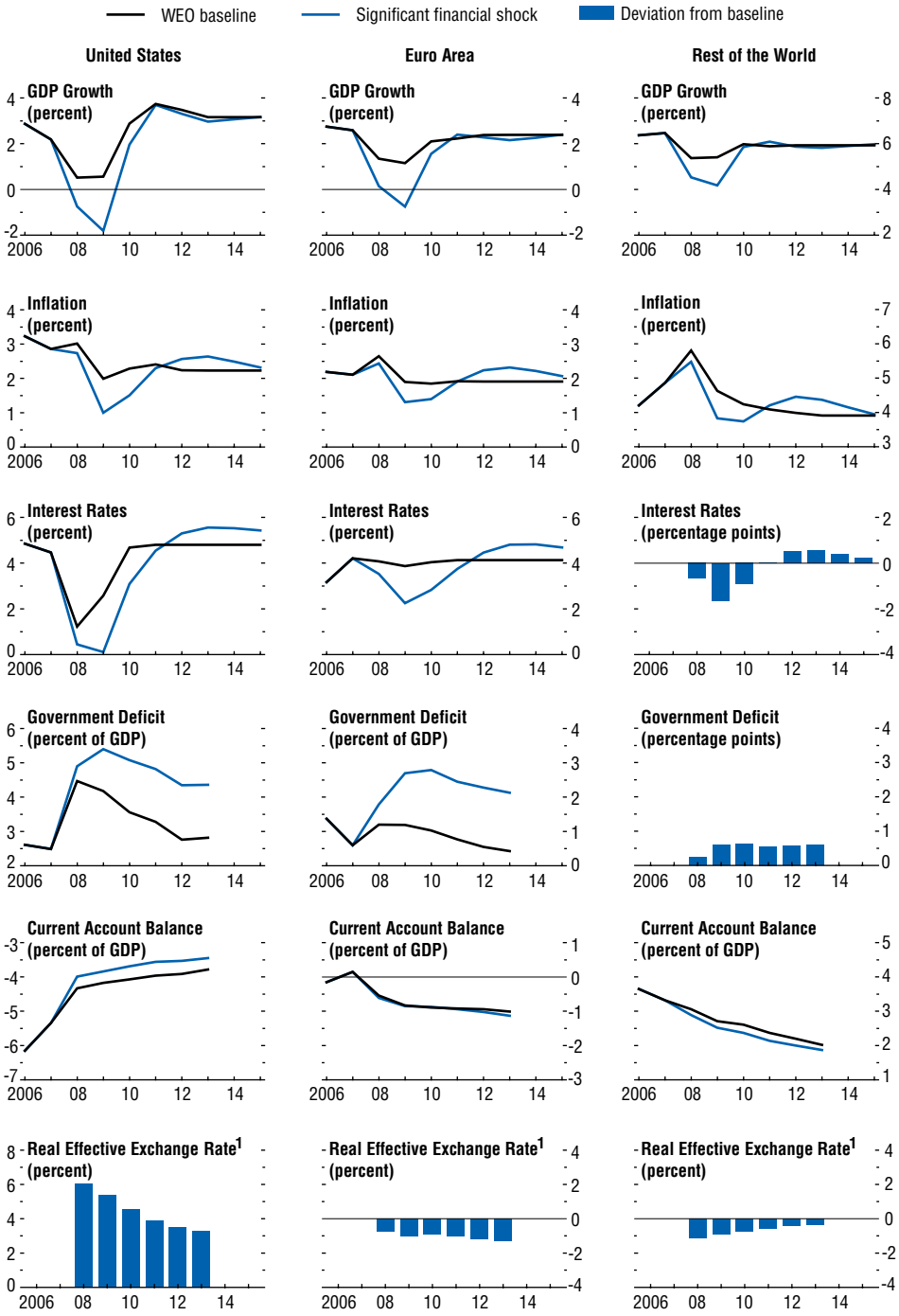
The downside scenario presented in Figure 1.15 is based on a combination of three related shocks. First, it includes a temporary shock to consumption and investment from a further tightening of credit conditions while the financial system goes through a protracted rehabilitation period during which capital and credibility are repaired after extended financial turmoil. Equity and real estate prices would be reduced relative to baseline (by 30 percent and 20 percent, respectively). The economic impact of this shock is felt most directly in the United States and western Europe, but it also affects parts of the world that have heavily relied on borrowing. Second, the scenario builds in a permanent downward shift in expectations for long-term productivity growth in the United States, which would tend to raise the U.S. saving rate as households and businesses adjust their expectations for capital gains and lower investment. Third, the scenario incorporates a shift in investor preferences away from U.S. assets, raising their risk premiums and reflecting investors' diminished confidence in the U.S. financial system and their downscaled expectations for U.S. potential growth.

Under this scenario, as shown in Figure 1.15, the U.S. economy would experience a deeper and more extended recession as negative effects from lower asset prices and lower longer-term growth expectations continued to depress aggregate demand, even with a gradual improvement of credit availability and with substantial support from monetary easing and fiscal stabilizers. Slower domestic demand growth, together with exchange rate depreciation, would contribute to an improvement in the U.S. current account. The euro area would undergo an extended period of weakness, as the economy faces the negative financial shock and upward pressure on the exchange rate, although the subsequent rebound would be more robust, because the scenario does not build in the longer-term adverse shift included for the United States. The rest of the world would also experience a slowdown in the aggregate, albeit less intense, reflecting both weaker growth in global trade and the impact of tighter credit conditions.

Although the global model does not explicitly model housing markets or commodity prices and includes only limited country detail, the negative effects appear most intense in countries with particularly large exposure to house price and commodity cycles. Thus, countries in western Europe that have experienced rapid house price appreciation in recent years—such as Spain and the United Kingdom—as well as some emerging economies with booming housing markets—would be vulnerable to sustained housing corrections that would amplify their business cycles. Commodity prices would

Figure 1.15. Two Scenarios for the Global Economy

Based on a multicountry general equilibrium model, a downside scenario has been developed to illustrate the possible impact of a deeper financial shock than incorporated in the *World Economic Outlook* baseline projections. The shock has the greatest impact on the U.S. economy but also has substantial spillovers on the euro area and the rest of the world.



Source: IMF staff estimates.
[1]A positive value represents a depreciation.

also be expected to weaken in the context of a global downturn that slowed growth in the large Asian emerging economies that have accounted for the bulk of the increase in demand for commodities in recent years. Such a shift would have consequences for exporters of food and metals in Africa and Latin America, as well as for oil exporters in the Middle East and elsewhere.

This scenario is intended to be illustrative, but it underlines two key points. First, a downturn would be expected to have global consequences, leading to more moderate rates of growth in emerging and developing economies and exposing some of them to greater external financing strains. Second, a downturn could be followed by a slow rather than rapid recovery, as financial system constraints take time to dissipate and as negative wealth effects continue to dampen activity.

Policy Challenges in a Multipolar World

Policymakers around the world face a fast-moving set of challenges, and although each country's circumstances differ, in an increasingly multipolar world it will be essential to meet these challenges broadly, taking full account of cross-border interactions. In the advanced economies, the pressing tasks are dealing with the financial market crisis and responding to downside risks to growth—but policy choices should also take into account recent high inflation indicators and longer-term concerns. Many emerging and developing economies continue to face the challenge of ensuring that current strong growth does not build up inflation or vulnerabilities. However, a number of countries are already experiencing fallout from the advanced economy slowdown, and an intensified or prolonged global downturn would inevitably strain a widening group of countries, requiring judicious responses from policymakers. Many emerging economies would have more room than in the past to apply countercyclical measures in the event of a severe global downturn, but those that are still highly vulnerable or have large external financing needs might need to tighten policies.

Advanced Economies

In the advanced economies, monetary policymakers face a delicate balancing act between alleviating the downside risks to growth and guarding against a buildup in inflation.

- In the *United States*, rising downside risks to output, amid considerable uncertainty about the extent, duration, and impact of financial turbulence and the deterioration in labor market conditions, justify the Federal Reserve's rapid interest rate cuts and a continuing bias toward monetary easing until the economy moves to a firmer footing. Although the recent jump in headline inflation caused by higher energy and food prices, and the uptick in core inflation, are of concern, softening labor markets and a rising output gap have alleviated inflation risks.
- In the *euro area*, while current inflation is uncomfortably high, prospects point to its falling back below 2 percent during 2009, in the context of an increasingly negative outlook for activity. Accordingly, the ECB can afford some easing of the policy stance.
- In *Japan*, there is merit in keeping interest rates on hold for now. Monetary policy remains highly accommodating, but there would be some scope, albeit limited, to reduce interest rates from already low levels if there is a substantial deterioration in growth prospects.

Beyond these immediate concerns, recent financial developments have fueled the continuing debate about the degree to which central banks should take asset prices into account in setting the monetary policy stance. The prevailing orthodoxy is that asset price movements would be one factor to consider in assessing price and output prospects, but that targeting asset prices would not be an appropriate policy objective, because central banks have no particular insight into equilibrium price levels and lack the tools to ensure that desired levels are

achieved (Mishkin, 2007). Against this, there are concerns that sustained asset price swings can lead to large imbalances in an economy, which are not immediately reflected in short-term price developments, especially when inflation expectations are well anchored. Moreover, perceptions that policymakers will respond vigorously to limit the negative impact of asset price corrections can serve to reduce risk premiums and thus increase the amplitude of the asset price cycle.

These issues are analyzed further in Chapter 3, which looks at the connections between housing cycles and monetary policy. Recent experience seems to support the case for giving significant weight to house price movements in the context of a "risk-management" approach to monetary policymaking, especially in economies with more developed mortgage markets where "financial accelerator" effects have become more pronounced, particularly when house prices move rapidly or move out of normal valuation ranges. Such leaning against the wind would not necessarily prevent large asset price movements—particularly when price dynamics are given some support by changing fundamentals—but it can help to limit the amplitude of such swings (Bordo and Jeanne, 2002). There are two important caveats. First, such an approach must be applied symmetrically: an aggressive easing might be justified in response to increasing concerns about the consequences of a house price correction, but it is also essential to unwind such easing promptly when the downside risks dissipate. Second, monetary policy alone certainly cannot bear the full weight of responding to possible house price bubbles; regulatory policy has a critical role to play in guarding against an inappropriate loosening of lending standards, which may fuel extreme house price movements.

Fiscal policy can play a useful countercyclical role in a downturn in economic activity, although it would be important not to jeopardize efforts aimed at consolidating fiscal positions over the medium term in the face of population aging. In the first place, there are automatic stabilizers during a cyclical downturn—declines in tax revenues and increases in safety net spending—and these should provide timely fiscal support, without compromising progress toward medium-term objectives. In addition, there may be justification for extra discretionary stimulus in some countries, given present concerns about the strength of recessionary forces and perceptions that financial dislocations may have weakened the normal monetary policy transmission mechanism, but any such stimulus must be timely, well targeted, and quickly unwound.[3]

- In the *United States*, automatic stabilizers are quite low, because the overall size of government is relatively small and social safety net spending is limited. Although tax revenues (particularly capital gains) could be affected by a downturn in activity, demand effects might be mitigated because the benefits would accrue mainly to higher-income groups. Given the serious risks coming from sustained financial market dislocations, the recent legislation to provide additional fiscal support for an economy under stress is fully justified, and room may need to be found for some additional public support for housing and financial markets to help stabilize these markets, while care is taken to avoid inducing undue moral hazard. At the same time, it will be important not to jeopardize achievement of longer-term fiscal consolidation, which is necessary to help reduce global imbalances as well as improve the U.S. fiscal position in the face of an aging population and rising health care costs.
- In the *euro area*, automatic stabilizers are more extensive and should be allowed to play out fully around a fiscal deficit path that is consistent with steady advancement toward medium-term objectives. Countries whose medium-term objectives are well in hand can also provide some additional discretionary stimulus. Indeed, in Germany, where the

[3]Box 2.1 assesses the circumstances under which fiscal policy can be most effective, based on empirical and analytical approaches.

public accounts were brought into balance in 2007, tax reforms are already providing some fiscal support for the economy in 2008, and a number of smaller euro area members also have adequate room under the revised Stability and Growth Pact (SGP) to provide stimulus if needed. However, in other countries, including France and Italy, the ability to allow even automatic stabilizers to operate in full may be limited by high levels of public debt and current adjustment plans that are insufficient for medium-term sustainability. Unless these countries face recession, the stabilizers should be allowed to play out only insofar as underlying deficits are being reduced by at least ½ percent of GDP a year, in line with commitments under the revised SGP.

- In *Japan*, net public debt is projected to remain at very high levels despite consolidation efforts. Speeding up such efforts would buy "policy insurance" against shocks and help meet the challenges associated with an aging society. In the context of an economic downturn, automatic stabilizers could be allowed to operate, but their impact on domestic demand would be limited, and there would be little scope for additional discretionary action.

Policymakers in advanced economies also need to continue strong efforts to deal with financial market turmoil in order to avoid a full-blown crisis of confidence or a credit crunch. Priorities include rebuilding counterparty confidence, reinforcing the financial soundness of institutions, and easing liquidity strains, as described in greater detail in the April 2008 *Global Financial Stability Report.* Initiatives to support the housing sector could also play a useful role to reduce the negative interaction between house prices, delinquency rates, and financial losses. Forceful action is essential to avoid the protracted problems that could imply a lingering drag, such as was experienced in Japan in the 1990s after the collapse of its equity and housing bubbles.

- Improve disclosure: A loss of confidence has been at the core of the market turmoil, and financial supervisors must make concerted efforts to ensure timely acknowledgment by regulated financial institutions of their losses from exposures to structured instruments, both directly and through off-balance-sheet entities.
- Reinforce bank capital: Weakly capitalized institutions should continue to rebuild capital cushions and reduce leverage, in order to quickly restore confidence and lending capacity.
- Provide liquidity: Central banks should continue to provide liquidity as needed to ensure the smooth functioning of markets, even as they develop strategies to wind down private sector reliance on central bank actions.
- Support the housing market: Initiatives could be considered to facilitate the refinancing of mortgages in the United States in the face of house price declines, including through the judicious use of government funds, in order to reduce risks that rising foreclosures would put further downward pressure on house prices.

It is too early to draw definitive conclusions about the fundamental reforms that will be needed to safeguard financial stability for the long term, but some preliminary areas for improvement can be identified.

- Improve regulation of the mortgage market: It has become clear that underwriting standards in the U.S. subprime mortgage market were inadequate. Although bank originators have now adopted guidance issued by federal supervisors in 2006 and 2007 to address some areas of concern, there would be considerable merit in improving coordination among federal supervisors to ensure that any future guidance is promulgated more quickly and efficiently. Moreover, there are still gaps in the oversight of nonbank originators that must be addressed. Other countries should review lending standards in their own markets.
- Review the role of rating agencies: Applying a differentiated rating scale to structured credit products, and providing indications of the sensitivity of ratings to underlying assump-

tions, would better inform investors about the risks related to these products. Consideration could also be given to reforms that would prevent conflicts of interest within rating agencies.

- Broaden the risk perimeter: The heavy losses to banks from off-balance-sheet entities during this current episode suggests that the relevant scope of risk consolidation for banks should be widened. Disclosure should be improved so that investors can better assess the risks to sponsoring banks from off-balance-sheet entities, including through contingent credit lines.
- Strengthen supervisory cooperation: The very rapid pace of financial innovation and the increasing complexity of cross-border activities pose a substantial challenge for supervisors seeking to monitor the activities of regulated institutions. This underscores the need to strengthen the framework for cooperation among supervisors, regulators, and central banks, including to share experiences and expertise, both within jurisdictions and across borders, to fill gaps in information flows and facilitate crisis management. It is encouraging that financial regulators in the European Union have recognized the need for progress in this area.
- Improve crisis-resolution mechanisms: The experience with the collapse of a major U.K. bank, the rescue of two German regional banks, and the near-failure of a major U.S. investment bank has raised broader questions about how best to manage financial distress, design financial safety nets, and use public funds. These experiences have illustrated that well-designed deposit insurance systems and mechanisms for swift and effective bank resolution are critical for ensuring that strains in an individual institution do not lead to a broader loss of confidence that could pose a systemic threat. They have also suggested a need to consider carefully how to handle deep stress on large banks whose failure could have systemic consequences. At the same time, bailouts can raise moral hazard, and it is thus important that infusions of public capital occur only after private sector solutions have been ruled out and that, when state support does prove necessary, shareholders and managers bear appropriate losses.

Emerging and Developing Economies

Emerging and developing economies face the challenge of controlling inflation while being alert to downside risks from the slowdown in the advanced economies and the increased stress on financial markets. In some countries, further tightening of monetary policy stances may be needed to keep inflation under control, recognizing that even though higher headline inflation may be driven initially by rising food and energy prices, it could quickly lead to broader price and wage pressures in a rapidly growing economy. With a flexible exchange rate regime, currency appreciation will tend to provide useful support for monetary tightening, although concerns about competitiveness can limit policymakers' willingness to follow this path. Countries whose exchange rates are heavily managed vis-à-vis the U.S. dollar, however, have less room to respond because raising interest rates may encourage heavier capital inflows, and the real effective exchange rate may depreciate along with the U.S. dollar, exacerbating the problem. China and other countries in this situation that have diversified economies would benefit from moving toward more flexible regimes that would provide greater scope for monetary policy. For many oil exporters in the Middle East, the exchange rate peg to the U.S. dollar constrains monetary policy. It will be important that the current buildup in spending be calibrated to reflect the cyclical position of these economies, and that such spending be aimed toward alleviating supply bottlenecks that have contributed to inflationary pressures.

Fiscal and financial policies can also play useful roles in preventing overheating and related problems. Restraint on government spending can help moderate domestic demand, lessen the

need for monetary tightening, and ease pressures from short-term capital inflows attracted by high interest rates.[4] Sustained fiscal consolidation would also provide the basis for further strengthening public sector balance sheets, which is important for reducing the vulnerabilities of countries with high public debt. Similarly, vigilant financial supervision—promoting appropriately tight lending standards and strong risk management in domestic financial institutions—can pay dividends both by moderating the demand impulse from rapid credit growth and by reducing the risk of a buildup in balance-sheet vulnerabilities that could be costly in a downturn. Continued structural reforms aimed at providing the basis for sustained high growth also remain important.

At the same time, policymakers in these countries should be ready to respond to a more negative external environment, which could well emerge in the months ahead and could involve both weaker trade performance and a reduction of capital inflows. In many countries, strengthened policy frameworks and public sector balance sheets will allow for more use than in the past of countercyclical monetary and fiscal policies. The appropriate mix will need to be judged country by country. In China, the consolidation of the past few years provides ample room to support the economy through fiscal policy, such as by accelerating public investment plans and advancing the pace of reforms to strengthen social safety nets, health care, and education. In many Latin American countries, well-established inflation-targeting frameworks provide the basis for monetary easing, and automatic fiscal stabilizers could be allowed to operate, although there would be little room for discretionary fiscal stimulus given still-high public debt levels. However, faced with a severe global downturn and a disruption of external financing flows, some countries that have large current account deficits or other vulnerabilities may need to respond by tightening policies promptly in order to maintain confidence and avoid the type of external crises experienced in earlier decades.

[4]See Chapter 3 of the October 2007 *World Economic Outlook*.

Multilateral Initiatives

In an increasingly multipolar world, broadly based efforts to deal with global challenges have become indispensable. In the event of a severe global downturn, there would be a case for providing temporary fiscal support in a range of countries that have made good progress in recent years in securing sound fiscal positions. Although fiscal support could be in each country's individual interest, providing stimulus across a broad group of countries could prove much more effective in bolstering confidence and demand, given the inevitable cross-border leakages from added spending in open economies. It is still too early to launch such an approach, but it would be prudent for countries to start contingency planning in the event that such support becomes necessary. IMF staff estimates suggest that countries representing about half the global economy would have fiscal room to provide additional discretionary fiscal stimulus on a temporary basis if needed. These include the United States, Germany, Canada, and China, a number of small advanced economies, emerging economies in East Asia and Latin America, and commodity exporters in the Middle East and Central Asia. Furthermore, most countries (90–95 percent of the global economy) would be able to allow automatic stabilizers to work, at least in part.

Reducing risks associated with global current account imbalances remains an important task. Therefore, it is encouraging that some progress is being made in implementing the strategy endorsed by the International Monetary and Financial Committee and the more detailed policy plans laid out by participants in the IMF-sponsored Multilateral Consultation on Global Imbalances aimed at rebalancing domestic demand across countries with supportive movements in real exchange rates (see Box 1.3). This road map remains relevant, but

should be used flexibly to take account of the changing global context. Thus, some reversal of recent progress toward fiscal consolidation in the United States can provide insurance against a worldwide slowdown, but it will be important that the fiscal support be strictly temporary, and not be allowed to jeopardize achievement of medium-term consolidation goals. The continuing depreciation of the U.S. dollar has been helpful in cushioning the impact of adjustments in the domestic economy, but there is concern that the weight of the dollar's adjustment has been largely borne by countries with flexibly managed exchange rates, which has put pressure on other advanced economies that are also slowing. In China, further tightening of monetary policy alongside upward flexibility of the renminbi would contribute to rebalancing the Chinese economy and containing inflation pressures while easing downward pressure on other major currencies in response to the depreciating dollar. For the oil-exporting countries, priority should be given to tackling supply bottlenecks, which have contributed to rising inflation pressures as domestic spending has built up. And in the euro area and Japan, more rapid progress with structural reform of product and labor markets could provide an additional boost to confidence and help sustain growth.

Two other priorities for multilateral action are to reduce trade barriers and combat climate change—both of which promise potentially large returns to collective action. The opportunity provided by the Doha Round to advance multilateral trade liberalization should not be squandered, given the substantial benefits that can be realized, particularly from improving access for agricultural products in advanced economy markets and from increasing trade in services. Rising trade has been a key source of the recent strong performance of the global economy—and the recent progress toward global poverty reduction—and a renewed push in this area remains essential.

Recent commitments to developing a post-Kyoto framework for joint action to address climate change are very welcome. Although the effects of climate change will be evident mainly over the long term and are hard to quantify, there is an imperative to act because the costs will fall largely on poorer countries, because the process is irreversible, and because the costs to the global economy of catastrophic events are potentially very high. Moreover, as discussed in Chapter 4, efforts to adapt to and mitigate the buildup of greenhouse gases have important short-term economic consequences. The fact that expanded biofuel production has raised food prices and inflation pressures is a concrete example of both the immediacy of the risks involved and the need for a multilateral approach. The implementation of a comprehensive framework for carbon pricing and carbon trading would also have a potentially large macroeconomic impact—on global saving and investment patterns and on foreign exchange flows—which will need to be considered carefully to avoid unintended consequences. Chapter 4 finds that these macroeconomic consequences can be mitigated, provided efforts to contain emissions are based on an effective carbon-pricing system that reflects the damages emissions inflict. Such carbon pricing should be applied across countries to maximize the efficiency of abatement, should be flexible to avoid volatility, and should be equitable so as not to put undue burdens on the countries least able to bear them.

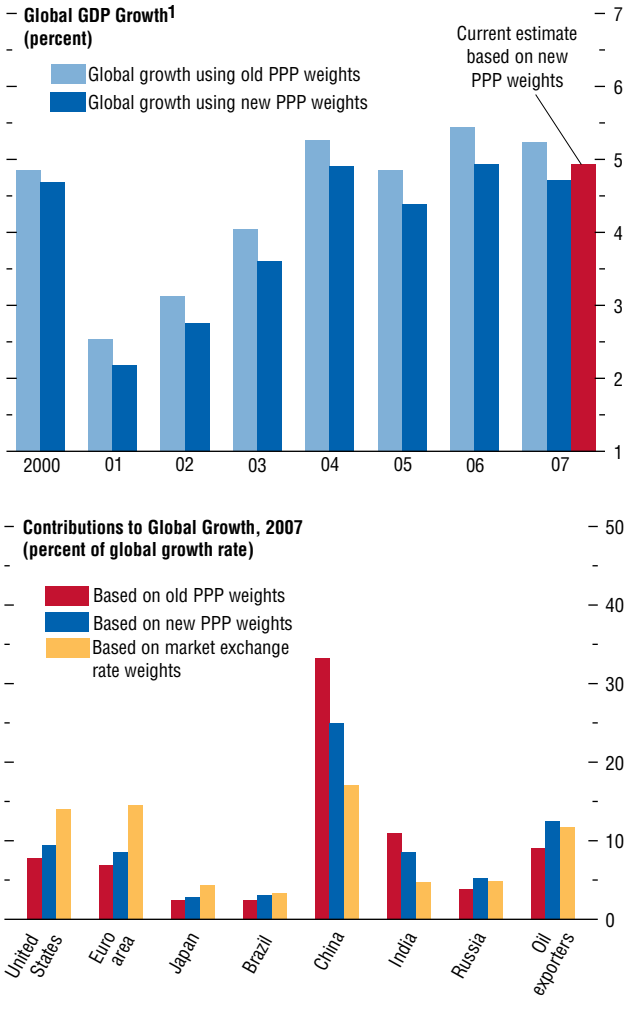
Appendix 1.1. Implications of New PPP Estimates for Measuring Global Growth

The main authors of this appendix are Selim Elekdag and Subir Lall.

Following the release of new estimates of purchasing-power-parity (PPP) exchange rates by the International Comparison Program (ICP) in December 2007, global growth estimates in this *World Economic Outlook* have been revised downward by about ½ percentage point over the 2000–07 period (Figure 1.16).[5] It is important

[5]For further details on the ICP revisions, see www.worldbank.org/data/icp.

Figure 1.16. Purchasing-Power-Parity (PPP) Exchange Rate Revisions and Global Growth



Source: IMF staff calculations.
[1]Based on October 2007 *World Economic Outlook* estimates except where noted.

to underscore that changes to the historical estimates reflect mainly the effect of the PPP revisions, but that global growth projections for 2008–09 reflect both the effects from PPP revisions and changes to the overall outlook. This appendix highlights key aspects of the revised PPP estimates and their implications.

The Relevance of PPP Exchange Rates

PPP rates are an alternative way of calculating exchange rates between countries using a comparison of prices for similar goods and services in different countries. The PPP rate is defined as the amount of a particular currency needed to purchase the same basket of goods and services as one unit of the reference currency, usually the U.S. dollar. The PPP rate can—especially in the short run—deviate by a large amount from the market exchange rate between two currencies, given the influence of trade, capital flows, and other factors on market exchange rates. A well-known but less comprehensive measure of the PPP exchange rate between countries is *The Economist*'s Big Mac index, which calculates the exchange rate at which the eponymous hamburger would cost the same across all countries in the index.

PPP exchange rates are important in evaluating aggregate economic activity across the world. Because they adjust for the difference in price levels across countries, they tend to provide a more meaningful estimate of global economic activity than market exchange rates. For example, developing economies typically have relatively low prices for nontraded goods and services, and a unit of local currency thus has greater purchasing power within a developing economy than it does internationally. PPP-based GDP takes this into account, but conversions based on market exchange rates typically underestimate the value of domestic economic activity and the output of a developing economy relative to an advanced economy.

PPP-based GDP estimates also provide a more consistent picture of the relative contributions of advanced economies to aggregate economic

activity. This is because bilateral exchange rate movements can distort individual economies' contributions to global economic activity. For example, given the depreciation of the dollar over the past few years, comparing GDP using market exchange rates would imply that the contribution of the United States to global economic activity has diminished substantially relative to that of the euro area.

This said, it is important to underscore that PPP exchange rates are not designed to assess potential currency misalignments, but rather to provide a more accurate estimate of economic activity across countries.

Table 1.2. Shares of Global GDP, 2007

Country	At PPP exchange rates[1]	At market exchange rates
United States	21.36	25.51
China	10.83	5.99
Japan	6.61	8.08
India	4.58	2.02
Germany	4.34	6.12
United Kingdom	3.30	5.11
Russia	3.18	2.38
France	3.17	4.72
Brazil	2.81	2.42
Italy	2.76	3.88

Sources: IMF, World Economic Outlook database; and IMF staff calculations.
[1]PPP = purchasing power parity.

Are the New PPP Estimates More Accurate?

The 2003–07 ICP round, coordinated by the World Bank, represents the most extensive and thorough effort ever to measure PPP rates across countries. The PPP revisions were released December 17, 2007, and are preliminary estimates for the 2005 benchmark year. An extensive collection of detailed price data from across more than 100 emerging and developing economies replaces previous benchmark PPP estimates, which date to 1993 or earlier in most cases. Moreover, China participated in the survey program for the first time and India for the first time since 1985. For advanced economies, the Eurostat-OECD PPP program, which updates rates on a more frequent basis, provided the revisions for 46 other economies.

Why Did the PPP Estimates Change?

The first-time participation of China in the ICP resulted in the downward revision of China's PPP-based GDP by about 40 percent. This is because previous estimates were extrapolated from a bilateral comparison of 1986 prices between China and the United States, which failed to adequately reflect the increase in domestic prices over time. In particular, these previous price extrapolations assumed a constant basket of goods and services (with a relatively limited set of items), which did not account for the changing structure of the Chinese economy. In addition, the extrapolations did not account for the shift away from necessities such as food toward products and services that were not included in the 1986 survey basket. Finally, the new estimates are based on data collected in 11 cities across China, including some rural districts, which facilitates more accurate cross-country comparisons and therefore better PPP estimates. The data for India also include both urban and rural prices for food, clothing and footwear, and education. Incorporating these revisions, China still ranks as the world's second largest economy, with about 11 percent of world output in 2007, and India (which also had a sizable downward GDP adjustment in PPP terms) is the fourth largest, with more than 4 percent of the world total (Table 1.2).

Implications for Global GDP Growth

The revisions to PPP exchange rates imply a substantial reduction in the PPP rates of some key emerging economies and an upward revision in others—including oil exporters. The changes have implications for both aggregate global growth based on PPP exchange rates and the share of global GDP accounted for by individual countries and groups.

- Global growth based on the new PPP exchange rates is now estimated on average

to be some ½ percentage point lower than previous *World Economic Outlook* estimates for 2002–06. The estimated global growth of 4.9 percent in 2007 reflects the 0.5 percentage point reduction purely due to PPP weights (from 5.2 percent global growth forecast in the October 2007 *World Economic Outlook*) and a 0.2 percentage point upward revision based on revisions to the estimates of country growth rates since the last *World Economic Outlook*.

- Although PPP estimates have been revised substantially for a large number of countries, the impact on global growth estimates is driven to a large extent by the implied changes in the relative shares of China, India, and the United States in global output. China's share of global output in 2007 is now estimated at 10.8 percent (down from 15.8 percent), and India's share has declined to 4.6 percent (from 6.4 percent). Reflecting the overall reduction in GDP in PPP terms of other countries, the share of the United States in global GDP has been revised up from 19.3 percent to 21.4 percent.

Notwithstanding these changes, it remains true that emerging economies have been the main recent driver of global growth in PPP terms, led by China, which contributed nearly 27 percent to global growth in 2007 (see Figure 1.16).

Appendix 1.2. Commodity Market Developments and Prospects

The main authors of this appendix are Kevin Cheng, Thomas Helbling, and Valerie Mercer-Blackman, with contributions from To-Nhu Dao and Nese Erbil.

The commodity price boom picked up in 2007 and has shown little sign of abating so far in 2008, notwithstanding financial market turmoil and concerns about slowing growth in the major advanced economies. The IMF commodity price index rose by 44 percent from February 2007 to February 2008. Many prices—including those of crude oil, tin, nickel, soybeans, corn, and wheat—reached new record highs in current U.S. dollar terms (Figure 1.17, first panel).[6] Nevertheless, in constant terms, prices of many commodities remain well below their highs in the 1970s and early 1980s, with those of crude oil, lead, and nickel being the main exceptions (Figure 1.17, second panel).[7]

Tightening market balances have been a common factor behind the price run-ups for many commodities. Prices have been propelled by positive and rising global net demand (consumption minus production) against the backdrop of already-low inventory levels in some markets. Strong demand from emerging economies, which have accounted for much of the increase in commodity consumption in recent years, remains a main driving force, with seemingly little impact so far from the slowing growth in some advanced economies, except for some softening of base metals prices from their mid-2007 peaks. Biofuel production has added to the demand for some food commodities, especially corn and rapeseed oil, which has affected demand for other foods through cost-push and substitution effects.

Financial trends have also contributed to commodity price increases. The effective depreciation of the U.S. dollar in 2007 pushed up prices

[6]In January 2008, the IMF issued a revised commodity price index, with updated weights based on average export values over the 2002–04 period (previously it was 1995–97) and using 2005 as a base year (compared with 1995 previously). The greatest difference between the old and new index is the change in the weight of energy in the basket, which has risen to 63.1 percent (from 47.8 percent), reflecting higher oil prices and global trade volumes. In terms of composition, rapeseed oil has been added to the index and coconut oil has been removed.

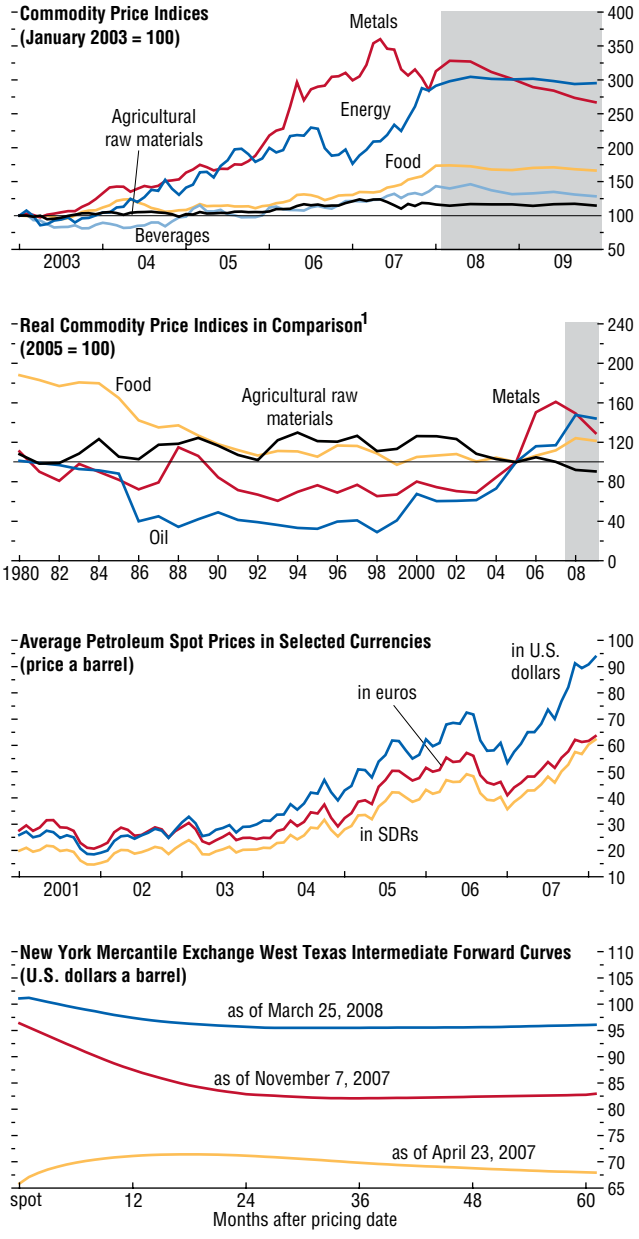
[7]In constant prices, the comparison depends critically on whether the price index used for deflation includes prices of nontraded goods. Because prices of nontraded goods have risen much more than for traded goods, the prices of some commodities—notably oil—are still below their 1970s peaks for 2007 if they are deflated by a broad-based index. In the second panel of Figure 1.17, prices are deflated by a unit value index for industrial countries' exports of manufactures, which is a measure of the so-called commodity terms of trade—that is, the price of commodities relative to prices of manufactures.

by increasing the purchasing power of oil users outside the dollar area (oil and other commodities are priced in U.S. dollars), raising the costs of inputs priced in other currencies and stimulating demand for oil and other commodities as inflation and currency hedges (Box 1.4). Falling policy interest rates in the United States have also played a role, as lower short-term real interest rates tend to push up spot commodity prices—everything else being equal—by reducing inventory holding costs and inducing shifts from money market instruments to commodities and other higher-yielding assets.

More generally, with the prospect of persistently tight fundamentals, commodity financial markets have benefited from favorable investor sentiment. Investors have also increasingly used commodities for portfolio diversification, as commodity returns have typically not been strongly correlated with those of other asset classes, notably equity. Related inflows into commodity investment vehicles have thus risen rapidly in recent years. These inflows have enhanced market liquidity and price discovery in commodity futures markets, including at the long end, but they can also contribute to short-term price volatility and may have led to an overshooting of prices.

Commodity prices are expected to give up some gains later in 2008 and in 2009 with the slowing of global growth. In the baseline projections, the price declines are generally small, reflecting the expected moderate pace of the growth slowdown in major emerging economies. Moreover, tight market balances—because of factors such as increased demand for biofuels and delayed supply responses—should continue to support prices of many commodities well above recent averages, especially for grains and edible oils. Factors such as temporary supply problems and geopolitical concerns, as well as declining short-term interest rates and a depreciating dollar, could again create upside potential for prices, particularly for metals and oil. Nevertheless, if global growth were to slow more than expected—which would involve a large decline

Figure 1.17. Commodity and Petroleum Prices

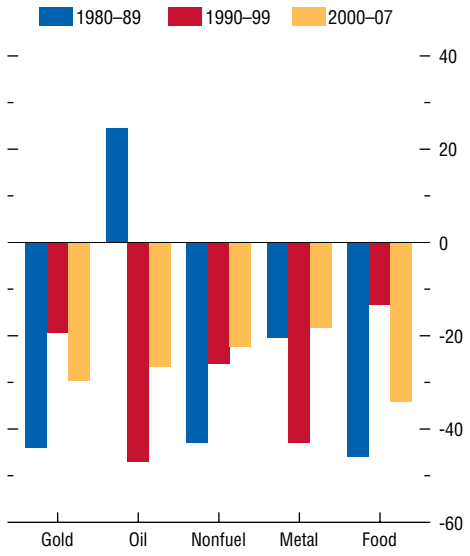


Sources: Bloomberg Financial Markets; and IMF staff estimates.
[1]Based on a unit value index for industrial countries' exports of manufactures.

Box 1.4. Dollar Depreciation and Commodity Prices

Over the past few years, dollar depreciation has coincided with soaring commodity prices. In March 2008, both crude oil and gold reached fresh highs within a short period after the U.S. dollar set new record lows against some other major currencies. These comovements are no coincidence. Over the past 20 years, commodity prices have generally been negatively correlated with the U.S. dollar—both in nominal and real effective terms—with the notable exception of crude oil during the 1980s (first figure). However, dollar depreciation has been only one factor affecting commodity prices in recent years, and this box attempts to put the role of the dollar fluctuations in perspective. Specifically, it discusses channels through which the dollar exchange rate may affect commodity prices and gauges the impact of U.S. dollar movements on prices of key commodities.

Correlations between Commodity Prices and the U.S. Exchange Rate in Nominal Terms[1]
(Correlation coefficients in percent)



Source: IMF staff calculations.
[1]Correlations based on cyclical components from a Hodrick-Prescott filter.

How Does the Dollar Affect Commodity Prices?

There are a number of channels through which a fall in the nominal effective value of the U.S. dollar can raise commodity prices in dollars.

- The purchasing power and cost channel: Most commodities—notably crude oil, precious metals, industrial metals, and grains such as wheat and corn—are priced in U.S. dollars. A dollar depreciation makes commodities less expensive for consumers in nondollar regions, thereby increasing their demand. On the supply side, price pressures arise from declining profits in local currency for producers outside the dollar area.
- The asset channel: Given the purchasing power and cost channel, a falling U.S. dollar reduces the returns on dollar-denominated financial assets in foreign currencies, which can make commodities a more attractive class of alternative assets to foreign investors. Moreover, a dollar depreciation raises risks of inflationary pressure in the United States, prompting investors to move toward real assets—such as commodities—to hedge against inflation. For example, commodity markets rallied in the 1970s amid high inflation.
- Other channels: A dollar depreciation could lead to monetary policy easing in other economies, especially in countries with currencies pegged to the dollar. This could result in lower interest rates and increased liquidity, thereby stimulating demand for commodities and other assets.

Note: The main author of this box is Kevin C. Cheng.

How Large Is the Dollar's Impact?

To gauge the relationship between the U.S. dollar and commodity prices, a simple reduced-form price equation was estimated for six commodities—gold, crude oil, aluminum, copper, corn, and wheat—together with a nonfuel commodity index. The equation is based on a simple demand-supply framework for commodities along the line of Borensztein and Reinhart

(1994).[1] Specifically, the equation assumes that for each commodity, there is a relationship between the price, the trade-weighted U.S. dollar exchange rate, and three other variables:

- World industrial production: Increases in production require more commodity inputs; this variable should thus be positively correlated with commodity prices.
- Federal funds rate: This variable should be negatively correlated with commodity prices. Frankel (2006) suggests three channels through which a higher interest rate reduces commodity prices: first, it increases the incentive for extraction today rather than tomorrow, thereby increasing supply; second, it elevates costs of holding inventories; and third, it induces shifts in asset demand from commodities to treasury bills.
- Market balance of the particular commodity: This variable captures the impact of inventory holding on commodity prices, with a high level of stocks depressing commodity prices.[2]

The equation was estimated for commodity prices in both current and constant dollars using the IMF's nominal effective exchange rate and real effective exchange rate, respectively.[3]

Impact of a 1 Percent Decline in the U.S. Dollar Exchange Rate on Commodity Prices[1]

(In percent)

Months after the Shock	1	4	12	24	60
	In Current Dollars (based on U.S. NEER)				
Gold	1.17	1.22	1.30	1.36	1.39
Oil	0.89	0.97	1.13	1.27	1.43
Nonfuel commodity index	0.48	0.47	0.47	0.47	0.46
Aluminum	0.53	0.53	0.53	0.52	0.52
Copper	1.11	1.02	0.80	0.55	0.18
	In Constant Dollars (based on U.S. REER)				
Gold	1.12	1.12	1.13	1.14	1.17
Oil	0.48	0.58	0.81	1.08	1.58
Nonfuel commodity index	0.47	0.48	0.51	0.54	0.64
Aluminum	0.55	0.58	0.65	0.74	0.95
Copper	1.23	1.28	1.38	1.52	1.80

Source: IMF staff estimates.

[1]Dynamic multipliers implied by the error-correction equations for individual commodities. NEER: nominal effective exchange rate; REER: real effective exchange rate.

The main results are as follows (see table):

- The nominal U.S. dollar exchange rate has a significant impact in both the long run and the short run on crude oil and gold prices. In the long run, a 1 percent depreciation of the U.S. dollar is associated with increases for gold and oil prices of more than 1 percent. In the short run, the elasticity is close to 1, but higher for gold than for crude oil.
- For other nonfuel commodities, as measured by the IMF's index, the U.S. dollar impact is significant but smaller in magnitude over both the short and long runs. For metals, U.S. dollar movements also have a significant impact. In contrast, the impact on grains is not significant.
- The long-run impact of the real exchange rate is stronger than that of its nominal counterpart across most commodities. Specifically, a 1 percent real depreciation of the dollar

[1]Given the reduced-form nature of the estimation, the framework can identify only the average responses of commodity prices to exchange rate movements during the sample period; it does not, however, identify a structural relationship that may be time variant or the channels through which the exchange rate affects commodity prices.

[2]For crude oil, Organization for Economic Cooperation and Development (OECD) inventories were used. For corn and wheat, global stocks were used. For gold, aluminum, and copper, global production was used for lack of reliable data on consumption or stock.

[3]The equations were estimated in an error-correction framework. The dynamic ordinary least squares (DOLS) estimator proposed by Stock and Watson (1993) was used to estimate the cointegrating relationships among the variations in levels, with all variables in logarithms except the interest rate. Real commodity prices and real interest rates were deflated by the U.S. consumer price index. Monthly data since the early or mid-1980s were used because data on many key variables were unavailable before then. The precise year varies from commodity to commodity, depending on data availability.

Box 1.4 *(concluded)*

would result in an increase of greater than 1 percent in the real prices of gold, crude oil, aluminum, and copper in the long run. The real exchange rate also has a significant impact on corn prices, which do not respond strongly to the nominal exchange rate. The stronger impact of real effective exchange rates likely captures that the importance of the purchasing power and cost channel over the long run is better reflected in real variables.

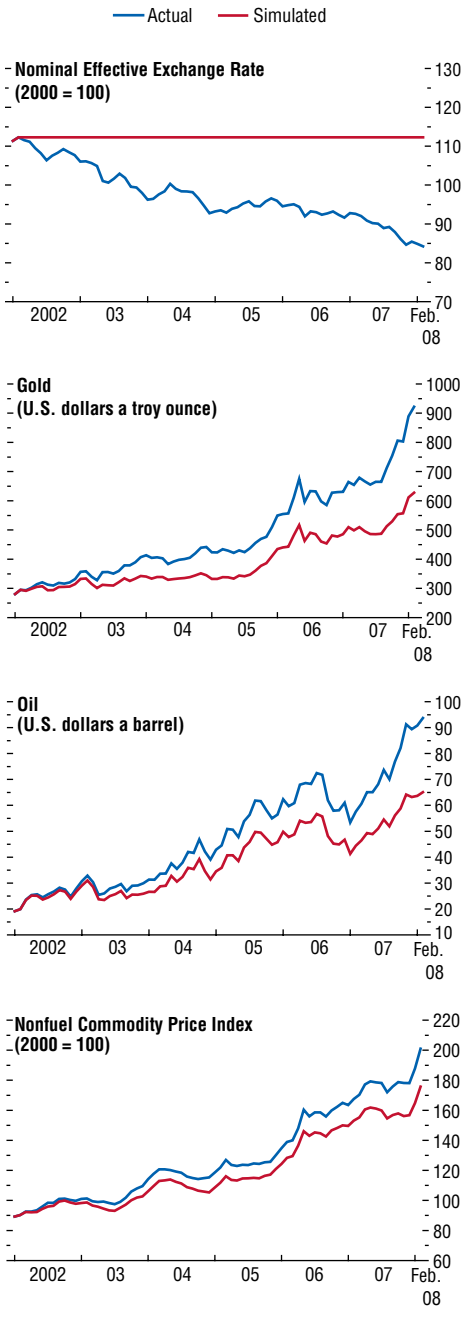
What explains the varying exchange rate impact across commodities? The variation likely reflects that some commodities such as gold and crude oil are more suitable than others as a "store of value." In general, nonrenewable commodities such as crude oil are a better store of value than perishable or renewable commodities.

To gauge the actual impact of the dollar depreciation on commodity prices during 2002–07, an alternative scenario was simulated.[4] Using the estimated equations, the exercise simulated commodity prices under a scenario in which the U.S. exchange rate remained at its peak of early 2002 until end-2007. The study suggests that under such a scenario, by end-2007, nominal gold prices would have been lower by around $250 a troy ounce, crude oil prices would have been lower by around $25 a barrel, and nonfuel commodity prices would have been lower by around 12 percent (second figure).

In summary, U.S. dollar fluctuations have a significant impact on most commodity prices—both in nominal and in real terms. The magnitude, however, varies across commodities and time horizons. The impact is particularly strong on gold and crude oil, followed by industrial metals. For grains, however, U.S. dollar fluctuations do not appear to be an important determinant.

[4]As a caveat, the simulation (as well as the estimated equations) assumes that the U.S. dollar exchange rate and other variables are exogenous to commodity prices.

Actual and Simulated Commodity Prices, 2002–08



Source: IMF staff calculations.

in growth in emerging markets—commodity prices could fall substantially, as they have in past global downturns.

Tightening Balances Shaping Oil Market Dynamics

After rising rapidly in the first half of 2007, oil prices experienced another strong run-up from late August to early January 2008. Over the year, spot prices for West Texas Intermediate (WTI) rose from $58 a barrel on January 3, 2007, to more than $100 a barrel on January 2, 2008. Although prices eased thereafter around concerns about slowing global growth, prices recovered in February and have stayed above $100 a barrel since end-February on a string of news signaling short-term supply problems and financial factors, as discussed above.

The price surge in the second half of 2007 was sparked by heightened geopolitical concerns about tensions in the Middle East and some weather-related production shutdowns. These events, taken by themselves, are not unusual, but they occurred against the backdrop of a noticeable tightening of oil market balances, and prices became highly sensitive to news that signaled future supply shortages. Nevertheless, the macrofinancial factors discussed in the previous section, such as the depreciation of the U.S. dollar, also played some role (Figure 1.17, third panel).

Global oil demand remained robust and increased by about 1 million barrels a day (mbd) in 2007, about the same as in 2006 (Table 1.3). As in recent years, growth continues to be driven by rapid income growth in emerging economies, supported in part by below-market domestic fuel prices (especially in the Middle East region and in China). Overall, demand from non-OECD countries (particularly India, China, and countries in the Middle East) increased by an estimated 1.3 mbd, whereas OECD demand declined by 0.1 mbd. In regional terms, demand fell in Europe and the former Soviet Union (FSU), but increased everywhere else (Figure 1.18, first panel).

Table 1.3. Global Oil Demand and Production by Region[1]
(Millions of barrels a day)

				Annual Percent Change		
	2006	2007 Est.	2008 Proj.	2006	2007 Est.	2008 Proj.
Demand						
OECD	49.3	49.1	49.3	–0.7	–0.5	0.3
North America	25.3	25.5	25.4	–0.7	0.9	–0.4
Of which:						
United States	20.7	20.8	20.7	–0.5	0.6	–0.5
Europe	15.6	15.3	15.4	0.1	–2.2	0.7
Pacific	8.4	8.3	8.4	–1.9	–1.6	1.9
Non-OECD	35.6	36.7	38.3	4.0	3.2	4.2
Of which:						
China	7.2	7.5	8.0	7.8	4.6	5.6
Other Asia	8.9	9.2	9.5	1.2	3.4	2.8
Former Soviet Union	4.1	4.0	4.1	4.4	–4.3	3.6
Middle East	6.4	6.7	7.1	5.8	4.8	6.1
Africa	2.9	3.1	3.2	–0.4	4.3	3.6
Latin America	5.3	5.5	5.7	3.7	4.7	3.7
World	84.9	85.8	87.5	1.2	1.1	2.0
Production						
OPEC (current composition)[2]	36.3	35.9	. . .	0.7	–1.0	. . .
Of which:						
Saudi Arabia	10.4	10.0	. . .	–1.5	–4.3	. . .
Algeria	2.1	2.2	. . .	1.7	2.5	. . .
Non-OPEC	49.1	49.7	50.6	1.1	1.1	1.8
Of which:						
North America	14.2	14.3	14.2	0.5	0.4	–0.7
North Sea	4.8	4.6	4.2	–7.6	–5.0	–8.7
Russia	9.8	10.1	10.2	2.2	2.4	0.9
Other former Soviet Union	2.4	2.7	3.0	11.1	11.9	12.3
Other non-OPEC	17.9	18.1	19.1	2.3	1.1	5.5
World	85.43	85.62	. . .	0.9	0.2	. . .
Net Demand[3]	–0.53	0.20	. . .	–0.6	0.2	. . .

Sources: International Energy Agency, Oil Market Report, March 2008; and IMF staff estimates.

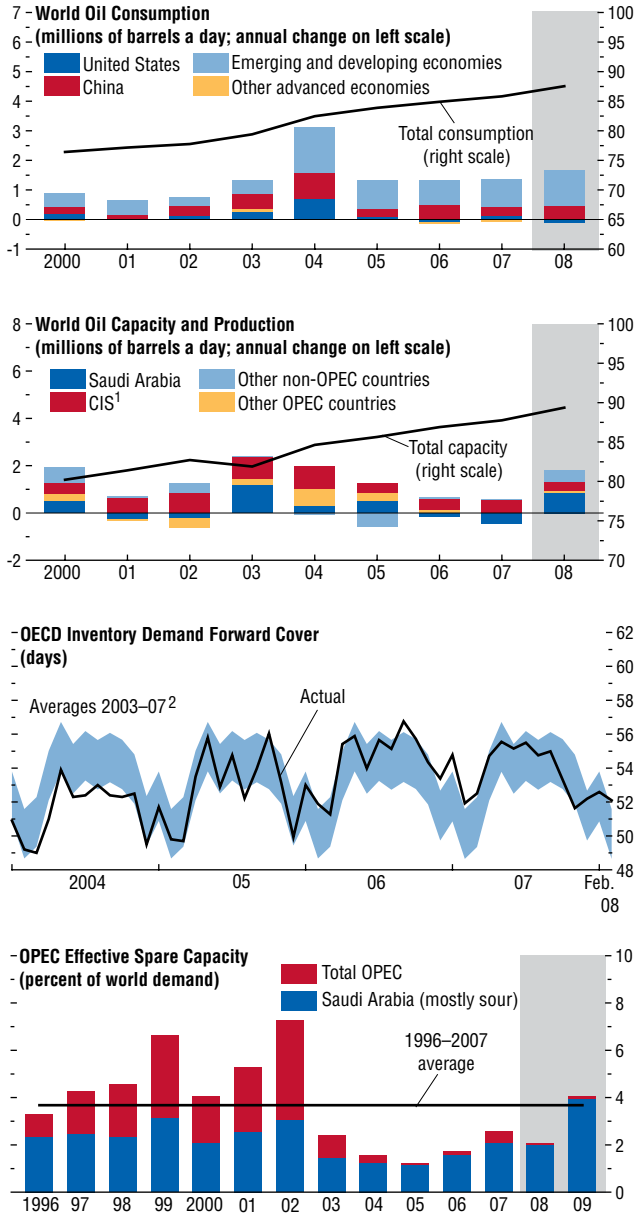
[1]Covers consumption and production of crude oil, natural gas liquids, and nonconventional oil.

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

[3]Difference between demand and production. Values reported as percent changes reflect net demand as percent of annual demand during the previous year.

Global oil supply increased only slightly in 2007, reflecting a combination of slightly lower production by Organization of Petroleum Exporting Countries (OPEC) members and shortfalls in non-OPEC production. The latter increased only by 0.6 mbd compared with an average increase of 1.0 mbd during 2001–06, with most of the increase accounted for by rising production in FSU countries. In

Figure 1.18. World Oil Market Balances



Sources: International Energy Agency; U.S. Energy Information Agency; and IMF staff estimates.

[1]CIS is the Commonwealth of Independent States.

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

contrast, production in new offshore fields in Brazil and the Gulf of Mexico remained broadly unchanged, while greater-than-expected declines in production in Mexico, Alaska, and the North Sea more than offset modest gains elsewhere in the OECD countries (Figure 1.18, second panel). In general, non-OPEC production growth continues to be held back by frequent production outages and project delays—in some cases prompted by changes in contract terms by host governments.[8] Underlying this trend are major challenges facing all upstream investors, particularly increasingly complex geological and technological challenges as well as soaring costs (including from higher tax rates and royalties). Because some of these factors are expected to persist, supply constraints are likely to remain a dominant factor behind oil price fluctuations during the next few years (Box 1.5).

OPEC production declined by an estimated 0.4 mbd in 2007 compared with 2006. The decline reflected OPEC's decisions to cut production quotas by 1.2 mbd starting in November 2006 and by an additional 0.5 mbd starting in February 2007. Indeed, actual OPEC production would have been even lower in 2007 had it not been for increases in Angola and Iraq, which were not subject to quota limits during 2007.[9] Following OPEC's September 2007 decision to raise output by 0.5 mbd starting in November, estimated actual OPEC production rose by 0.3 mbd between October 2007 and February 2008.

[8]A few recent examples include (1) the efforts of Kazakhstan to increase the state oil company's equity in Kashagan, requiring contract renegotiation; (2) the hefty increase in royalties for oil companies in Alberta, Canada; and (3) the forcing out of Shell and BP from the Russian joint-venture projects in Sakhalin and Kovytka, respectively.

[9]Starting in 2008, Angola's output is subject to OPEC quotas, with its initial allocation of 1.9 mbd (below the estimated potential capacity of at least 2.2 mbd). In addition, Ecuador has rejoined OPEC. Although OPEC currently controls about 42 percent of global production, this share is expected to increase over the medium term, as its members own 76 percent of conventional reserves and have large planned additions to capacity.

Box 1.5. Why Hasn't Oil Supply Responded to Higher Prices?

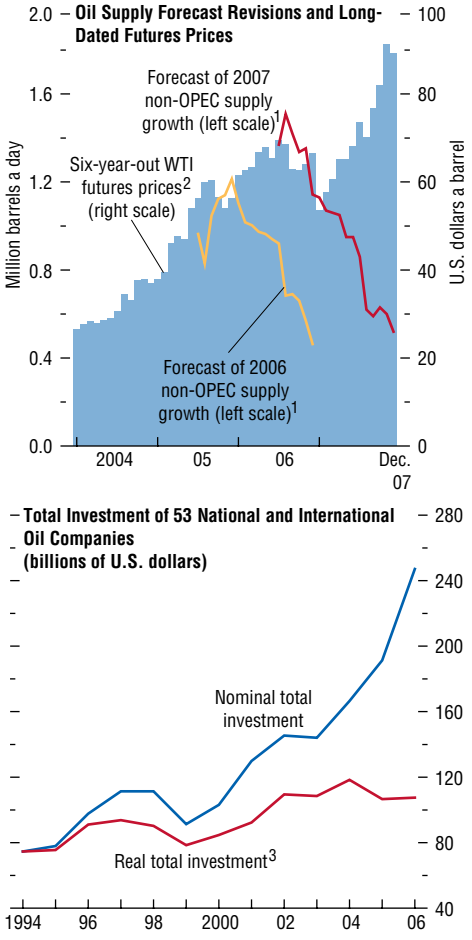
Markets and analysts alike increasingly expect high oil prices to endure.[1] An important factor behind the firming of these expectations has been weaker-than-expected prospects for an expansion in supply. Indeed, the increase in long-dated futures prices over the past three years has coincided with steady downward revisions to projections for non-OPEC supply (figure, top panel). Although initial uncertainty about how long high oil prices would last was plausibly an important reason for oil producers not to rapidly ratchet up their investment, the sluggish supply response has become increasingly puzzling in light of persistently high prices. This box examines recent patterns in oil investment based on company and field data and considers prospects for capacity expansion. It concludes that there are geological, technological, and policy constraints that are unlikely to abate soon.

Soaring Investment Costs Point to Technical Supply Constraints

The sluggish response to higher oil prices is clearly not the result of a lack of investment. During 2004–06, nominal oil investment grew by about 70 percent (figure, bottom panel). However, soaring prices for investment meant that this did not translate into large real investment increases. The higher investment costs were due to a global scarcity both of equipment such as rigs and of services such as skilled engineers and project managers and to higher average exploration and development costs.[2]

Many of the factors contributing to higher costs are cyclical in nature and should moderate as input supplies adjust to the increased demand. However, based on evidence presented below, a significant component of these costs is

Diminished Expectations



Sources: Bloomberg Financial Markets; Goldman Sachs Group, Inc. (2007); International Energy Agency, *Oil and Gas Journal;* Organization of Petroleum Exporting Countries (OPEC); U.S. Bureau of Statistics; U.S. Energy Information Administration; and IMF staff calculations.

[1]The forecast refers to a simple average from OPEC, the International Energy Agency, and the U.S. Energy Information Administration at the time of forecast. Futures prices are from New York Mercantile Exchange.

[2]WTI is West Texas Intermediate crude.

[3]Nominal capital investment in exploration deflated by the U.S. oil cost producer price index (weighted average of oil and gas wells' drilling services, operational support services, and oil and gas fields' machinery and equipment indices).

Note: The main author of this box is Valerie Mercer-Blackman, with contributions from Lyudmyla Hvozdyk (Cambridge University).

[1]In their recent long-term reports, the International Energy Agency and the U.S. Department of Energy predicted that prices would remain around current levels (in 2005 dollars) in 2030 under current policies.

[2]According to Goldman Sachs (2007), field exploration and development costs of a sample of the most important projects have soared from $5 a barrel of oil equivalent in 2000 to about $10 in 2007.

Box 1.5 *(continued)*

the result of geological constraints—a more permanent rigidity—implying that the responsiveness of supply to high prices is likely to remain low for some time.

Oil Investment Response Lags

To assess prospects for supply, the IMF staff estimated a model of investment to gauge whether the impediments to investment in the oil sector were technical or geological in nature, or whether they were associated with the investment environment. The model postulates that real investment by a company depends on net revenues (profits), expected future prices (proxied by spare capacity or long-dated futures prices), per-unit exploration and production costs, and technical risks, as well as variables characterizing the host-country investment environment, namely political stability (derived from the World Bank governance indicators) and fiscal balance to GDP (intended to capture the possible need of a host country to raise additional revenues through the oil sector).[3] By disaggregating investment at the field and company levels, it is also possible to investigate how quickly supply responds to price signals and whether investment behavior varies by such characteristics as company size, the type of exploration, or majority ownership (private versus public). The conclusions from this analysis are as follows.

- The data suggest that oil companies' investment—in particular that of major international firms—was slower to respond to the price signals in the current boom than in earlier periods. Using a panel of company data for investment between 1993 and 2006, IMF staff estimates show that the lag between spare capacity (a proxy for the price signal) and investment is about three years.[4] However, this lag increased in recent years. For international oil companies, this may reflect limited given oil sector foreign direct investment restrictions in an increasing number of countries, as well as a reluctance to quickly switch to a risk-taking mode following the consolidation and cost-cutting strategies implemented during the 1990s, when oil prices remained low.[5]
- Comparing investment across companies suggests that the largest companies are also those that take on the greatest technical risks, even after controlling for higher costs. Indeed, regression estimates using company-level data suggest that increased technical risk significantly raises real investment.[6]
- Political variables in the host country were somewhat important in explaining investment. Political stability and the fiscal balance of the host country had positive coefficients in the regressions, as expected, but they were not always statistically significant. It is possible that fears of "resource nationalism" have increased uncertainty about investment in a less-tangible way that is not yet being captured by the data.[7] There could also be

[3]Additional control variables were past investment, reserves, and size.

[4]The oil sector is an industry with long planning horizons and high sunk costs, and so long lags are not unusual.

[5]The median share of G7-listed oil and gas companies' cash earnings spent on asset acquisitions and dividend payouts increased from 35 percent in 1990–95 to 57 percent in 2000–04, leaving a lower share to be spent on new investment.

[6]The technical risk variable is an index that takes into account factors such as water depth, environment, geography, climate, technology dependence, stakeholder issues, geological issues (including American Petroleum Institute (API) performance level and reservoir complexity), and, if subject to OPEC quota compliance, infrastructure dependence and project development status. See Goldman Sachs (2007).

[7]Investment data span the 1993–2006 period and are limited. Data for Iraq are not available and are limited for Iran. Moreover, the data do not fully reflect the possible negative effects of recent nationalizations on investment (for the case of República Bolivariana de Venezuela, investment data for PDVSA, the national oil company, are unavailable after 2003). The variable would also fail to capture localized problems within countries. For example, Nigeria's onshore production has been hampered by frequent violent attacks, but investment in offshore production, which is less vulnerable to attacks, has grown steadily. Jojarth (2008) has shown that fields affected by hostilities do

some self-selection: the strong positive correlation between exploration and production costs and political stability may suggest that oil companies would prefer to gamble on difficult geology than to take the necessary steps to hedge against political uncertainties.

- Increased tax assessments by governments have raised the costs of international joint-venture projects. In 2007, payments to governments (including royalties) represented more than half the cost of a barrel of oil. It was not possible to isolate the specific effect of higher taxes, but after-tax profits were found to have a positive and very significant effect on investment. In other words, to the extent that high tax rates affect companies' bottom lines, they adversely affect investment.
- Comparing investment behavior across companies, there is no evidence that national oil companies were investing less than international oil companies. On the contrary, some emerging, outwardly oriented national oil companies are increasing foreign and domestic investment very rapidly, in some cases with strong political and financial support from their governments. However, traditional national oil companies—which are typically smaller—have been struggling with high costs and aging infrastructure.
- Smaller oil companies are investing more as a share of revenues than larger ones, but they are much less likely to embark on technically risky projects. Soaring costs have been particularly taxing for smaller, independent companies with limited cash flow, which are less diversified than larger ones. In some cases, an important consequence of rising investment costs is that some projects have become unviable.

Turning to results obtained from analyzing field-level investment data, the analysis found that the amount of time it takes, on average, for investment to translate into output has also increased, as more complex projects have become the norm. The projects attracting most of the marginal investment—such as deep-water offshore drilling in Brazil, the Gulf of Mexico, and West Africa; Canadian oil sands projects; and Siberian projects—take longer to explore and develop than more traditional projects. According to estimates based on field-level investment data of about 150 projects during 2003–07, these projects showed roughly twice the lag before the start of production as conventional projects. The lags likely reflect the complexities of working with emerging technology and are intrinsically related to soaring exploration and development costs. In some cases, projects have been delayed because governments have refused to renew some contracts in their current form in the face of higher-than-expected cost overruns.

In sum, the evidence suggests that although investment eventually does respond to prices, it does so with a greater lag and more slowly than in the past.

Geological Factors Make Supply Rigidities More Persistent

In addition to slow investment responses, there are two other factors that suggest that capacity growth will be more constrained by geology than in the past.

First, although peak production rates in major fields are attained earlier—because extraction methods have become more efficient—"decline rates" are also higher in major fields.[8] The International Energy Agency suggests that almost two-thirds of the additional gross capacity needed over the next eight years will be required just to replace declines in output from existing fields.

experience statistically significant higher costs. That said, the IMF staff has found a positive relationship between oil production growth and good governance indicators since 2000 (see Box 1.4 of the September 2006 *World Economic Outlook)*.

[8]Decline rates refer to the natural rate of depletion once an oil field reaches its peak and are estimated at between 4 and 8 percent for conventional non-OPEC fields.

Box 1.5 *(concluded)*

Second, oil will increasingly come from unconventional sources, because output has declined from peak levels at conventional fields in many countries, and the size of oil fields is getting smaller on average.[9] This does not mean that the world is about to run out of oil, but it suggests that higher oil prices are needed to induce the additional investment required to balance the market over the medium term.

The rigidities that are currently preventing an adjustment toward greater supply growth suggest that the current cycle will be different from the major oil boom of the late 1970s. The table shows many of the underlying oil market factors associated with both episodes: in the late 1970s oil companies had ample opportunity to expand geographically, more oil fields were conventional, and production was located close to the main consuming centers.

Ultimately, policy and technology will determine the size of the supply and demand responses to high prices this time around. Although both demand and supply will eventually adjust, a policy-induced demand response can be implemented faster and is likely to have a more immediate impact than a supply response, because many of the output constraints are geological and technological. Specifically, policies that lead to higher vehicle fuel-efficiency standards and the elimination of domestic fuel subsidies in some countries have the greatest potential to ease market tightness. It will also be important to remove investment obstacles and foster efficient and stable tax policies for companies.

[9]See the International Energy Agency (2007), National Petroleum Council (2007), and van der Veer (2008).

Then and Now: Average Values of Oil Market Variables during Two Major Oil Booms
(In percent unless otherwise stated)

	1977–80	2004–06
Supply-related factors		
Oil capacity growth rate	2.5	1.6
Share of production by seven major international oil companies[1]	21	15
Share of production in conventional oil fields to total[2]	93	52
Share of production in the OECD to total global production	61	38
Memorandum item:		
OECD oil intensity (million barrels a day consumed as a ratio of GDP)	1.07	0.57

Sources: Goldman Sachs (2007); International Energy Agency; British Petroleum, Statistical Review of World Energy 2007; and IMF staff estimates.
[1]Data for 1977–80 estimated based on major operations of seven largest companies.
[2]Nonconventional defined as offshore, Siberian, and oil sands.

The increased global net demand (consumption minus production) in 2007 was accommodated by declining inventories. OECD inventories fell through the second half of 2007 to a level below the five-year average (in millions of barrels) and forward cover (in days). During the first two months of 2008, however, inventories started to increase on weakening demand in some OECD economies (Figure 1.18, third panel).[10] With some capacity buildup and declining production, OPEC's spare capacity increased slightly to about 2.7 percent of global demand (Figure 1.18, fourth panel), but remains below recent historical averages and is largely concentrated in Saudi Arabia (consisting mostly of more difficult-to-refine sour crude). However, substantial additions to capacity are projected to raise spare capacity to levels closer to historical averages during 2009.

With the tightening market balance, spot prices rose much faster than futures prices in the second half of 2007, and the oil price futures curve at the front end has been more downward sloping than usual since then. This

[10]There are no data on non-OECD commercial stocks. China and India have begun to build official oil stock facilities.

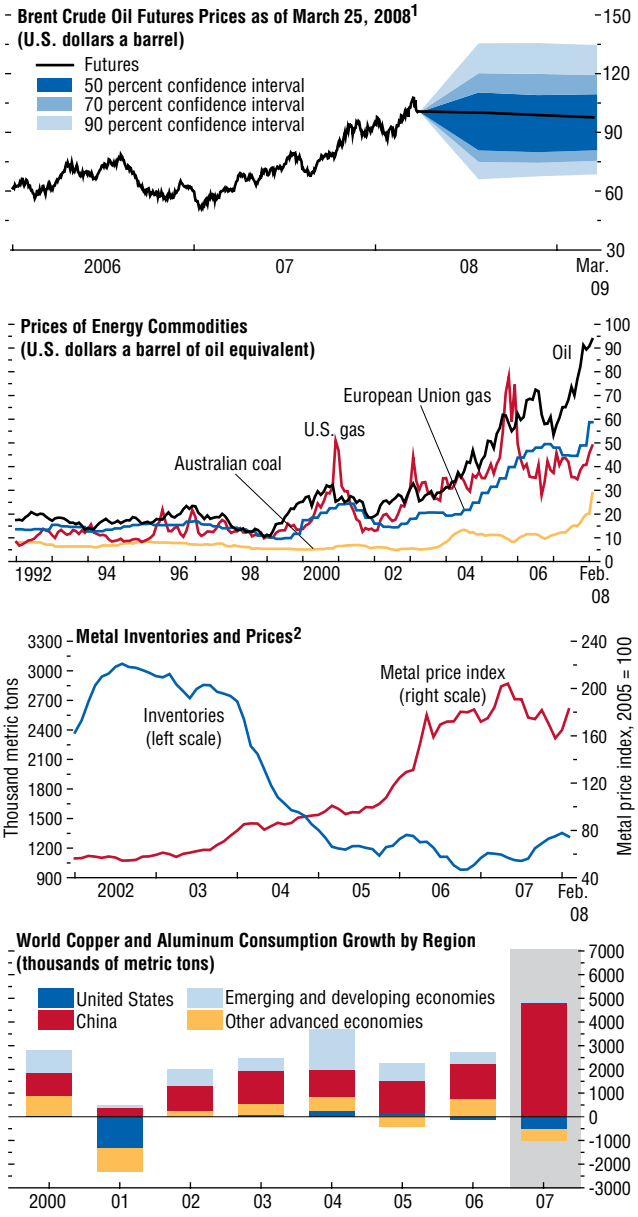
constellation of above-average backwardation implies that markets expect future spot prices to be below current spot prices, which provides inventory holders with incentives to reduce their stocks below usual levels to accommodate short-term supply disruptions.[11] As inventory levels recovered somewhat in the first six weeks of 2008, the futures curve began to flatten (Figure 1.17, fourth panel). These developments are in contrast with much of 2005–07, when near-term futures were above spot prices—referred to as "front-end contango"—which provided incentives for increased inventory holdings in anticipation of higher prices.

Oil market balances are expected to remain tight on the basis of current demand and supply projections. Most forecasters expect a pickup in demand growth in 2008 by around 1.6 mbd under the assumption of more normal (colder) winter weather, with growth in non-OECD countries broadly unchanged at about 1.3–1.5 mbd. This projected increase in global demand is likely to be only partly met by higher non-OPEC supply. The latter is expected to rise by 0.8–1.0 mbd, but given the recent pattern of overprediction of non-OPEC supply trends, actual production increases could again fall short of expectations. OPEC has so far resisted pressure to increase production quotas beyond last November's increase, given concerns that prices may fall rapidly with slowing global growth.

As a result, oil prices are projected to remain at around $95 a barrel in 2008–09 (as measured by the IMF's average petroleum spot price, see Box 1.6), broadly consistent with futures market prices. As shown in the fan chart based on options prices, the balance of risks to future spot prices is slightly tilted to the downside, likely reflecting downside risks to global growth (Figure 1.19, first panel). Nevertheless, price spikes remain a concern, as options mar-

[11]Slight backwardation (spot prices above futures prices) has been the norm in oil markets, reflecting the convenience yield required for inventory holdings with stable prices and the incentives needed for producers to extract oil now rather than in the future.

Figure 1.19. Energy and Metal Prices and Metal Consumption Growth



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

[1]From futures options.

[2]Inventories refer to the sum of global stocks of copper, aluminum, tin, zinc, nickel, and lead monitored by the London Metal Exchange. Price refers to a composite index of those metals.

Box 1.6. Oil Price Benchmarks

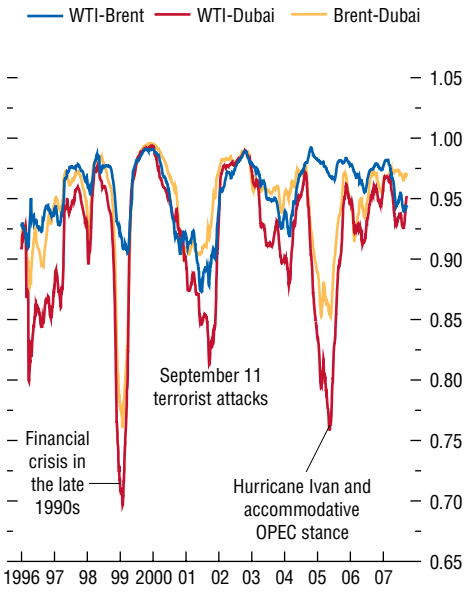
There are three main regional crude oil price benchmarks against which crudes in the various regions are priced based on quality differentials. West Texas Intermediate (WTI) is primarily used as a benchmark for much of the Western Hemisphere. North Sea Brent is a marker for crudes from Europe, Africa, and Central Asia, as well as for Middle Eastern crudes heading into Western markets. Dubai Fateh is mainly used as a benchmark for markets in Asia.

All three benchmark prices generally are useful gauges of global oil market conditions, except during times of large localized disturbances. Because the crudes underlying the benchmarks are of different quality, their prices differ. Nevertheless, with arbitrage possibilities across markets, the price differentials are broadly constant on average, and the price benchmarks are typically highly correlated (figure). The main exceptions are times with large localized disturbances, owing to regional specialization in supply chains. For example, in the summer of 2007, WTI traded at a discount to Brent owing to refinery problems in the U.S. Midwest.

The IMF uses an average petroleum spot price (APSP) for projections in the *World Economic Outlook*. The APSP is a simple average of the three major price benchmarks. Using such an average reduces the risk of misrepresenting the underlying global oil market conditions because of localized disturbances.

Note: The main authors of this box are Kevin Cheng and Valerie Mercer-Blackman.

Rolling Correlation Coefficients of Daily Oil Benchmark Prices
(Correlation coefficients)



Source: IMF staff calculations.

kets still expect oil prices of $100 a barrel or higher on delivery dates during 2008–09 with a risk-neutral probability of about 40 percent. On the downside, current estimates of long-run average production costs of $50 a barrel in marginal fields effectively constitute a lower bound.

Despite record-high oil prices, U.S. gasoline prices are only slightly above their highs of mid-May 2007, with U.S. retail gasoline prices hovering around $3.30 a gallon, reflecting lower crack spreads as refinery runs returned to normal levels and inventories rose to more comfortable levels. However, heating fuel prices in the United States hit a record high in March 2008, as stocks fell to critically low levels.

Coal Prices Soaring with Increased Substitution Away from Oil

The steady increases in crude oil prices since 2004 have changed fuel consumption patterns, which for the past two years have increasingly been characterized by a substitution for oil of other, cheaper energy sources. The substitution is

particularly noticeable in electricity production, where fuel oil has increasingly been replaced by coal and, to a lesser extent, natural gas. This is in stark contrast with the consumption rigidities in transportation, where there are no large-scale alternative sources under current technologies (Figure 1.19, second panel).[12]

At a time of rising demand, coal supplies have recently been adversely affected by overextended supply chains,[13] in particular by major bottlenecks in Australian ports and weather problems in South Africa. As a result, coal prices increased by 83 percent over the 12 months ending January 2008. Overall, coal has become the world's fastest-growing hydrocarbon source.

In contrast, natural gas prices remained mostly flat during 2007. In the United States, this reflected ample inventories, notwithstanding greater demand through most of 2007 and two consecutive winters of warmer-than-normal temperatures. Prices are expected to stay near current levels during the next two years, but beyond that horizon, supplies are expected to tighten, as the current inventory overhang is expected to disappear. In Europe, however, energy consumption has shifted from natural gas to coal and nuclear energy, prompted by energy security concerns (Russia is the sole gas supplier for many markets).

Base Metals Prices Soften but Still Benefit from Strong Emerging Economy Growth

After surging in the first half of 2007, metals prices eased in the second half on concerns about slowing global manufacturing and increasing inventories. In early 2008, they recovered some of their losses in light of supply concerns (primarily owing to the effects of power outages on production in China and South Africa) (Figure 1.19, third panel). Tin was the main exception to the general trend, with prices remaining close to recent highs because of continued supply tightness and export restrictions in major Asian producers.

Overall, however, the fall in metals prices from the mid-2007 peak has been relatively narrow, because of continued strong demand from emerging economies, especially China. Prices of many metals—in particular of those used as inputs in steel production (nickel and zinc)—have been strongly correlated with China's industrial production during the past five years, and China accounted for almost 90 percent of global consumption increases in four main base metals during 2005–07 (Figure 1.19, fourth panel).

Metals prices—which tend to be the most sensitive to business cycle fluctuations among commodity prices—are expected to reverse their gains from early 2008 later in the year and to ease further with slowing global growth. That said, as in the oil market, supply problems could limit downward pressures, especially over the medium term, as reflected in the increased spread between five-year-ahead futures and spot prices for copper and aluminum in early 2008. Copper production in particular could remain vulnerable to labor-related disruptions, technical difficulties, and deteriorating ore quality, while other metals—particularly nickel and aluminum—could be affected by escalating costs and the latest bout of industry consolidation.[14] Such merger activity could negatively affect new investment because funds are being diverted from possible greenfield investments to acquisitions, a process generally followed by

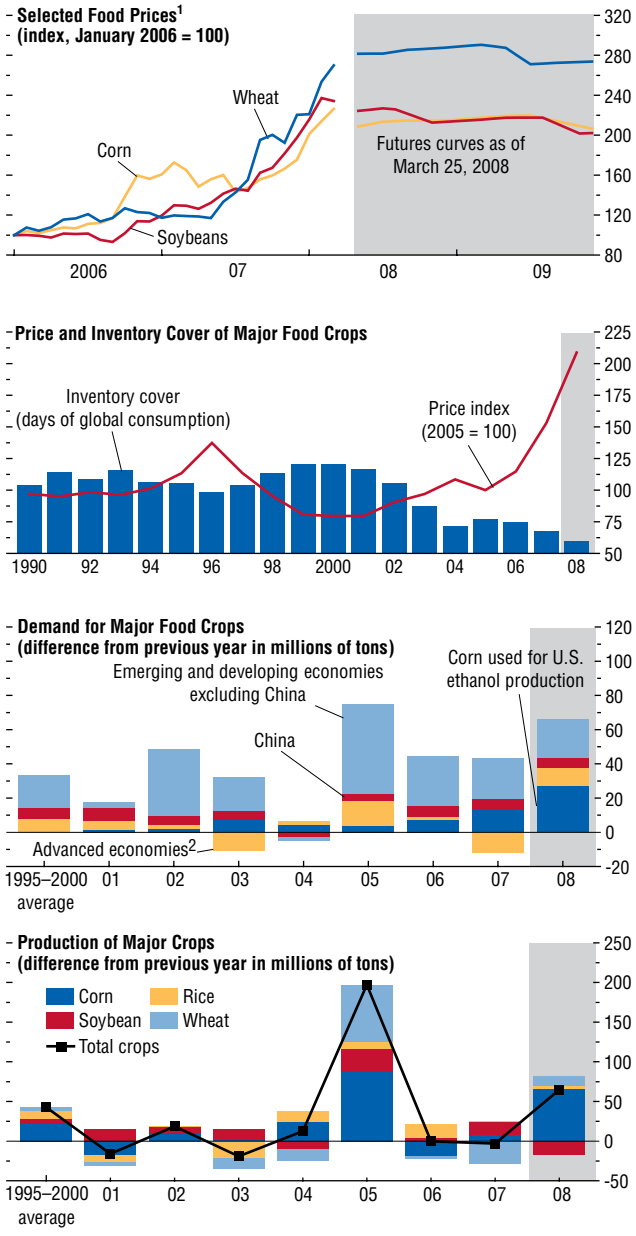
[12]A recent study by Hughes and others (2007) suggests that the price elasticity of demand for transportation fuels in the United States may be up to 10 times smaller now, compared with the late 1970s. In emerging markets, moreover, transportation fuel demand has become less income elastic with increased vehicle ownership.

[13]Transport bottlenecks for both wet and dry freight have become more prevalent in recent years with rapidly increasing commodity demand, as reflected in sharply higher bulk shipping rates.

[14]Recent notable mergers and acquisitions in metals include Alcoa with Alcan and Arcelor with Mittal. This follows a trend toward greater concentration in mining of the main base metals, with the five largest companies in 2005 producing an estimated 43 percent of metals output combined (compared with 33 percent in 1985).

conservative financial strategies as firms attempt to reduce new debt levels.

Figure 1.20. Recent Developments in Major Food Crops



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

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

[2]Excludes corn used in U.S. ethanol production.

Prices of Major Crops Propped by Biofuels and Rapid Emerging Economy Growth

Food prices rose by 39 percent from February 2007 to February 2008—led by wheat, soybeans, corn, and edible oils, all of which reached new highs. As in the oil market, price strength reflects tight market balances, with inventories of major food crops at a two-decade low despite generally robust production growth (Figure 1.20, top panels). The tightening reflects a number of factors.

Rising biofuel production in the United States and the European Union has boosted demand for corn, rapeseed oil, and other grains and edible oils. Although biofuels still account for only 1½ percent of the global liquid fuels supply, they accounted for almost half the increase in the consumption of major food crops in 2006–07, mostly because of corn-based ethanol produced in the United States (Figure 1.20, third panel). Biofuel demand has propelled the prices not only for corn, but also for other grains, meat, poultry, and dairy through cost-push and crop and demand substitution effects.[15] Strong per capita income growth in China, India, and other emerging economies has also buoyed food demand, including for meats and related animal feeds, especially grains, soybeans, and edible oils.

On the supply side, drought conditions in a number of countries reduced global wheat production in 2007 (Figure 1.20, fourth panel). Moreover, higher oil prices have also increased production costs for many foods products.

Policies may also have contributed to upward pressure on global prices. In view of political concern about the social implications of rising food prices, some countries have resorted to measures to reduce exports and increase imports of food, thereby contributing to global

[15]See Box 1.6 of the October 2007 *World Economic Outlook*.

market tightness. For example, in 2007, China, Russia, Ukraine, Kazakhstan, and Argentina imposed export taxes on grains and lowered tariffs on edible oils, while India banned basmati rice exports and raised export taxes on palm oil.

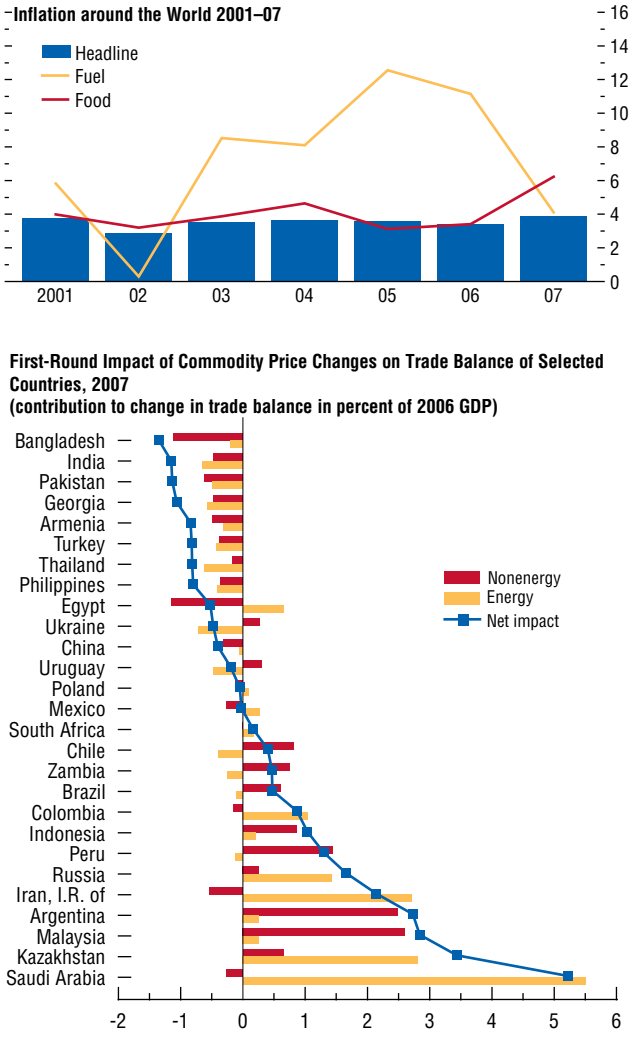
Food prices are expected to peak in 2008, and they are forecast to ease only gradually thereafter. In the short term, price risks are on the upside, as demand is expected to remain strong. More generally, although food price cycles in the past typically averaged three years, with supply responding quickly to changes in demand conditions, the current cycle is likely to last longer. The reason is that food demand is expected to continue increasing rapidly for some time with rising biofuel production in the United States[16] and the European Union, and with continued strong demand from emerging and developing economies.

Macroeconomic Implications of Rising Commodity Prices

Rising fuel and food prices have boosted headline inflation in many countries in recent months. Food price increases are of particular concern, especially for emerging and developing economies, because the corresponding expenditure shares exceed those of oil-related spending by a substantial margin. Indeed, food price increases accounted for almost 45 percent of global headline inflation in 2007 for major industrial and emerging economies, compared with around 27 percent in 2006, and the impact on emerging economies (almost 70 percent) has been much larger than on advanced economies (around 20 percent) (Figure 1.21, top panel; Table 1.4). The impact on headline inflation

[16]Corn-based ethanol supplies, for example, are expected to be spurred by the mandate in the 2007 U.S. energy bill to quintuple the production of ethanol by 2022. If the mandate under the bill is met on schedule, about half of the entire U.S. corn crop will have to be set aside for ethanol by the middle of the next decade (up from about 31 percent in 2008), even assuming cellulosic ethanol becomes commercially viable in about five years.

Figure 1.21. Macroeconomic Implications of High Commodity Prices



Source: IMF staff calculations.
[1]Assuming full pass-through is allowed.

Table 1.4. Food, Fuel, and Headline Inflation[1]

(In percent)

	2006					2007				
	Headline Inflation	Food		Fuel		Headline Inflation	Food		Fuel	
		Inflation[2]	Contribution[3]	Inflation[2]	Contribution[3]		Inflation[2]	Contribution[3]	Inflation[2]	Contribution[3]
World	3.4	3.4	27.0	11.2	19.9	3.9	6.2	44.3	4.1	8.0
Advanced economies	2.3	2.0	12.4	11.1	28.0	2.2	3.0	19.5	3.8	12.1
Africa	7.2	8.5	46.6	8.7	22.3	7.4	8.7	43.6	6.7	6.5
CIS[4]	9.3	8.5	40.0	17.1	7.6	9.6	9.2	41.1	11.7	7.2
Developing Asia	3.7	4.4	37.7	12.3	19.4	4.9	10.0	67.5	3.1	3.4
Central and eastern Europe	5.2	4.6	22.0	9.7	18.2	5.4	8.2	34.9	6.9	11.8
Middle East	3.4	5.1	57.0	1.9	5.3	10.1	13.6	42.3	10.1	24.4
Western Hemisphere	5.4	4.5	23.1	8.7	9.8	5.4	8.5	40.8	2.3	3.4

Source: Data on food and fuel price inflation are based on 137 countries submitted by country desks and data banks.
[1]Figure may differ from those in the Statistical Appendix tables because of limited country coverage.
[2]Changes in food or fuel-related consumer prices (or closest equivalents).
[3]Contribution to headline inflation in percent.
[4]CIS: Commonwealth of Independent States.

of the recent large oil and food price surges will persist through much of 2008 even without further price increases, and the potential for second-round effects on inflation remains a concern.

Higher commodity prices have benefited many emerging and developing economies, but they have adversely affected external balances of the net commodity importers among them (Figure 1.21, lower panel). IMF staff estimates suggest that the adverse first-round effects of sharply higher oil and food prices in 2007 on external current account balances exceeded 1 percentage point of GDP in a number of developing economies. Because much of the increase in the prices of grains and oil occurred in the second half of 2007, for some low-income economies external balances may deteriorate significantly in 2008, which could contribute to increasing their external vulnerabilities and slowing domestic demand and activity.

The sharply higher commodity prices have also increased cost pressures on producers and reduced household purchasing power in commodity-importing countries. These effects are likely to amplify the downdraft from the credit market crisis on consumers in advanced economies. At the global level, the effect of these subtractions from aggregate demand is unlikely to be fully offset by higher expenditure in commodity-exporting countries in response to the substantial terms of trade gain.

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