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Recovery, Risk, and Rebalancing

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Recovery, Risk, and Rebalancing

International Monetary Fund

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ASSUMPTIONS AND CONVENTIONS

A number of assumptions have been adopted for the projections presented in the *World Economic Outlook*. It has been assumed that real effective exchange rates remained constant at their average levels during August 4–September 1, 2010, except for the currencies participating in the European exchange rate mechanism II (ERM II), which are assumed to have remained constant in nominal terms relative to the euro; that established policies of national authorities will be maintained (for specific assumptions about fiscal and monetary policies for selected economies, see Box A1); that the average price of oil will be $76.20 a barrel in 2010 and $78.75 a barrel in 2011 and will remain unchanged in real terms over the medium term; that the six-month London interbank offered rate (LIBOR) on U.S. dollar deposits will average 0.6 percent in 2010 and 0.8 percent in 2011; that the three-month euro deposit rate will average 0.8 percent in 2010 and 1.0 percent in 2011; and that the six-month Japanese yen deposit rate will yield on average 0.6 percent in 2010 and 0.4 percent in 2011. These are, of course, working hypotheses rather than forecasts, and the uncertainties surrounding them add to the margin of error that would in any event be involved in the projections. The estimates and projections are based on statistical information available through late September 2010.

The following conventions are used throughout the *World Economic Outlook:*

. . .   to indicate that data are not available or not applicable;

–   between years or months (for example, 2009–10 or January–June) to indicate the years or months covered, including the beginning and ending years or months;

/   between years or months (for example, 2009/10) to indicate a fiscal or financial year.

"Billion" means a thousand million; "trillion" means a thousand billion.

"Basis points" refer to hundredths of 1 percentage point (for example, 25 basis points are equivalent to ¼ of 1 percentage point).

In figures and tables, shaded areas indicate IMF staff projections.

If no source is listed on tables and figures, data are drawn from the World Economic Outlook (WEO) database.

When countries are not listed alphabetically, they are ordered on the basis of economic size.

Minor discrepancies between sums of constituent figures and totals shown reflect rounding.

As used in this report, the terms "country" and "economy" do not in all cases refer to a territorial entity that is a state as understood by international law and practice. As used here, the term also covers some territorial entities that are not states but for which statistical data are maintained on a separate and independent basis.

Composite data are provided for various groups of countries organized according to economic characteristics or region. Unless otherwise noted, country group composites represent calculations based on 90 percent or more of the weighted group data.

The boundaries, colors, denominations, and any other information shown on the maps do not imply, on the part of the International Monetary Fund, any judgment on the legal status of any territory or any endorsement or acceptance of such boundaries.

This version of the *World Economic Outlook* is available in full on the IMF's website, www.imf.org. Accompanying it on the website is a larger compilation of data from the WEO database than is included in the report itself, including files containing the series most frequently requested by readers. These files may be downloaded for use in a variety of software packages.

Inquiries about the content of the *World Economic Outlook* and the WEO database should be sent by mail, forum, or fax (telephone inquiries cannot be accepted) to

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PREFACE

The analysis and projections contained in the *World Economic Outlook* are integral elements of the IMF's surveillance of economic developments and policies in its member countries, of developments in international financial markets, and of the global economic system. The survey of prospects and policies is the product of a comprehensive interdepartmental review of world economic developments, which draws primarily on information the IMF staff gathers through its consultations with member countries. These consultations are carried out in particular by the IMF's area departments—namely, the African Department, Asia and Pacific Department, European Department, Middle East and Central Asia Department, and Western Hemisphere Department—together with the Strategy, Policy, and Review Department; the Monetary and Capital Markets Department; and the Fiscal Affairs Department.

The analysis in this report was coordinated in the Research Department under the general direction of Olivier Blanchard, Economic Counsellor and Director of Research. The project was directed by Jörg Decressin, Assistant Director, Research Department, and Petya Koeva Brooks, Division Chief, Research Department.

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The analysis has benefited from comments and suggestions by staff from other IMF departments, as well as by Executive Directors following their discussion of the report on September 20, 2010. However, both projections and policy considerations are those of the IMF staff and should not be attributed to Executive Directors or to their national authorities.

Achieving a "strong, balanced, and sustained world recovery"—to quote from the goal set in Pittsburgh by the G20—was never going to be easy. It requires much more than just going back to business as usual. It requires two fundamental and difficult economic rebalancing acts.

First, internal rebalancing: When private demand collapsed, fiscal stimulus helped alleviate the fall in output. But fiscal stimulus has to eventually give way to fiscal consolidation, and private demand must be strong enough to take the lead and sustain growth.

Second, external rebalancing: Many advanced economies, most notably the United States, which relied excessively on domestic demand, must now rely more on net exports. Many emerging market economies, most notably China, which relied excessively on net exports, must now rely more on domestic demand.

These two rebalancing acts are taking place too slowly.

Private domestic demand remains weak in advanced economies. This weakness reflects both a correction of precrisis excesses and the scars of the crisis. U.S. consumers who had overborrowed before the crisis are now saving more and consuming less, and while this is good for the long term, it is a drag on demand in the short term. Housing booms have given way to housing slumps, and housing investment will remain depressed for some time. And weaknesses in the financial system are still constraining credit.

External rebalancing remains limited. Net exports are not contributing to growth in advanced economies, and the U.S. trade deficit remains large. Many emerging market economies continue to run large current account surpluses and to respond to capital inflows primarily through reserve accumulation rather than exchange rate appreciation. International reserves are higher than they have ever been and continue to increase.

The result is a recovery that is neither strong nor balanced and runs the risk of not being sustained. For the past year or so, inventory accumulation and fiscal stimulus were driving the recovery. The first is coming to an end. The second is slowly being phased out. Consumption and investment now have to take the lead. But in most advanced economies, weak consumption and investment, together with little improvement in net exports, are leading to low growth. Unemployment is high and barely decreasing. By contrast, in many emerging market economies, where excesses were limited and the scars are few, consumption, investment, and net exports are all contributing to strong growth, and output is once again close to potential.

What can be done to improve things?

First, and wherever private demand is weak, central banks should continue with accommodative monetary policy. However, one should be realistic. Not much more can be done, and one should not expect too much from further quantitative or credit easing. While there is no evidence yet that sustained low interest rates are leading to excessive risk taking, should such risks materialize, they should be addressed through macroprudential measures, not through increases in policy rates.

Second, and wherever needed, governments must continue both financial repair and financial reform. Many banks remain undercapitalized, and tight credit is constraining segments of demand. Securitization, which must play an important role in any future intermediation system, is still moribund. Financial reform is proceeding, but questions remain about "too-big-to-fail" institutions, the perimeter of regulation, and cross-border issues. The faster reform uncertainty is reduced, the more the financial system will support demand and growth.

Third, and again wherever needed, governments must address fiscal consolidation. What is essential is not so much phasing out fiscal stimulus now, but offering credible medium-term plans for debt stabilization and, eventually, debt reduction. Such

credible plans may involve fiscal rules, the creation of independent fiscal agencies, and phased-in entitlement reforms. They have not been offered in most countries, but they are essential and, once in place, will give governments more fiscal flexibility to sustain growth in the short term.

Fourth, emerging market economies with large current account surpluses must accelerate rebalancing. This is not only in the world economy's interest, but also in their own. In many countries, distortions have led to too low a level of consumption or too little investment. Removing these distortions and thus allowing consumption and investment to increase is desirable. To a large extent, market forces in the form of large capital inflows are pushing these countries in the right direction. Unless offset by reserve accumulation, capital inflows will lead to exchange rate appreciation. With the help of macroprudential measures and capital controls, these flows can help reallocate

production toward domestic goods. Finally, to the extent that countries remain worried about sudden stops, better provision of global liquidity can play an important role and limit the accumulation of reserves.

All these pieces are interconnected. Unless advanced economies can count on stronger private demand, both domestic and foreign, they will find it difficult to achieve fiscal consolidation. And worries about sovereign risk can easily derail growth. If growth stops in advanced economies, emerging market economies will have a hard time decoupling. The need for careful design at the national level, and coordination at the global level, may be even more important today than at the peak of the crisis, a year and a half ago.

Olivier Blanchard
Economic Counsellor

Thus far, economic recovery is proceeding broadly as expected, but downside risks remain elevated. Most advanced economies and a few emerging economies still face large adjustments. Their recoveries are proceeding at a sluggish pace, and high unemployment poses major social challenges. By contrast, many emerging and developing economies are again seeing strong growth, because they did not experience major financial excesses just prior to the Great Recession. Sustained, healthy recovery rests on two rebalancing acts: internal rebalancing, with a strengthening of private demand in advanced economies, allowing for fiscal consolidation; and external rebalancing, with an increase in net exports in deficit countries, such as the United States, and a decrease in net exports in surplus countries, notably emerging Asia. The two interact in strong ways. Increased net exports in advanced economies imply higher demand and higher growth, allowing more room for fiscal consolidation. Strengthened domestic demand helps emerging market economies maintain growth in the face of lower exports. A number of policies are required to support these rebalancing acts. In advanced economies, the repair and reform of the financial sector need to accelerate to allow a resumption of healthy credit growth. In addition, fiscal adjustment needs to start in earnest in 2011. Specific plans to cut future budget deficits are urgently needed now to create new room for fiscal policy maneuver. If global growth threatens to slow appreciably more than expected, countries with fiscal room could postpone some of the planned consolidation. Meanwhile, key emerging economies will need to further develop domestic sources of growth, with the support of greater exchange rate flexibility.

Stronger Activity, but Setbacks to Financial Stability

Economic recovery continued to strengthen during the first half of 2010. Global activity expanded at an annual rate of about 5¼ percent—about ½ percent higher than anticipated in the July *World Economic Outlook* (WEO) *Update*. A surge in inventory and, lately, fixed investment accounted for a dramatic rise in manufacturing and global trade. Low consumer confidence and reduced household incomes and wealth are holding consumption down in many advanced economies. Growth in these economies reached only about 3½ percent during the first half of 2010, a low rate considering that they are emerging from the deepest recession since World War II. Their recoveries will remain fragile for as long as improving business investment does not translate into higher employment growth. However, household spending is doing well in many emerging market economies, which expanded by close to 8 percent and where investment is propelling job creation. This heterogeneity in the pace of recovery across advanced and emerging economies is discussed in detail in Chapter 2.

At the same time, financial stability suffered a major setback, as explained in the accompanying October 2010 *Global Financial Stability Report* (GFSR). Market volatility increased and investor confidence dropped. Prices in many stock exchanges fell, led initially by financial stocks and by European markets. Heavy selling of the sovereign debt of vulnerable euro area economies rattled the banking system, triggering a systemic crisis. This added to existing worries about the sustainability of the recovery and caused a broader decline in stocks. Risk premiums on corporate bonds widened, and corporate bond issues slowed to a trickle in May. Issuance in emerging markets also dropped sharply. Since the beginning of the summer, however, financial conditions have improved again. Tail risks have been reduced by unprecedented European policy initiatives—the European Central Bank's Securities Markets Program and euro area governments' European Stabilization Mechanism—and by a front-loading of fiscal adjustment. However, underlying sovereign and banking vulnerabilities remain a significant challenge amid lingering concerns about risks to the global recovery.

Questions about the Pace of Recovery

The global recovery remains fragile, because strong policies to foster internal rebalancing of demand from public to private sources and external rebalancing from deficit to surplus economies are not yet in place. Global activity is forecast to expand by 4.8 percent in 2010 and 4.2 percent in 2011, broadly in line with earlier expectations, and downside risks continue to predominate. WEO projections are that output of emerging and developing economies will expand at rates of 7.1 and 6.4 percent, respectively, in 2010 and 2011. In advanced economies, however, growth is projected at only 2.7 and 2.2 percent, respectively, with some economies slowing noticeably during the second half of 2010 and the first half of 2011, followed by a reacceleration of activity. Slack will remain substantial and unemployment persistently high. Inflation is projected to stay generally low, amid continued excess capacity and high unemployment, with a few exceptions among the emerging economies. Risks to the growth forecasts are mainly to the downside. However, the probability of a sharp global slowdown, including stagnation or contraction in advanced economies, still appears low.

More Proactive Policies Are Needed

Policies need to become more proactive to achieve the required internal and external rebalancing. Most advanced economies and a few emerging economies still face major adjustments, including the need to strengthen household balance sheets, stabilize and subsequently reduce high public debt, and repair and reform their financial sectors. Monetary policy should stay highly supportive in most of the advanced economies and should be the first line of defense against any larger-than-projected weakening of activity as fiscal support diminishes. With policy rates already near zero in the large advanced economies, monetary policymakers may have to resort to further unconventional measures if private demand weakens unexpectedly as fiscal support wanes.

Fiscal adjustment needs to start in 2011. If global growth threatens to slow appreciably more than expected, countries with fiscal room could postpone some of the planned consolidation. One of the most urgent challenges for advanced economies is to legislate plans that help achieve sustainable fiscal positions before the end of the decade. This task is now more pressing than it was six months ago to rebuild room for fiscal policy maneuver in the face of still-volatile sovereign debt markets. Such room could be needed because monetary policy alone might not be able to provide sufficient support to counter the threat of a weakening of activity that is markedly more pronounced than expected.

Fiscal policy tightening will likely prove contractionary in most economies, although the extent is difficult to gauge. The survey of past experience in Chapter 3 suggests that fiscal consolidation in advanced economies typically detracts from short-term growth. The introduction of credible, growth-friendly, medium-term fiscal consolidation plans—currently not on offer in many advanced economies—would help limit the deflationary impact of consolidation on private demand in the short term. Such plans would have to include reforms to rapidly growing spending programs, notably entitlements, and tax reforms that favor production rather than consumption.

Better financial sector policies and practices in advanced economies are critical for strengthening the resilience of the recovery to shocks and sustaining private demand over the medium term. Progress on this front has been very slow. Apparently isolated difficulties in a few spots can have large spillover effects, via complex financial linkages and deterioration of fragile confidence. As the October 2010 GFSR explains, incomplete progress in addressing the legacy problems of the crisis has left systems in advanced economies vulnerable. Failure to rapidly resolve, restructure, or consolidate weak banks and repair wholesale markets raises the need for further fiscal backstopping and low interest rates to support recovery, which can cause other problems, including spillovers to emerging economies. More broadly, policymakers need to continue to clarify and specify regulatory reform, building on the improvements proposed by the Basel Committee on Banking Supervision. This would help financial markets and institutions provide more support, on a sounder

basis, for consumption and investment, which is essential for strong, sustainable growth.

Structural policies that strengthen growth over the medium term would also help support the required normalization of macroeconomic policies in advanced economies. While supportive macroeconomic policies and financial sector repair and reform are essential for stronger job creation, in a number of economies, labor market policies could enhance growth and job creation and reduce high unemployment over the medium term. Complementary reforms to product and services markets could strengthen the employment effects by boosting labor demand and real wages through greater competition and lower markups on prices.

Although many emerging economies are seeing high growth again, they continue to rely significantly on demand from advanced economies. Chapter 4 makes clear that demand for imports from the advanced economies will continue to be below precrisis trends, in view of the high share of consumer durables and investment goods in trade. Emerging economies that relied heavily on demand from these economies will therefore have to rebalance growth further toward domestic sources to achieve growth rates similar to those before the crisis, helping the required external rebalancing. In economies with excessive external surpluses, which are mainly in emerging Asia, fiscal tightening should therefore take a backseat to monetary tightening and exchange rate flexibility. Removing distortions that drive high household or corporate saving rates and deter investment in nontradables sectors would facilitate the rebalancing of growth to domestic sources. Such rebalancing will require further deregulation and reform of financial sectors and corporate governance, as well as stronger social safety nets in key Asian economies. In many other emerging economies, fiscal tightening can start

immediately, because domestic demand recovery is already well under way or public debt is relatively high. In various emerging economies, rising inflation or high credit growth also signal a need for further monetary tightening.

Many emerging and developing economies have successfully concluded first-generation reforms that improved macroeconomic policy frameworks, strengthening their resilience to macroeconomic shocks. However, to sustain or further raise potential growth and employment, efforts could usefully focus on simplifying product and services market regulation, raising human capital, and building critical infrastructure. Such reforms would also help absorb growing capital inflows in a productive manner, which would accelerate global income convergence and external rebalancing. As Chapter 1 and the October 2010 GFSR underscore, these flows can be expected to grow over the medium term, as the performance of emerging economies improves relative to that of the advanced economies, yields in the advanced economies remain low for some time, and institutional investors in advanced economies continue to diversify their exposures.

Strong, coordinated policy responses by all are essential to limit the fallout of the Great Recession. Historical evidence suggests that countries hit by financial crises typically suffer permanent output losses relative to precrisis trends. However, outcomes after individual crises have varied widely, depending on the policy responses. So far, much progress has been made through coordinated policy responses in alleviating liquidity strains and rebuilding confidence, and this has been essential for activity to rebound. The challenge ahead is for policymakers to put in place, in a coordinated manner, policies that support the fundamental adjustments needed for a return to healthy medium-term growth.

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

solidation. Meanwhile, key emerging economies will need to further develop domestic sources of growth, with the support of greater exchange rate flexibility.

Stronger Activity, but Setbacks to Financial Stability

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

Growing Momentum through the First Half of 2010

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

Table 1.1. Overview of the *World Economic Outlook* Projections
(Percent change, unless noted otherwise)

| | Year over Year | | | | | | Q4 over Q4 | | |
| | | | Projections | | Difference from July 2010 WEO Projections | | Estimate | Projections | |
	2008	2009	2010	2011	2010	2011	2009	2010	2011
World Output[1]	**2.8**	**−0.6**	**4.8**	**4.2**	**0.2**	**−0.1**	**2.0**	**4.3**	**4.4**
Advanced Economies	**0.2**	**−3.2**	**2.7**	**2.2**	**0.1**	**−0.2**	**−0.4**	**2.4**	**2.5**
United States	0.0	−2.6	2.6	2.3	−0.7	−0.6	0.2	2.2	2.7
Euro Area	0.5	−4.1	1.7	1.5	0.7	0.2	−2.0	1.9	1.4
Germany	1.0	−4.7	3.3	2.0	1.9	0.4	−2.0	3.9	1.2
France	0.1	−2.5	1.6	1.6	0.2	0.0	−0.5	1.7	1.6
Italy	−1.3	−5.0	1.0	1.0	0.1	−0.1	−2.8	1.3	1.1
Spain	0.9	−3.7	−0.3	0.7	0.1	0.1	−3.0	0.1	1.4
Japan	−1.2	−5.2	2.8	1.5	0.4	−0.3	−1.4	1.9	2.1
United Kingdom	−0.1	−4.9	1.7	2.0	0.5	−0.1	−2.9	2.8	1.6
Canada	0.5	−2.5	3.1	2.7	−0.5	−0.1	−1.1	3.1	2.9
Other Advanced Economies	1.7	−1.2	5.4	3.7	0.8	−0.0	3.2	4.2	4.7
Newly Industrialized Asian Economies	1.8	−0.9	7.8	4.5	1.1	−0.2	6.1	5.2	6.6
Emerging and Developing Economies[2]	**6.0**	**2.5**	**7.1**	**6.4**	**0.3**	**0.0**	**5.6**	**7.0**	**7.0**
Central and Eastern Europe	3.0	−3.6	3.7	3.1	0.5	−0.3	1.8	2.9	4.3
Commonwealth of Independent States	5.3	−6.5	4.3	4.6	0.0	0.3	−3.2	3.3	5.0
Russia	5.2	−7.9	4.0	4.3	−0.3	0.2	−2.9	3.2	5.0
Excluding Russia	5.4	−3.2	5.3	5.2	0.9	0.5	. . .	. . .	. . .
Developing Asia	7.7	6.9	9.4	8.4	0.2	−0.1	9.5	9.1	8.7
China	9.6	9.1	10.5	9.6	0.0	0.0	11.4	9.9	9.6
India	6.4	5.7	9.7	8.4	0.3	0.0	7.3	10.3	7.9
ASEAN-5[3]	4.7	1.7	6.6	5.4	0.2	−0.1	5.1	5.0	6.8
Latin America and the Caribbean	4.3	−1.7	5.7	4.0	0.9	0.0	1.4	4.8	4.4
Brazil	5.1	−0.2	7.5	4.1	0.4	−0.1	4.4	5.6	4.5
Mexico	1.5	−6.5	5.0	3.9	0.5	−0.5	−2.3	3.1	4.5
Middle East and North Africa	5.0	2.0	4.1	5.1	−0.4	0.2	. . .	. . .	. . .
Sub-Saharan Africa	5.5	2.6	5.0	5.5	0.0	−0.4	. . .	. . .	. . .
Memorandum									
European Union	0.8	−4.1	1.7	1.7	0.7	0.1	−2.1	2.1	1.7
World Growth Based on Market Exchange Rates	1.6	−2.0	3.7	3.3	0.1	−0.1	. . .	. . .	. . .
World Trade Volume (goods and services)	**2.9**	**−11.0**	**11.4**	**7.0**	**2.4**	**0.7**	. . .	. . .	. . .
Imports									
Advanced Economies	0.4	−12.7	10.1	5.2	2.9	0.6	. . .	. . .	. . .
Emerging and Developing Economies	9.0	−8.2	14.3	9.9	1.8	0.6	. . .	. . .	. . .
Exports									
Advanced Economies	1.9	−12.4	11.0	6.0	2.8	1.0	. . .	. . .	. . .
Emerging and Developing Economies	4.6	−7.8	11.9	9.1	1.4	0.1	. . .	. . .	. . .
Commodity Prices (U.S. dollars)									
Oil[4]	36.4	−36.3	23.3	3.3	1.5	0.3	. . .	. . .	. . .
Nonfuel (average based on world commodity export weights)	7.5	−18.7	16.8	−2.0	1.3	−0.6	. . .	. . .	. . .
Consumer Prices									
Advanced Economies	3.4	0.1	1.4	1.3	0.0	0.0	0.8	1.1	1.6
Emerging and Developing Economies[2]	9.2	5.2	6.2	5.2	−0.1	0.2	4.8	5.9	4.4
London Interbank Offered Rate (percent)[5]									
On U.S. Dollar Deposits	3.0	1.1	0.6	0.8	0.0	−0.1	. . .	. . .	. . .
On Euro Deposits	4.6	1.2	0.8	1.0	0.0	−0.2	. . .	. . .	. . .
On Japanese Yen Deposits	1.0	0.7	0.6	0.4	0.1	−0.2	. . .	. . .	. . .

Note: Real effective exchange rates are assumed to remain constant at the levels prevailing during August 4–September 1, 2010. Country weights used to construct aggregate growth rates for groups of economies were revised. When economies are not listed alphabetically, they are ordered on the basis of economic size. The aggregated quarterly data are seasonally adjusted.

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

[2]The quarterly estimates and projections account for approximately 78 percent of the emerging and developing economies.

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

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

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

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

- The economies of advanced Asia, other than Japan, have enjoyed a strong rebound. Their large manufacturing sectors have benefited from the global rebound in trade. As a result, their output is already above precrisis levels.

- The United States is close to precrisis levels of output but far below precrisis trends, and activity slowed noticeably in the second quarter of 2010. Consumption has been growing since the third quarter of 2009, but at low rates considering the depth of the retrenchment. At the same time, investment in business equipment and software has been rising strongly lately, helped by foreign demand, rebounding profits, and normalizing financial conditions. However, this has not yet triggered a sustained, solid recovery in employment and real estate activity remains very weak.

- Japan and the euro area are still appreciably below precrisis levels of output and remain dependent on foreign demand. In Japan, fiscal stimulus and the rebound in global trade and strong demand elsewhere in Asia have boosted output growth since the fourth quarter of 2009, but activity weakened significantly in the second quarter of 2010. In the euro area, led by Germany, activity showed significant strength only in the second quarter of this year, following a bad winter. The area's dependence on bank credit is restraining demand, as banks continue to be unusually cautious in lending. However, the depreciation of the euro from previous highs is beginning to support the euro area's tradable goods sector, and fixed investment is staging a modest comeback.

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

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

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

World trade and industrial production have continued to rebound, and employment has begun to grow again in advanced economies. Retail sales have recovered. They are buoyant in emerging economies but lagging in advanced economies, reflecting still-low consumer confidence. Recently, manufacturing confidence has receded, but it remains consistent with further expansion.
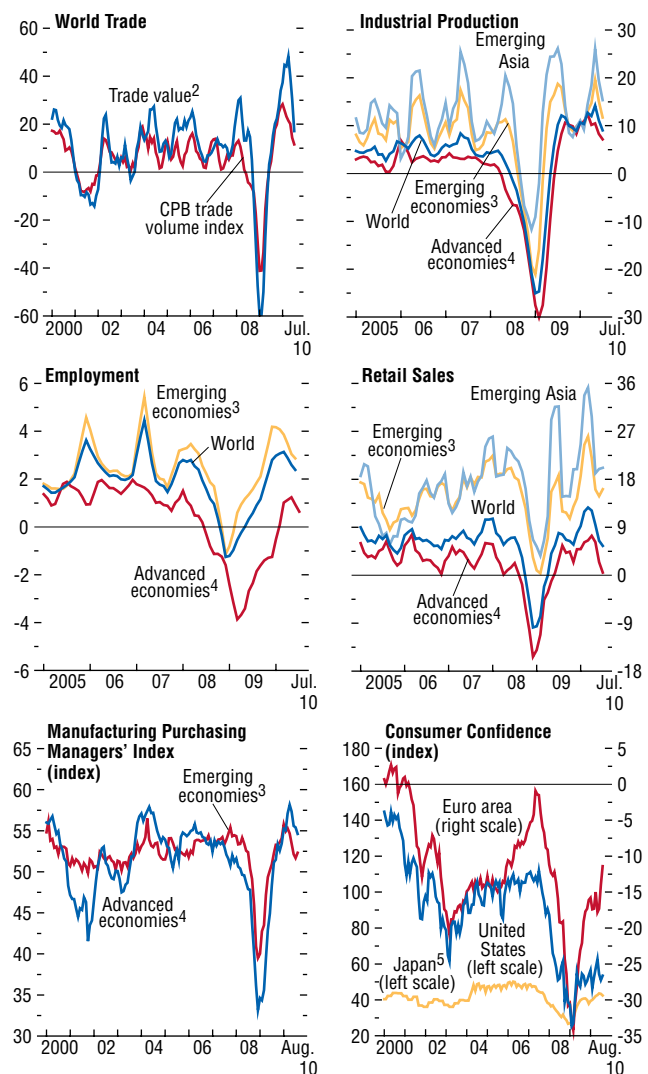
Sources: Netherlands Bureau for Economic Policy Analysis for CPB trade volume index; for all others, Haver Analytics and NTC Economics; and IMF staff calculations.

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

[2]In SDR terms.

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

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

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

Figure 1.2. Global Indicators[1]

(Annual percent change, unless noted otherwise)

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

Real Private Consumption
(annualized percent change from preceding quarter)

Emerging economies

Advanced economies

Real Gross Fixed Investment
(annualized percent change from preceding quarter)

Emerging economies

Advanced economies

of which: machinery and equipment[2]

Change in GDP[3]
(2010:Q2 GDP in percent of 2008:Q2 GDP)

US/EA   EAS   LA   CEE   AFR and
JP/OAAE   and CIS   ME

Real Commodity Prices
(1995 = 100)

Oil prices[4]

Gold

Metals   Food

Output since Trough for Highly Synchronized Recessions
(Index; quarters from trough on *x*-axis)

United States
1975:Q1
1982:Q3
1991:Q1
2009:Q2

Euro Area
1975:Q1
1982:Q3
1993:Q1
2009:Q2

Source: IMF staff estimates.
[1]Aggregates are computed on the basis of purchasing-power-parity (PPP) weights, unless noted otherwise.
[2]PPP-weighted averages of metal products and machinery for euro area, plants and equipment for Japan, plants and machinery for the United Kingdom, and equipment and software for the United States.
[3]US/EA/JP/OAAE: United States/euro area/Japan/other advanced Asian economies; EAS: emerging Asia; LA: Latin America; CEE and CIS: central and eastern Europe and Commonwealth of Independent States; AFR and ME: Africa and Middle East.
[4]Simple average of spot prices of U.K. Brent, Dubai Fateh, and West Texas Intermediate crude oil.

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

- Growth in emerging Asia reached about 9½ percent, as robust domestic demand spread from China, India, and Indonesia to other Asian economies. In China, major fiscal stimulus, a large expansion of credit, and a number of specific measures to boost household incomes and consumption increased domestic demand growth to close to 13 percent in 2009, contributing to a large decline in the current account surplus. The recovery is now well established, and a transition from public stimulus to private-sector-led growth is under way.

- Latin America has also recovered strongly, with real GDP growth at about 7 percent. The recovery is being led by Brazil, where real GDP growth has been running close to 10 percent since the third quarter of 2009 and the economy is now showing signs of overheating. A number of other economies have also returned to solid growth. However, Mexico is lagging, partly because of its strong trade linkages with the United States. Growth in Mexico recently picked up on the back of strengthening exports to the United States, but the output gap remains large.

- Many developing economies were less affected by the global recession and now seem to be sharing in the pickup in world trade, and estimates for growth in 2010 are generally encouraging. Available data for African and Middle Eastern economies point to robust growth. By contrast, economies that were hit particularly hard by the crisis are struggling to return to sustained growth, including in many parts of emerging Europe and the Commonwealth of Independent States, where the recovery remains much more subdued.

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

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

Setbacks to Financial Stability

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

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

Figure 1.3. Recent Financial Market Developments

Equity markets have surrendered part of their large 2009 gains, and volatility spiked during the first quarter. Losses were led by financial stocks in Europe. However, as concerns about sustainability of the recovery grew, losses broadened to other regions and sectors, particularly to companies producing discretionary consumer products. Commodity prices generally retreated, but gold prices shot up, driven by rising investor risk aversion.
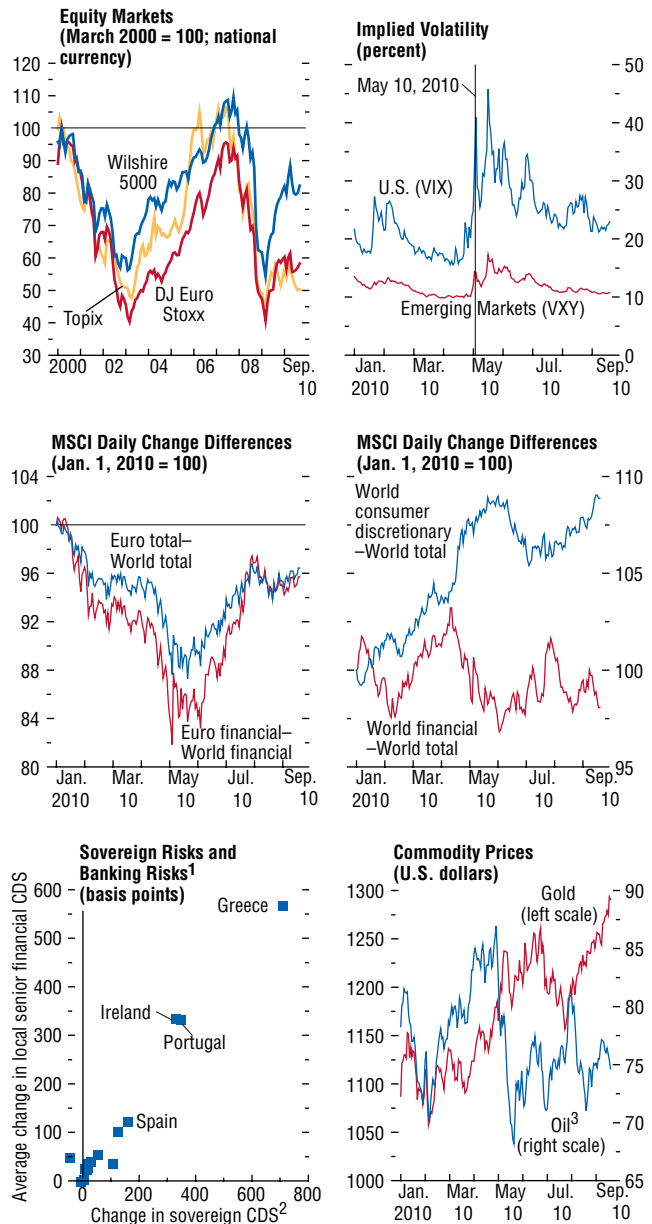
Sources: Bloomberg Financial Markets; Thomson Datastream; and IMF staff calculations.
[1]October 2009–September 2010.
[2]CDS = credit default swap spread.
[3]Simple average of spot prices of U.K. Brent, Dubai Fateh, and West Texas Intermediate crude oil.

Figure 1.4. Developments in Mature Credit Markets

Funding strains in advanced economy banking markets reappeared, but tensions remained much lower than one year earlier. Bond yields for Germany, Japan, and the United States declined amid investor flight to safe havens and rising concerns about the sustainability of the recovery. However, yields in vulnerable euro area countries rose because of concerns about high public and external deficits and debt. Notwithstanding the turbulence, bank lending conditions in major economies continued to normalize. Corporate spreads widened somewhat, and issuance briefly dried up.
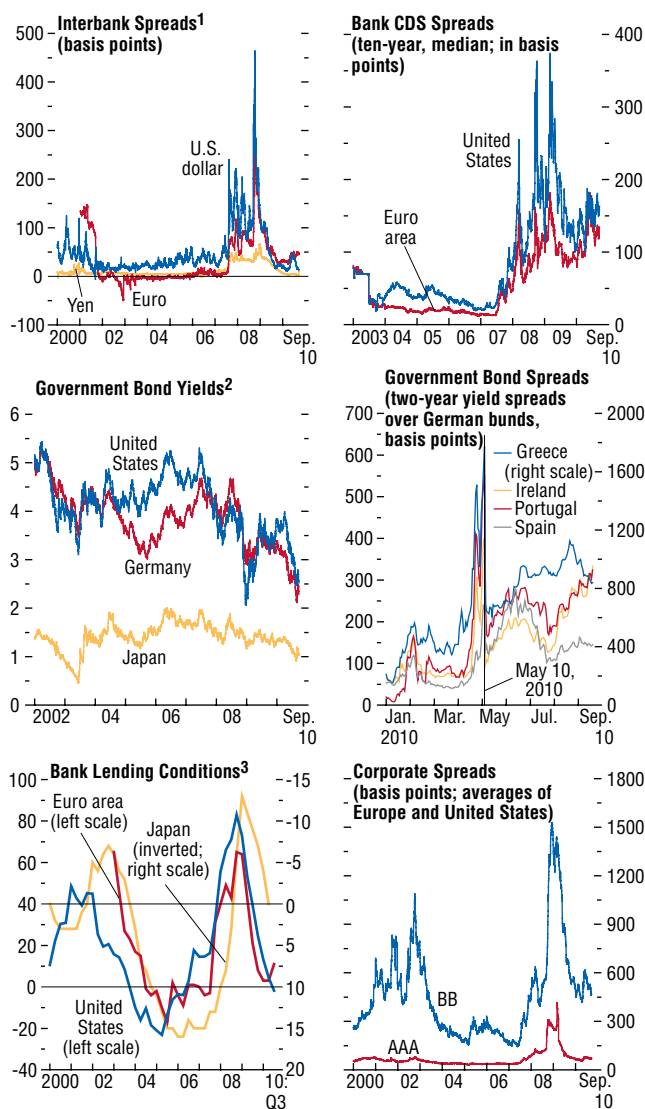
Sources: Bank of America/Merrill Lynch; Bank of Japan; Bloomberg Financial Markets; European Central Bank; Federal Reserve Board of Governors; and IMF staff calculations.

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

[2]Ten-year government bonds.

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

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

There Are Signs of Normalization, but Important Vulnerabilities Remain

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

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

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

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

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

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

Volatile Currencies and Commodity Prices

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

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

Figure 1.5. Emerging Market Conditions

Equity markets in emerging economies also surrendered a small part of earlier gains during the turbulent months of May and June. Spreads widened moderately and issuance fell. However, local bank credit markets continue to recover, with emerging Europe lagging. China has slowed very high credit growth rates to address growing macroprudential concerns.
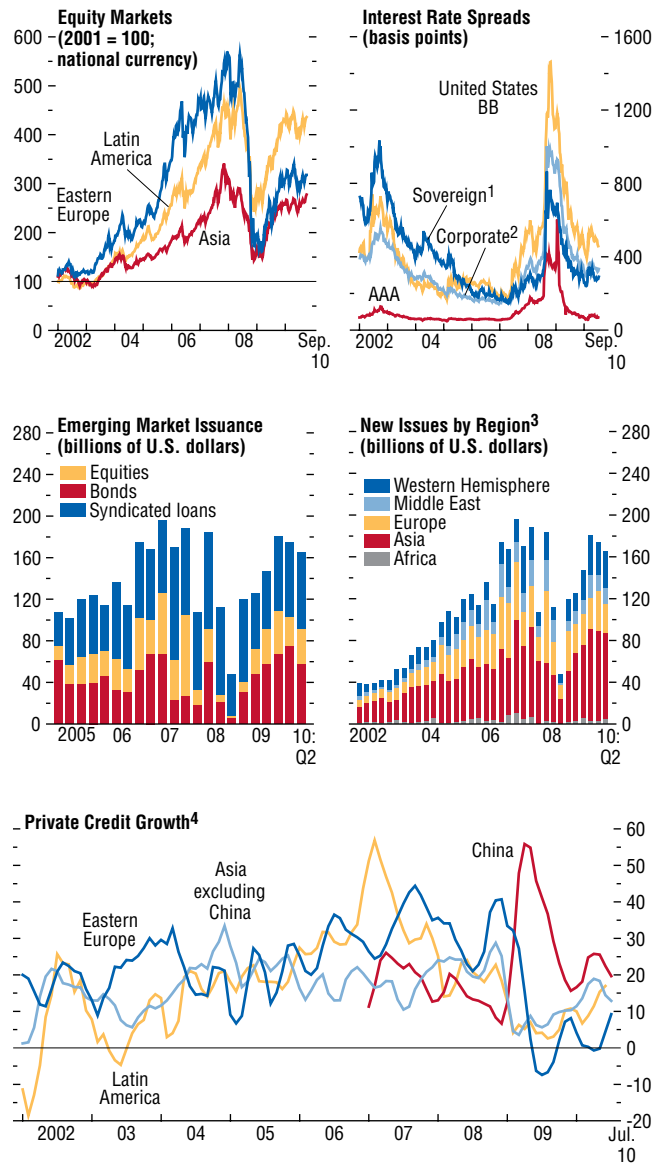
Sources: Bloomberg Financial Markets; Capital Data; IMF, *International Financial Statistics;* and IMF staff calculations.
[1] JPMorgan EMBI Global Index spread.
[2] JPMorgan CEMBI Broad Index spread.
[3] Total of equity, syndicated loans, and international bond issues.
[4] Annualized percent change of three-month moving average over previous three-month moving average.

Figure 1.6. Public Sector Financing[1]

Public sector financing needs are very large in many economies. However, demand for sovereign debt has remained strong because of high risk aversion. Accordingly, long-term government bond rates of most advanced economies have declined since March 2010 as concerns about the recovery rose. Also, even during the most turbulent times in June, only a few governments experienced a major widening of spreads. In the euro area, widening spreads correlate negatively with strong current account or fiscal balances.
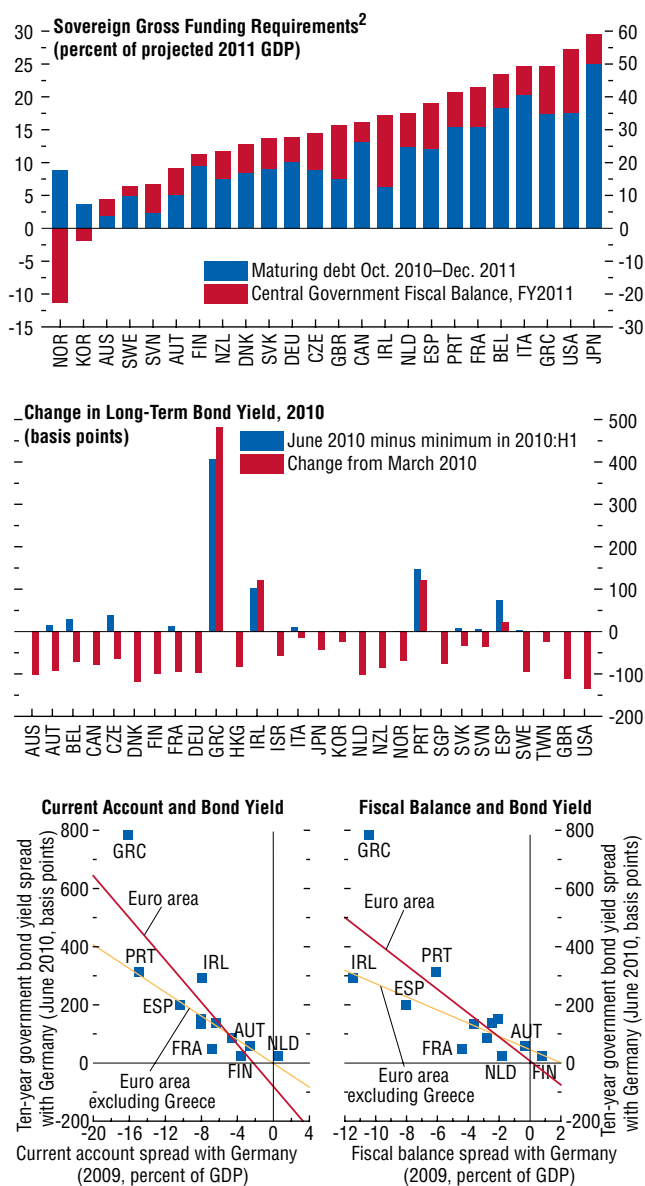
Source: IMF staff estimates.
[1]AUS: Australia; AUT: Austria; BEL: Belgium; CAN: Canada; CZE: Czech Republic; DNK: Denmark; FIN: Finland; FRA: France; DEU: Germany; GRC: Greece; HKG: Hong Kong SAR; ISL: Iceland; IRL: Ireland; ISR: Israel; ITA: Italy; JPN: Japan; KOR: Korea; NLD: Netherlands; NZL: New Zealand; NOR: Norway; PRT: Portugal; SGP: Singapore; SVK: Slovak Republic; SVN: Slovenia; ESP: Spain; SWE: Sweden; TWN: Taiwan Province of China; GBR: United Kingdom; USA: United States.
[2]All left scale except Japan; Japan right scale.

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

Questions about the Pace of Recovery

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

Questions about Near-Term Prospects

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

Forces driving the near-term recovery

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

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

Figure 1.7. External Developments

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

The euro depreciated significantly during May–June 2010, while the currencies of China, Japan, and the United States appreciated. More generally, the currencies of many emerging economies appreciated noticeably from troughs recorded during the crisis. Many emerging economies, notably in Asia, are building up international reserves. This slows the rebalancing of global demand.
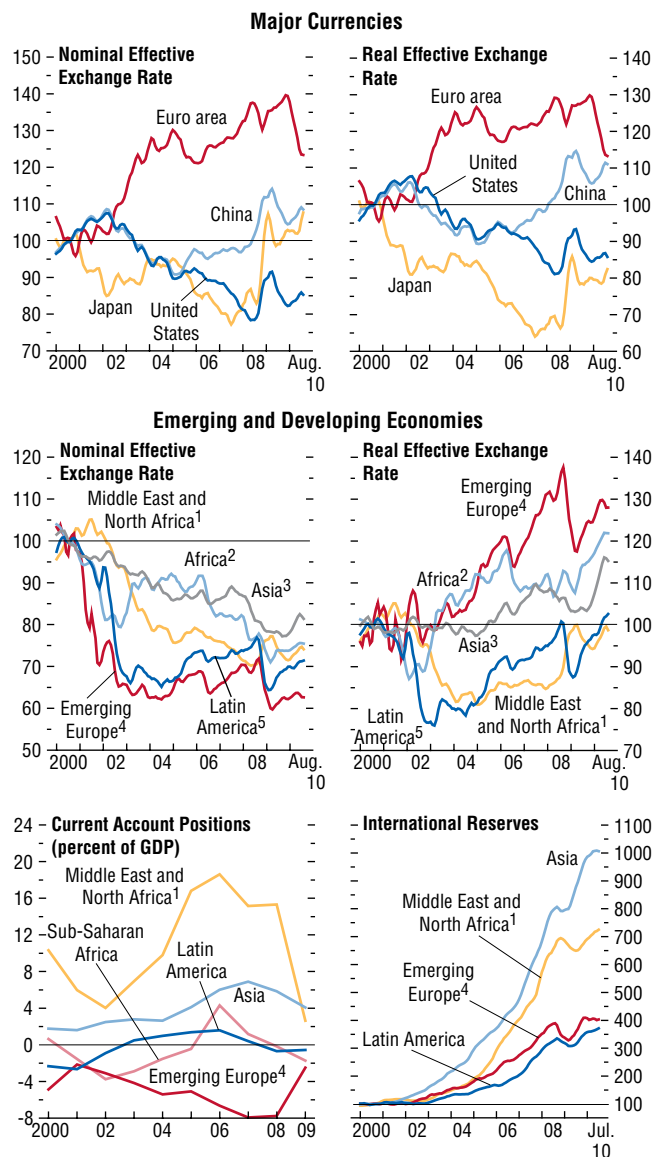
Sources: IMF, *International Financial Statistics;* and IMF staff calculations.
[1]Bahrain, Djibouti, Egypt, Islamic Republic of Iran, Jordan, Kuwait, Lebanon, Libya, Oman, Qatar, Saudi Arabia, Sudan, Syrian Arab Republic, United Arab Emirates, and Republic of Yemen.
[2]Botswana, Burkina Faso, Cameroon, Chad, Republic of Congo, Côte d'Ivoire, Equatorial Guinea, Ethiopia, Gabon, Ghana, Guinea, Kenya, Madagascar, Mali, Mauritius, Mozambique, Namibia, Niger, Nigeria, Rwanda, Senegal, South Africa, Tanzania, Uganda, and Zambia.
[3]Asia excluding China.
[4]Bulgaria, Croatia, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, and Turkey.
[5]Argentina, Brazil, Chile, Colombia, Mexico, Peru, and Venezuela.

Figure 1.8. Prospects for Near-Term Activity

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

Growth Tracker[1]

Real GDP Growth
(annualized percent change from previous half year)

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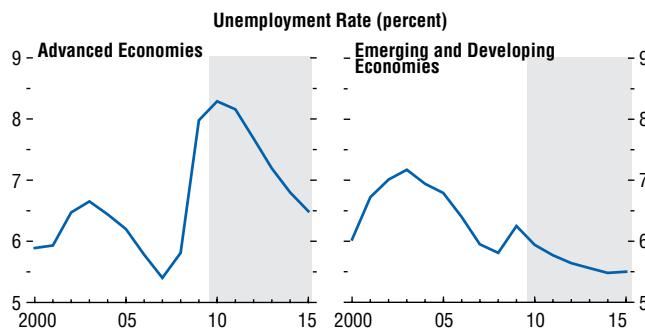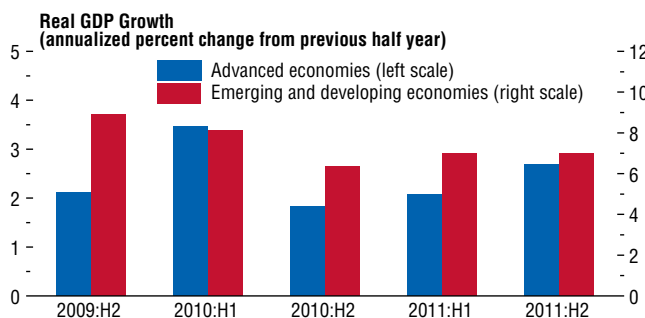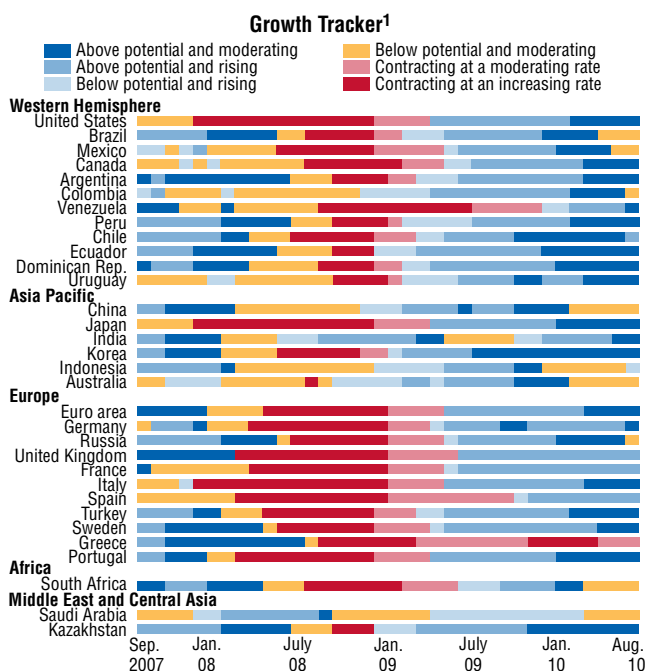
Sources: Haver Analytics; and IMF staff estimates.
[1]Within regions, countries are listed by economic size.

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

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

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

Forces holding back a near-term recovery

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

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

High uncertainty in financial markets

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

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

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

No upside from real estate

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

Figure 1.9. Recovery Dynamics

During the crisis, industrial production fell much more sharply than suggested by the trend relationship between output and GDP. This reflects a sharp drop in purchases of "postponable" items. Industrial production will continue to catch up with GDP, but at a diminishing rate. The inventory-driven rebound is largely over; as capacity utilization rates climb, investment should expand further, making a growing contribution to output growth.
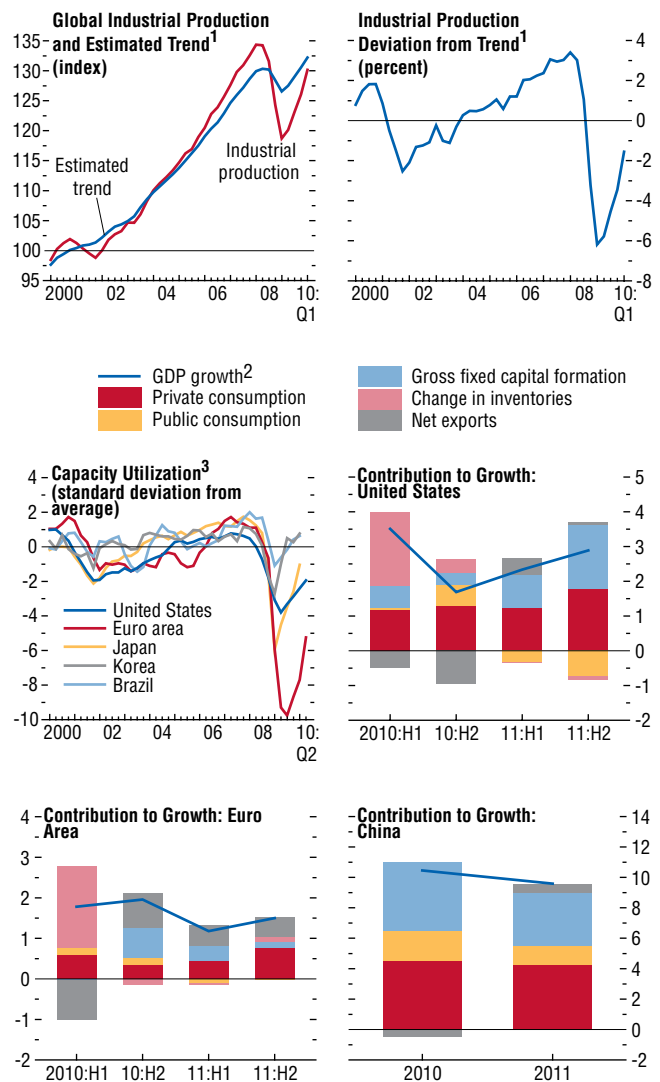
Sources: Haver Analytics; and IMF staff estimates.
[1]Trend estimated using a cointegrating relationship with global GDP.
[2]Annualized percent change over previous half year for the United States and Euro area, and percent change for China.
[3]Data standardized using averages and standard deviations taken from the 10 years before the crisis.

Figure 1.10. Balance Sheets and Saving Rates
(Percent)

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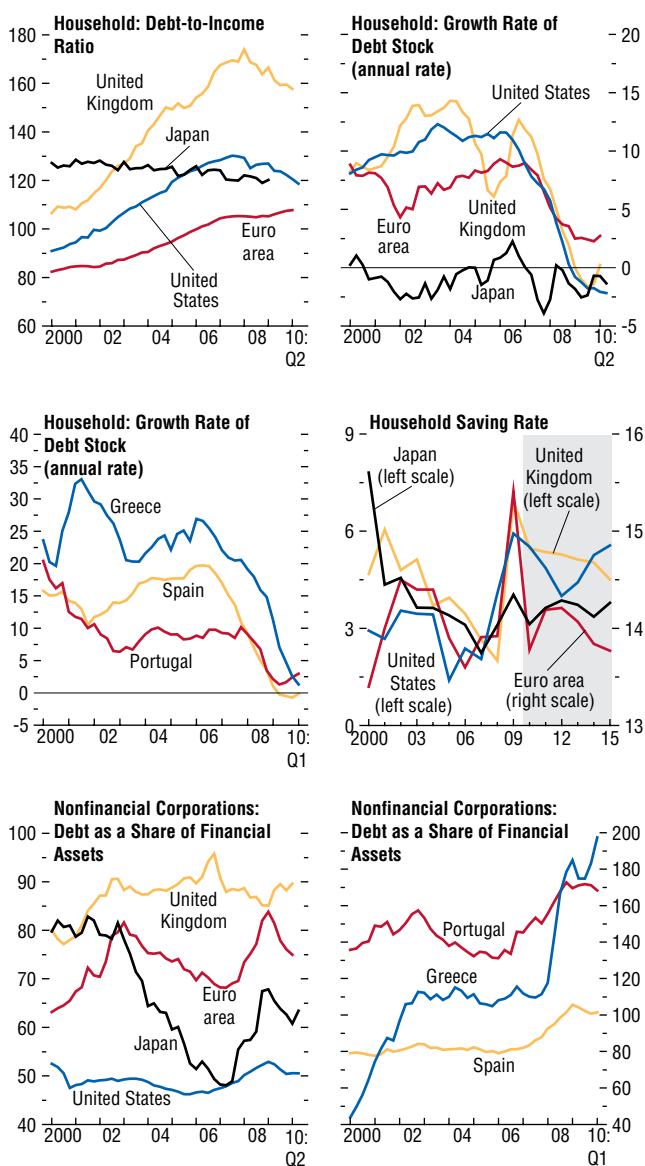
Sources: Haver Analytics; and IMF staff estimates.

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

Deleveraging by households

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

Slowing inventory accumulation

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

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

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

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

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

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

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

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

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

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

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

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

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

Box 1.1 *(continued)*

Emerging Economies' Performance after Advanced Economy Recessions
(Percentage points, unless noted otherwise)

— Emerging economy average   ■ Latin America
■ Asia   ■ Other

Growth Differences

Level Differences (percent)

Relative Growth

Source: IMF staff calculations.

Correlation of Advanced and Emerging Economy Detrended Output
(Rolling correlations, 20-year window, window-end years on x-axis)
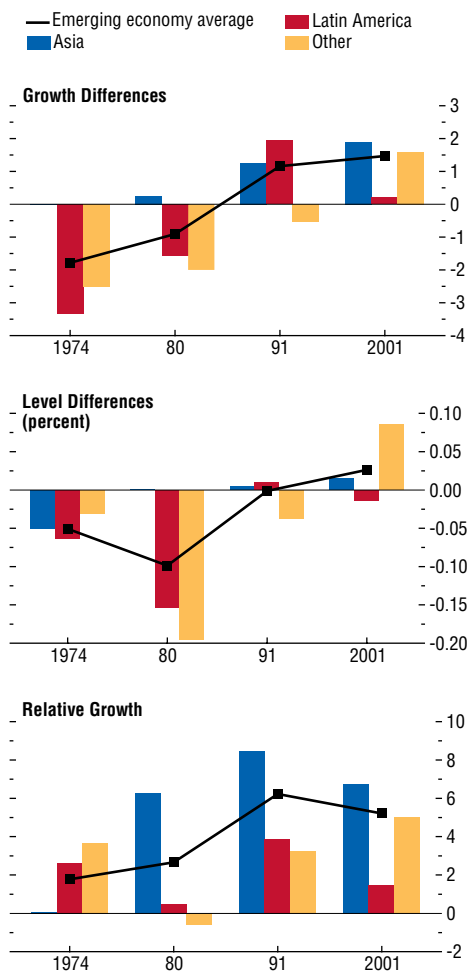
Source: IMF staff calculations.

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

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

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

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

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

How can we reconcile that emerging economies seem to be more dependent on advanced economies but have managed nonetheless to be less affected by their recessions? One possibility is that improved macroeconomic management may have helped insulate emerging economies from the worst effects of recent advanced economy recessions. Empirical evidence suggests that economies with weaker external balances were particularly vulnerable to the recent crisis, and that economies that were particularly depen-

dent on bank lending instead of foreign investment were susceptible to rapid capital outflows.[6] Similarly, analysis of the four episodes considered here shows that the current account balance at the onset of the advanced economy recession is a significant indicator of subsequent performance. Narrative evidence suggests that emerging economies are now more flexible and, as such, have been more resilient to foreign shocks. For example, flexible exchange rates helped to preserve competitiveness and allow trade to bounce back quickly following the downturn in the early 2000s, and capital inflows have been much less affected in recent episodes.

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

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

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

Shifting policy support

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

Easy monetary conditions

Monetary policy remains appropriately supportive in most economies, and markets are expecting a very gradual return to more normal interest rates (Figure 1.11).
- In advanced economies, the central banks of Australia, Canada, Israel, Korea, New Zealand,

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

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

(Percent, unless noted otherwise)

Monetary policy remains appropriately supportive. Amid rising uncertainty about future prospects, expectations for further rate hikes have been pushed further into the future, mainly in advanced economies.
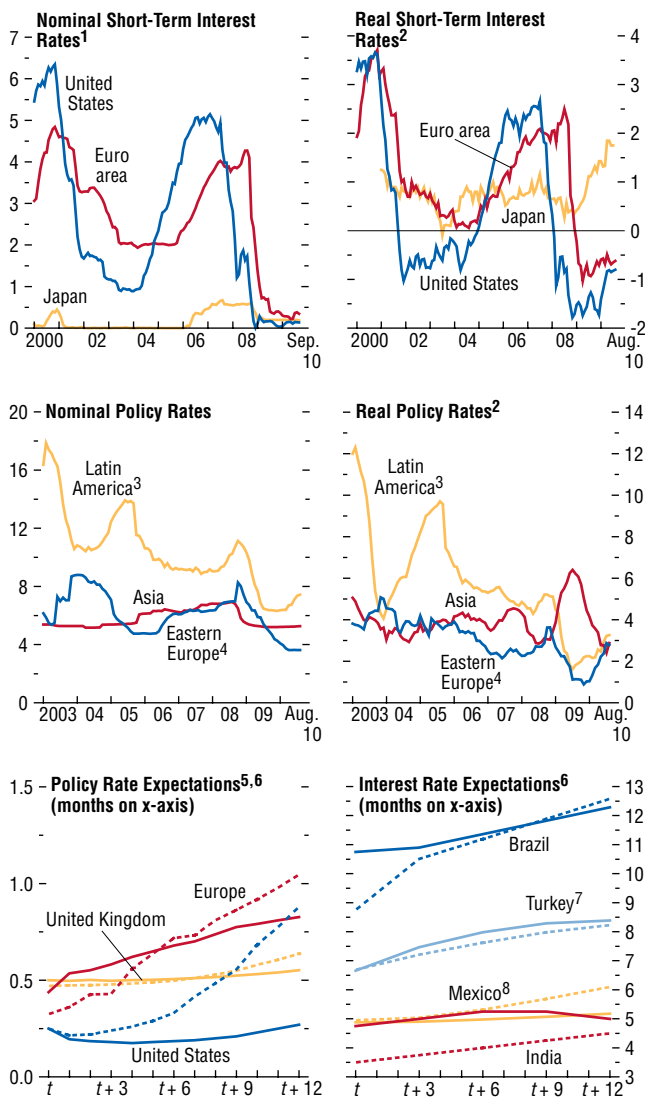
Sources: Bloomberg Financial Markets; Eurostat; Haver Analytics; and IMF staff calculations.

[1] Three-month treasury bill.
[2] Relative to core inflation.
[3] Argentina, Brazil, Chile, Colombia, Mexico, and Peru.
[4] Bulgaria, Estonia, Hungary, Latvia, Lithuania, and Poland.
[5] Expectations are based on the federal funds rate for the United States, the sterling overnight interbank average rate for the United Kingdom, and the euro interbank offered forward rates for Europe; updated September 23, 2010.
[6] Updated September 23, 2010. Dashed lines are as of April 12, 2010.
[7] Average bid-ask spread of the Turkish lira reference interest rate as of September 23, 2010. Some periods are linearly interpolated.
[8] Based on futures of 28-day interbank rates.

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

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

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

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

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

- The Bank of Japan terminated its limited commercial paper and corporate bond purchasing program and expanded a fund-supplying facility aimed at reducing term premiums. However, with the appreciation of the yen and declining equity prices, financial conditions have tightened and deflation remains a threat. Further monetary easing may thus be needed.

- The Bank of England halted its program of reserve-financed government bond purchases in February 2010. This was appropriate, given normalization in many parts of the financial sector, low long-term interest rates on government paper, and continued above-target inflation (due to price-level shocks).[3]

- Other central banks, such as the Reserve Bank of Australia, the Bank of Canada, the Swedish Riksbank, and those in emerging economies, have largely unwound liquidity support measures as their financial markets have healed and their economies have recovered robustly. In fact, a number of emerging economies have tightened prudential policies and practices in response to an upsurge in capital inflows or rapid credit growth.

- Given the sizable U.S. dollar funding needs of many commercial banks outside the United States, the Federal Reserve and the central banks of Canada, the euro area, Japan, Switzerland, and the United Kingdom recently revived their dollar swap facilities as dollar funding strains emerged during the May–June financial turmoil.

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

Fiscal consolidation

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

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

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

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

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

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

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

Figure 1.12. General Government Fiscal Balances and Public Debt
(Percent of GDP, unless noted otherwise)

Fiscal policy will become contractionary in 2011, following significant expansion mostly during 2009. Nonetheless, public debt ratios are projected to continue to rise, unless further action is taken. Although fiscal and household consolidation can be expected to lower demand in advanced economies, domestic demand in key emerging economies is not projected to compensate for this. Similarly, the change in fiscal policies in emerging and advanced economies with low debt and external surpluses is not expected to differ much from policy elsewhere.
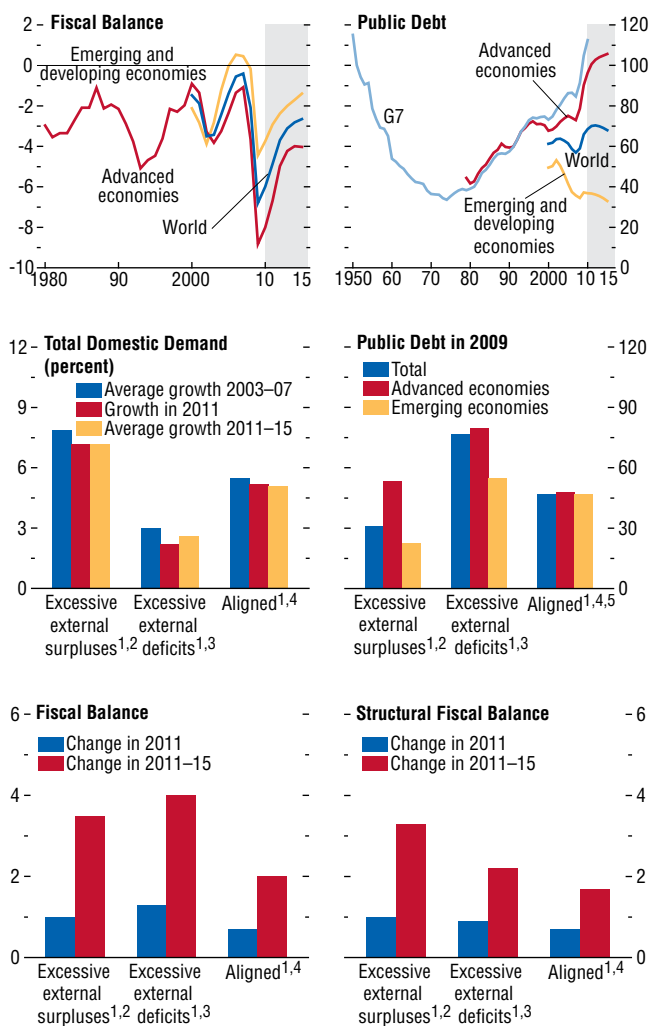
Source: IMF staff calculations.
[1]Based on the IMF staff's Consultative Group on Exchange Rate Issues (CGER). CGER countries include Argentina, Australia, Brazil, Canada, Chile, China, Colombia, Czech Republic, euro area, Hungary, India, Indonesia, Israel, Japan, Korea, Malaysia, Mexico, Pakistan, Poland, Russia, South Africa, Sweden, Switzerland, Thailand, Turkey, United Kingdom, and United States. For a detailed discussion of the methodology for the calculation of exchange rates' over- or undervaluation, see Lee and others (2008).
[2]These economies account for 19.4 percent of global GDP.
[3]These economies account for 21.6 percent of global GDP.
[4]These economies account for 44.0 percent of global GDP.
[5]Excludes Japan.

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

The forecast for 2010–11

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

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

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

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

Risks to activity are mainly to the downside

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

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

Figure 1.13. Global Outlook
(Real GDP; quarterly percent change from one year earlier, unless noted otherwise)

With negative and positive factors broadly canceling each other out over the next couple of years, WEO projections for 2010 and 2011 foresee little change in global growth. In advanced economies, growth rates are forecast to remain low, considering the depth of the recession and the amount of excess capacity. In emerging economies, growth is projected to be robust, compared with the experience following past global recessions, except in a number of economies in emerging Europe and the Commonwealth of Independent States.
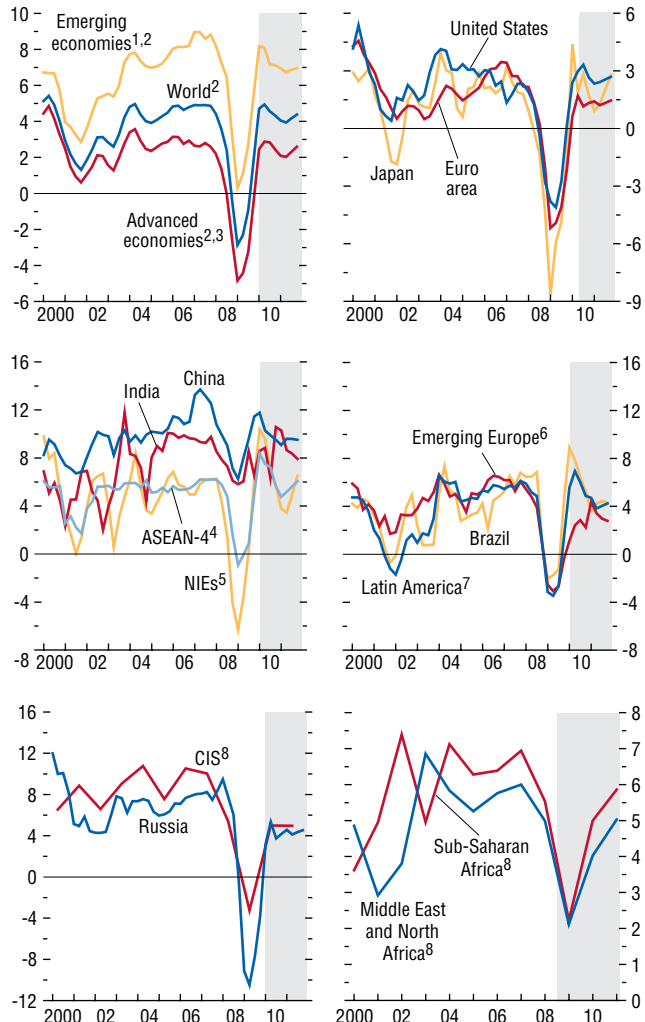
Sources: Haver Analytics; and World Economic Outlook database.
[1]Comprises China, India, Russia, South Africa, Turkey, and economies listed in footnotes 4, 6, and 7.
[2]Includes only economies that report quarterly data.
[3]Australia, Canada, Czech Republic, Denmark, euro area, Hong Kong SAR, Israel, Japan, Korea, New Zealand, Norway, Singapore, Sweden, Switzerland, Taiwan Province of China, United Kingdom, and United States.
[4]Indonesia, Malaysia, Philippines, and Thailand.
[5]Newly industrialized Asian economies (NIEs) comprise Hong Kong SAR, Korea, Singapore, and Taiwan Province of China.
[6]Bulgaria, Estonia, Hungary, Latvia, Lithuania, and Poland.
[7]Argentina, Brazil, Chile, Colombia, Mexico, Peru, and Venezuela.
[8]Annual percent change from one year earlier.

Box 1.2. Dismal Prospects for the Real Estate Sector

Asynchronized Adjustment[1]
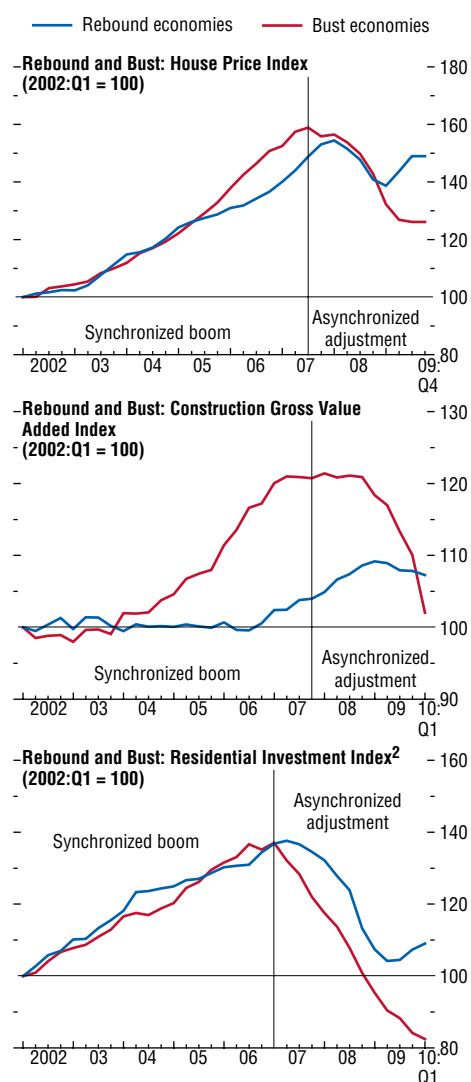
Sources: National sources; Organization for Economic Cooperation and Development, *Global Property Guide;* and IMF staff calculations.

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

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

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

Recent Developments in Real Estate Markets

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

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

- *Rebound economies:* Several economies in the Asia-Pacific region, joined by most Scandinavian countries and Canada, are seeing a rebound in house prices and residential investment and a stabilization in construction GVA.

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

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

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

GDP Prospects and Growth: Housing Rebound versus Bust Economies
(Percent)

■ Rebound economies ■ Bust economies
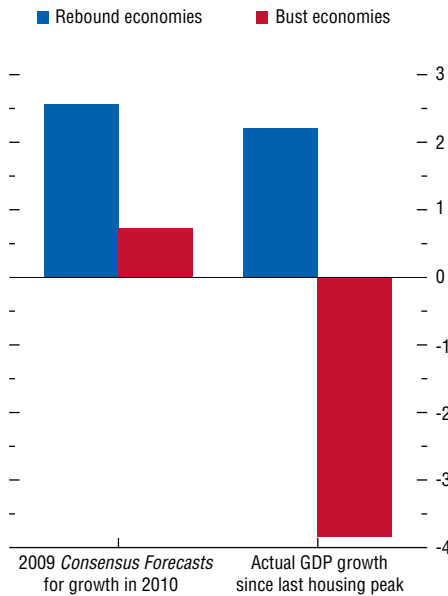
Sources: *Consensus Forecasts;* and IMF staff calculations.

Cross-Country Differences

■ Rebound economies ■ Bust economies

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

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

Collapse of Residential Investment in Advanced Economies

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

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

which is more difficult to sell off in a fire sale than bonds and equities. Therefore, the recovery is likely to be slower than in recessions triggered by problems related to corporate balance sheets.

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

Box 1.2 *(continued)*

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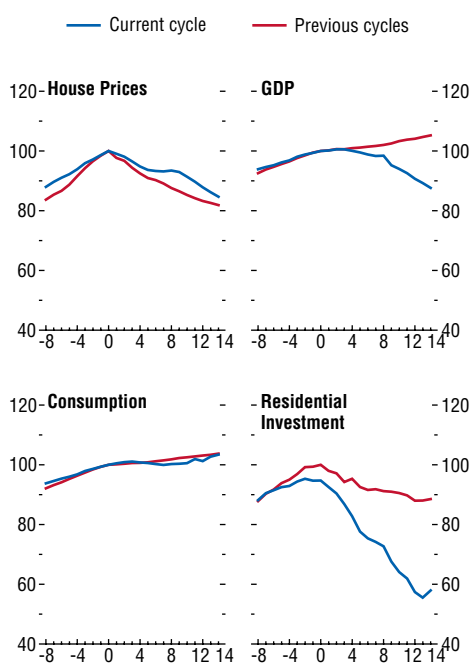
[1]House price cycle peaks are dated for each country separately. All series are indexed to equal 100 at the peak date. The series shown under previous cycles is the average index value for all countries around all peaks except the most recent one.

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

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

unemployment rates stubbornly high (Aspachs-Bracons and Rabanal, 2009).

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

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

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

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

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

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

There are other threats to the fragile stabilization. First, delinquency rates on commercial-mortgage-backed securities have recently reached record highs, and considerable amounts of commercial real estate debt will come due over the next few years.[7] Second, resets on adjustable-rate loans are looming on the horizon. Refinancing options are limited, despite his-

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

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

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

United States: Current versus Previous Housing Cycles
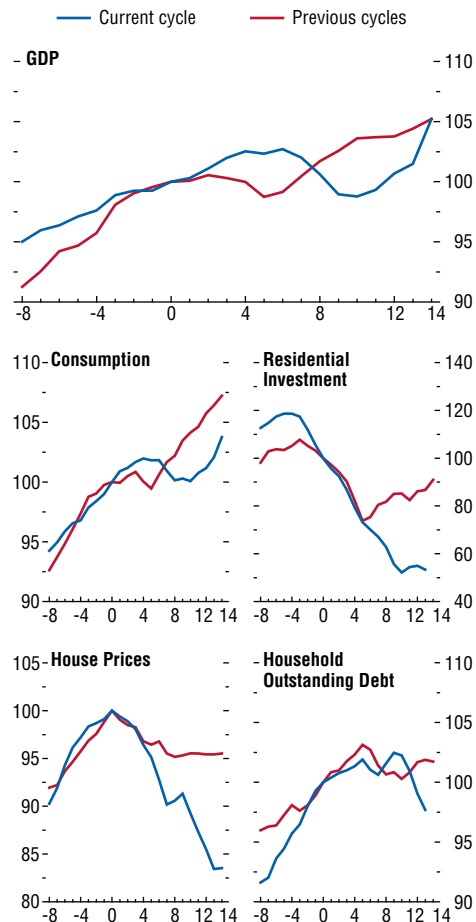
Sources: Haver Analytics; Organization for Economic Cooperation and Development; and IMF, *International Financial Statistics*

torically low mortgage rates, because many of these loans are underwater or have higher-than-original balances due to negative amortization and because borrowers face a depressed labor market.[8] Third, renewed strain on credit conditions may materialize from loan losses due to delinquencies, which still

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

Box 1.2 *(continued)*

Tax Relief to the Rescue?

—— Price index[1]
—— Existing home sales

United States: Housing Market Activity
(seasonally adjusted index, December 2003 = 100)

Home buyer tax credit originally to expire in December 2009, then extended to April 2010

United Kingdom: Housing Market Activity
(seasonally adjusted index, December 2003 = 100)

Suspension of stamp duty in December 2009
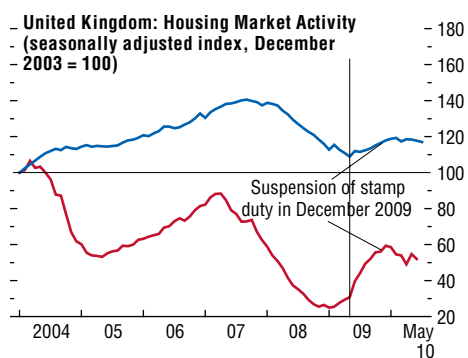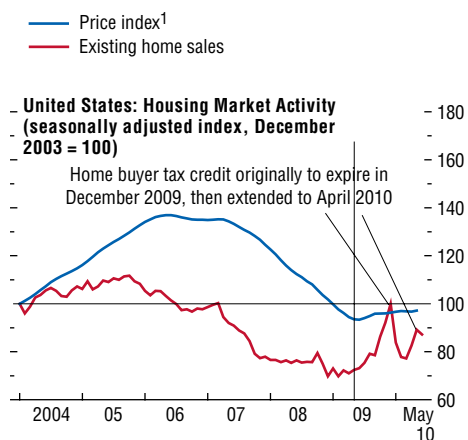
Sources: Haver Analytics; Investment Property Databank; Moody's; and IMF staff calculations.
[1]Residential real estate index for the United States is the Case-Shiller index. Residential real estate index for the United Kingdom is the Halifax index.

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

Another Bubble in Asia?

Several economies in the Asia-Pacific region, as well as Canada and most Scandinavian countries have experienced a rebound in real estate prices and residential investment since 2009. Will this rebound continue? In many of the economies in

[9]It should be noted that the United States and the United Kingdom have different housing markets: arrears and repossessions are considerably lower and loan losses due to mortgage delinquencies, arguably, are closer to their

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

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

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

peak in the United Kingdom. Last but not least, differences in supply constraints may also lead to a divergence in the probability of a double-dip real estate downturn in these two countries.

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

• In the euro area, as the October 2010 GFSR shows, intensifying funding strains could again stress banking systems. If unaddressed, such funding pressures could reawaken deleveraging pressures and the adverse feedback loop between the euro area banking system and the regional economy.

• In the United States, the real estate sector could well dip again, exposing pockets of vulnerability in the banking system. A stress test of the top 40 U.S. bank holding companies suggests that, under an adverse scenario where residential and commercial real estate prices fall by 6 percent and 9 percent, respectively, and real GDP growth slows to 1.2 percent in 2011, banks would require a total of $57 billion in additional capital in order to maintain a 6 percent Tier 1 common capital/risk-weighted assets ratio. Although the capital of U.S. banks thus appears broadly sufficient, substantially more capital would be needed in the absence of GSE and other government intervention.

• In Japan, a near-term disruption in the government bond market remains unlikely, but the factors currently supporting the Japanese bond market are expected to gradually erode. Also, banks' ever larger holdings of government bonds and the increasing interest rate risk arising from their extension into longer-dated maturities create a potential risk to financial stability if there were a sudden increase in government bond yields.

Quantitative risk indicators

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

Figure 1.14. Global Inflation

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

Inflation is projected to stay low amid continued excess capacity and high unemployment. The recovery of commodity prices has raised the level of consumer prices. With market indicators suggesting that commodity prices should remain stable and with downward pressure on wages gradually diminishing, headline and core inflation in advanced economies should converge to about 1¼ percent in 2011, and in emerging economies to about 5 percent. Inflation pressures are more elevated in economies that have had a history of unstable inflation or that are operating closer to capacity.
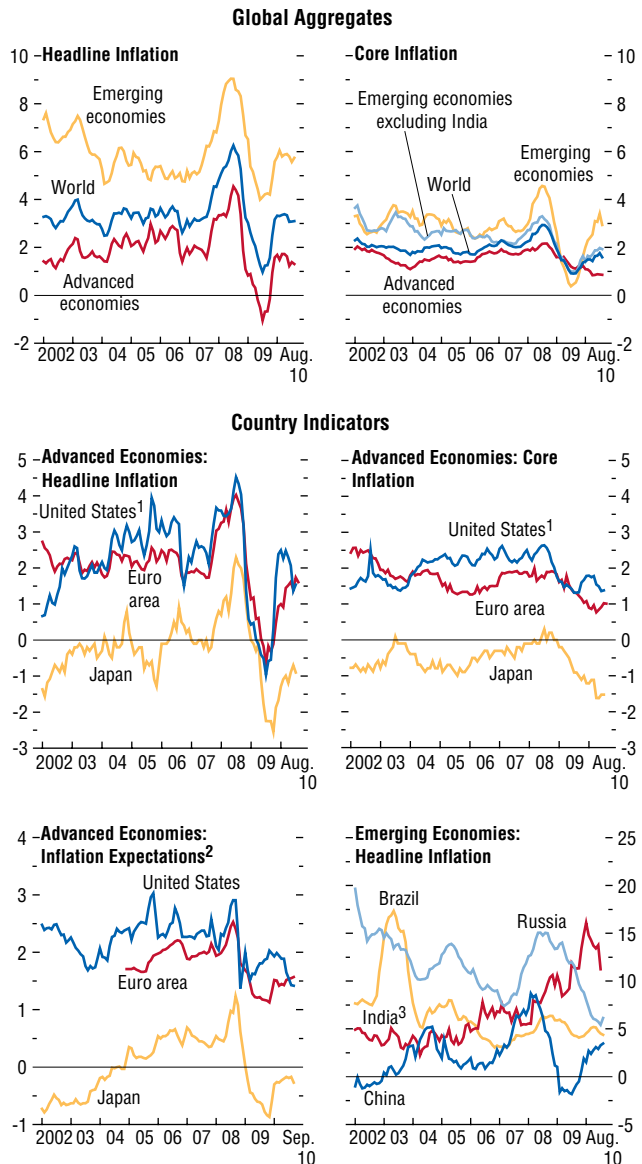
Sources: Consensus Economics; Haver Analytics; and IMF staff calculations.
[1] Personal consumption expenditure deflator.
[2] One-year-ahead *Consensus Forecasts*. The December values are the average of the surrounding November and January values.
[3] Consumer price index for industrial workers.

Figure 1.15. Risks to the Global Outlook

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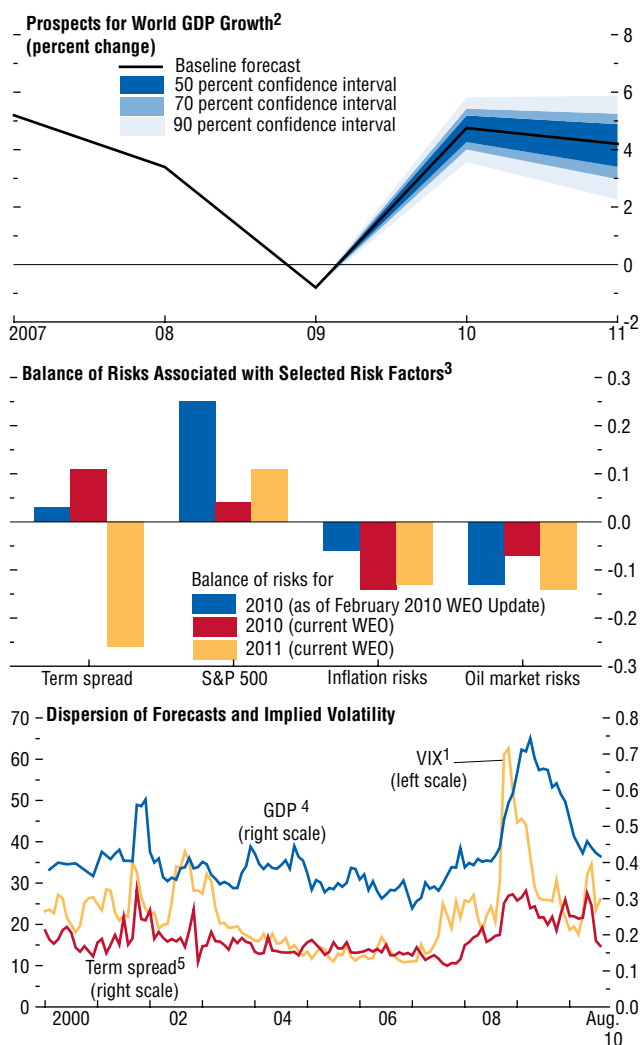
Sources: Bloomberg Financial Markets; Chicago Board Options Exchange; Consensus Economics; and IMF staff estimates.

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

[2]The fan chart shows the uncertainty around the *World Economic Outlook* (WEO) central forecast with 50, 70, and 90 percent probability intervals. As shown, the 70 percent confidence interval includes the 50 percent interval, and the 90 percent confidence interval includes the 50 and 70 percent intervals. See Appendix 1.2 in the April 2009 WEO for details.

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

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

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

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

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

Concerns about high inflation or deflation

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

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

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

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

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

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

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

Figure 1.16. Inflation, Deflation Risk, and Unemployment

Short-term *Consensus Forecasts* inflation expectations have overshot actual inflation by substantial margins. They have also been higher than indicated by past relationships with various fundamental determinants. This is surprising, as IMF staff analysis suggests that deflation rather than high inflation is the more pertinent risk. Assuming that these short-term expectations are representative of those in the broader economy, their stickiness may explain part of the stickiness of actual inflation.
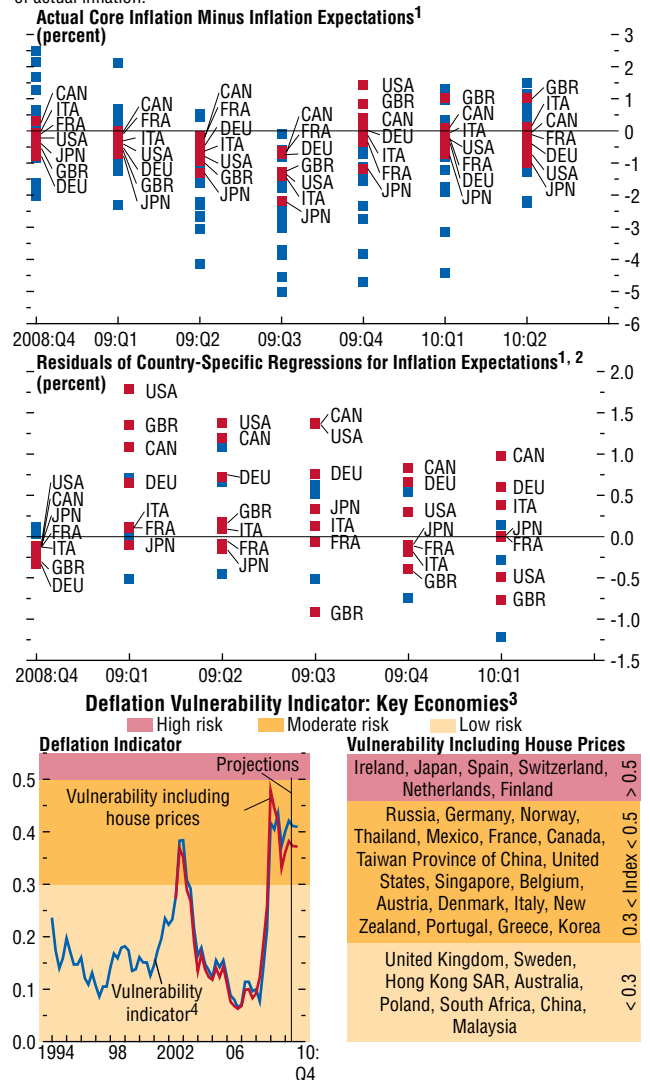
Sources: Bloomberg Financial Markets; Haver Analytics; and IMF staff calculations.
[1]CAN: Canada; FRA: France; DEU: Germany; ITA: Italy; JPN: Japan; GBR: United Kingdom; USA: United States.
[2]The residuals are differences between actual one-year-ahead Consensus inflation expectations and out-of-sample forecasts of these expectations. The forecasts are obtained from regressions of one-year-ahead Consensus inflation expectations on lagged values of these expectations, Consensus expectations for unemployment rates, WEO expectations for output gaps, oil price growth rates, and long-term Consensus expectations for inflation. The regression samples typically cover 1999:Q1 to 2008:Q4. Positive residuals suggest that short-term Consensus expectations have been higher than could have been expected given their past relationship with unemployment rates, output gaps, oil prices, and long-term Consensus expectations.
[3]For details on the construction of this indicator, see Kumar and others (2003) and Decressin and Laxton (2009). The figure also features an expanded indicator, which includes house prices. Vulnerability is as of 2010:Q2.
[4]Major advanced and emerging economies.

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

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

Questions about Medium-Term Prospects

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

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

Deteriorating growth prospects in advanced versus emerging economies

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

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

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

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

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

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

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

Constraints on raising domestic demand in emerging economies

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

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

Figure 1.17. Global Imbalances

The growth performance of emerging economies has been improving, whereas for advanced economies it has been deteriorating over the past couple of decades. This will continue to push capital flows toward emerging economies. Nonetheless, global imbalances are not projected to narrow over the medium term, as these economies are finding it hard to absorb these inflows productively and are building up reserves to protect themselves against flow reversals, which have often occurred in the past. As a result, the savings surplus in Asia will rise relative to the GDP of advanced economies. This will limit the increase in long-term interest rates in response to rising public debt.
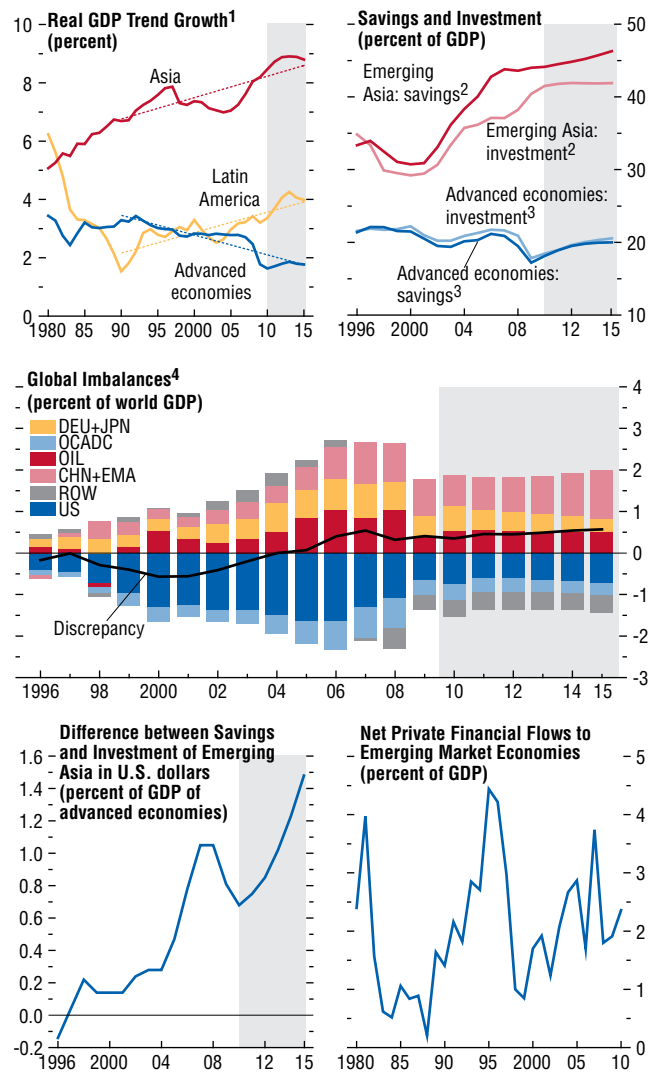
Source: IMF staff estimates.
[1]1980–2015 real GDP growth data are de-trended as 10-year backward rolling averages. Dotted lines are trends for each group between 1990 and 2015.
[2]China, India, Indonesia, Malaysia, Pakistan, Philippines, and Thailand.
[3]Australia, Canada, Czech Republic, Denmark, euro area, Hong Kong SAR, Israel, Japan, Korea, New Zealand, Norway, Singapore, Sweden, Switzerland, Taiwan Province of China, United Kingdom, and United States.
[4]CHN+EMA: China, Hong Kong SAR, Indonesia, Korea, Malaysia, Philippines, Singapore, Taiwan Province of China, and Thailand; DEU+JPN: Germany and Japan; OCADC: Bulgaria, Croatia, Czech Republic, Estonia, Greece, Hungary, Ireland, Latvia, Lithuania, Poland, Portugal, Romania, Slovak Republic, Slovenia, Spain, Turkey, and United Kingdom; OIL: Oil exporters; ROW: rest of the world; US: United States.

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

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

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

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

data. All else equal, a user would prefer estimates of output gaps that are not significantly revised with the receipt of new data.[2]

The Global Projection Model

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

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

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

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

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

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

The virtue of this system is its consistency, flexibility, and ability to render not just estimates of unobservables but measures of uncertainty around those estimates. But it is not a panacea. Consider the first figure, which shows 90 percent confidence intervals for both year-over-year growth and the level of potential output in the United States. The red line in the bottom panel showing the actual data is well outside the confidence interval, indicating that it is statistically safe to conclude that the current output gap is negative, an inference that is often difficult to make in more normal times. More

[3]The block is estimated using a systems approach with Bayesian methods and the Kalman filter. This allows for potential output to be estimated simultaneously with two other unobservables, the nonaccelerating inflation rate of unemployment, and the equilibrium capacity-

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

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

generally, the figure exhibits noteworthy in-sample precision, but the bands widen substantially during the forecast period.[3] Indeed, while we can say that it is likely that the level of potential output in the United States will be higher in the future than it is currently, we cannot say much more than that

utilization rate. In the figures, the path for potential growth is the two-sided estimate from the Kalman smoother. In-sample confidence intervals are asymptotic estimates computed from the inverse of the model's Hessian matrix.

Box 1.3 *(continued)*

Estimates of Real Potential Output and Output Gap

United States	Euro Area
H-P trend (1960–2007)	H-P trend (1993–2007)
OECD June 2010	OECD June 2010
CBO Aug. 2010	EC Dec. 2009
GPM Sep. 17, 2010	GPM Sep. 17, 2010
WEO Sep. 15, 2010	WEO Sep. 15, 2010
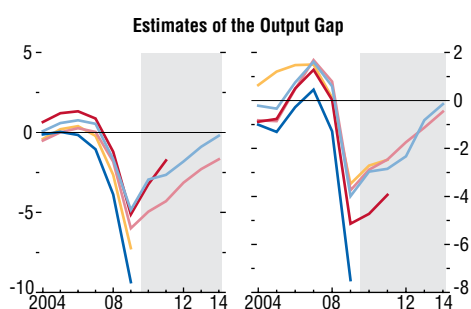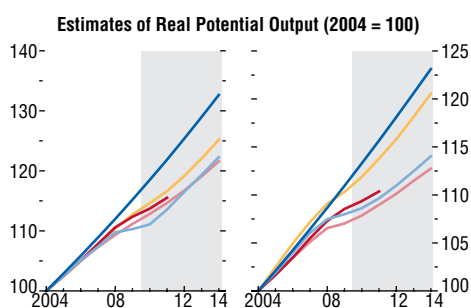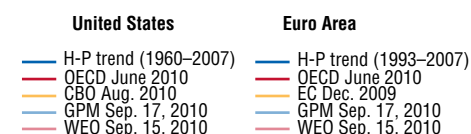
Sources: European Commission (EC); Organization of Economic Cooperation and Development (OECD); U.S. Congressional Budget Office (CBO); and IMF staff calculations.

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

Models as Characterizations of the Data

The evolution over time of estimates of potential output expresses how the user sees the incidence of shocks: smooth, deterministic time trends suggest that the user believes supply shocks are rare and easily identifiable in real time. A volatile, stochastic process signals a view that supply shocks are an important source of

business cycle fluctuations.[4] It is in this context that the way the recent financial crisis is interpreted is important. The smooth-trends view represents the belief that the precrisis trend is sustainable and points directly to demand management policies to move actual output to that trend. The stochastic view entertains the notion that the crisis and its aftermath may have shifted potential downward, which would call for somewhat less activist policies on the demand side but perhaps more policy actions to boost aggregate supply.[5]

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

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

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

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

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

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

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

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

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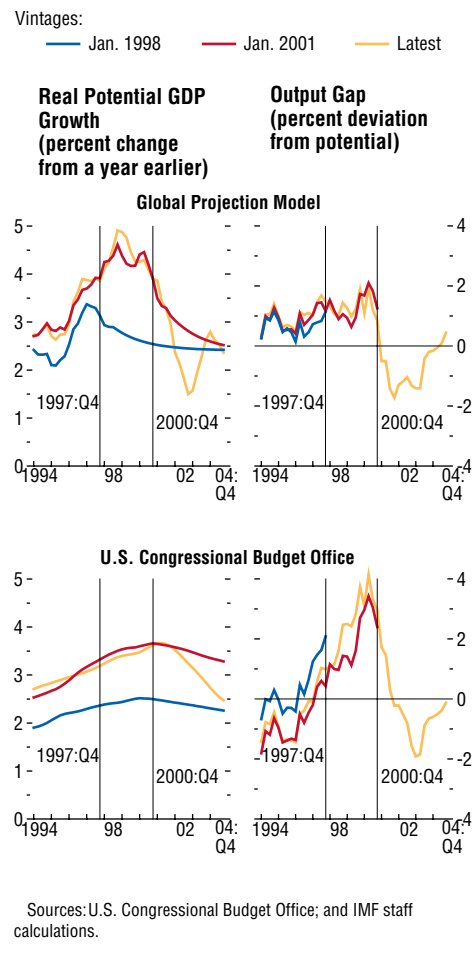
[7]At the risk of oversimplification, the CBO's methods for measuring potential output can reasonably be described as falling into the filtering range of methodologies except they are applied to the constituent parts of potential output and then built up. See Arnold (2009) and references therein for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

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

[9]The end of the vintage sample period is shown by the appropriate vertical line. In fact, the GPM has been in

with the receipt of new data, whereas the CBO gaps changed substantially, with revisions going back several years. To the extent that policy design

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

Box 1.3 *(continued)*

**Decomposition of Revisions to U.S. Real
Potential GDP Growth, as of 2010:Q2**
*(Percent, year over year; latest GPM
versus 2007:Q3)*
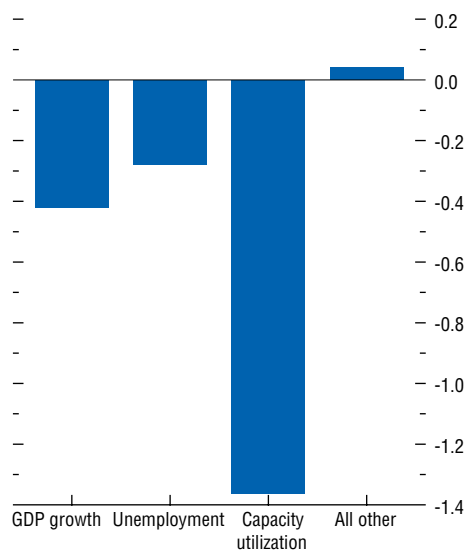
Source: IMF staff calculations.

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

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

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

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

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

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

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

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

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

- Restrictions on capital inflows: Here it is useful to distinguish between restrictions from the period before the latest crisis and recovery and restrictions imposed recently in response to capital inflows. The former can have large effects on inflows but can be reduced only very gradually, in tandem with reforms to goods and services markets, financial systems, and prudential policies and practices. Controls imposed recently are reviewed in more detail in Chapter 2. Again, two types can be distinguished: (1) those that affect both domestic residents and foreign investors (macroprudential measures)—most of the measures adopted in emerging Asia fall into this category; and (2) those that target foreign investors specifically (classic capital controls)—these have been the main focus of some countries in Latin America (Brazil). Given the nature of measures adopted recently, their medium-term effects on global demand rebalancing are probably not large.

- Concerns about destabilizing currency appreciations and related losses of competitiveness: These have led key emerging economies to mainly accumulate reserves rather than to allow the nominal exchange rate to appreciate in response to trade surpluses and capital inflows (see Figure 1.7). While offering insurance against sudden stops, accumulating reserves to mitigate currency appreciation pressures in response to sustained current account surpluses is likely to slow domestic demand and to gradually raise inflation. And it puts a burden on the budgets of emerging economies, given the difference between domestic and reserve-asset interest rates.

- Fiscal policy stances: Almost all major emerging market economies are consolidating, with only a few keeping support broadly unchanged (for

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

example, Brazil, Indonesia). The difference in the pace of consolidation during 2011 between economies with excessive external surpluses and deficits is modest (see Figure 1.12). Medium-term projections reinforce this point.

More Proactive Policies Are Needed

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

More Progress Is Needed in Repairing and Reforming the Financial Sector

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

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

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

- U.S. banks have made considerable progress in recognizing losses and rebuilding capital. However, important risks continue to revolve around exposure to real estate, especially by small and midsize banks, which are major providers of credit to small and medium-size enterprises (SMEs). These account for a large part of total employment in the economy. In addition, continuing weakness in private-label securitization markets is limiting the ability of banks to offload risk from their balance sheets. Reforms to the housing finance system are crucial but remain unfinished.

- European banks face challenges from fragile funding and profitability, sovereign debt exposure, and real estate lending. Decisive actions are being undertaken in some countries (for example, Ireland, Spain, United Kingdom), but much remains to be done to put bank balance sheets on a sustainable footing. In other countries (for example, Germany) long-standing problems have yet to be addressed. A range of measures should be considered, including forcing weak banks to raise additional capital, secure stable funding, and more decisively clean up their balance sheets. In cases when viable business models cannot be established, regulators should have the power to restructure or resolve quickly.

In the meantime, the public sector will remain heavily involved in financial intermediation. In the United States, for example, mortgage lending is being propped up by the government's purchase of GSE

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

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

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

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

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

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

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

of ctivities toward less regulated, nonbank financial intermediaries or markets.[16]

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

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

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

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

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

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

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

Figure 1.18. Medium-Term Fiscal Policies

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

Difference between National and WEO Real Growth Projections (average GDP growth, 2010–14)

Public Debt and Change in Structural Fiscal Balance[1]

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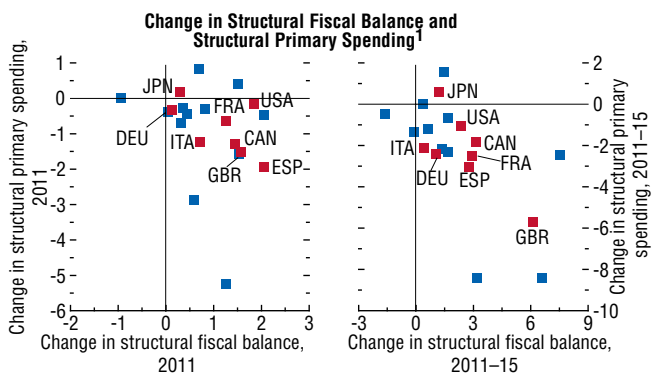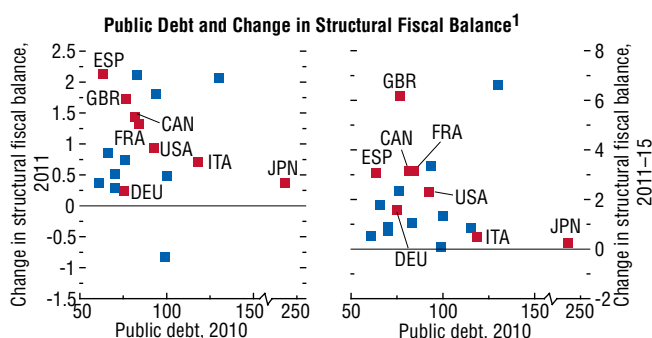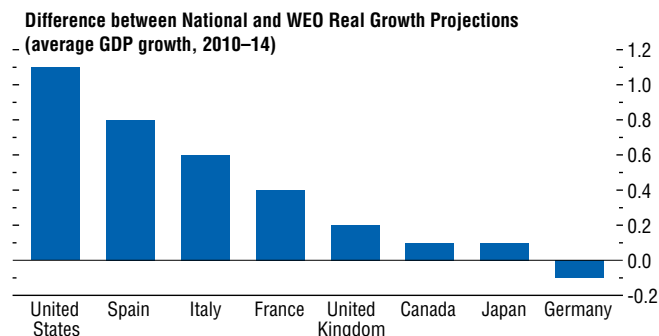
Source: IMF staff estimates.
[1]Percent of GDP, except structural fiscal balance, which is in percent of potential GDP. All advanced economies with 2010 public debt greater than 60 percent of GDP. CAN: Canada; FRA: France; DEU: Germany; ITA: Italy; JPN: Japan; ESP: Spain; GBR: United Kingdom; USA: United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

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

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

- Considering the widespread absence of strong, credible plans for medium-term consolidation and the latest turbulence in sovereign debt markets, fiscal consolidation plans for 2011 strike a broadly appropriate balance between progress toward stabilizing public debt and continued support for recovery (Figure 1.18). Countries facing severe foreign funding pressures have already had to retrench; in these economies, strong signals of commitment remain necessary.

- In economies with excessive external surpluses and relatively low public debt, fiscal tightening should take a backseat to monetary tightening and exchange rate adjustment. This would help support domestic demand as foreign demand temporarily weakens. In other emerging economies, fiscal tightening can start immediately because recovery is already well under way. Fiscal tightening should be a top priority in emerging economies that have relatively high public debt and are struggling to absorb large capital inflows productively.

- If activity threatens to weaken appreciably more than projected, countries with fiscal room should allow automatic stabilizers to play fully; in some countries with small stabilizers, temporary support through extended unemployment benefits or wage subsidies could be continued. In addition, if needed for the recovery to continue, some of the consolidation planned for 2011 may also have to be postponed.

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

As discussed, the fiscal adjustment that is shaping up is likely to detract from demand. Present fiscal plans for 2011 and beyond do not point to major differentiation across countries according to their external and public debt positions (see Figure 1.12). Chapter 3 suggests that such synchronized adjustment will make consolidation more painful. Encouragingly, however, some two-thirds of the planned adjustment is taking place on the expenditure side (notably lowering spending on wages, pensions, and public administration), which seems

to depress output by less than revenue increases, according to Chapter 3. Also, indirect rather than direct taxes contribute mainly to revenue-raising measures, which should limit distortions to labor supply and investment and accelerate output gains over the long term.

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

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

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

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

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

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

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

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

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

Monetary Policy Should Stay Accommodative in Many Economies

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

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

long-term government bond rates. Central banks in emerging economies have more room for interest rate cuts, if needed.

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

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

Exchange Rate Policies Should Support the Rebalancing of Global Demand

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

Box 1.4. Uncoordinated Rebalancing

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

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

Under regular circumstances, this would be only partly offset by higher policy interest rates in advanced economies in response to demand-driven inflation pressures. But because the policies reduce emerging Asia's external surpluses, they also reduce

the region's demand for government debt from the advanced economies (emerging Asia has been a particularly heavy investor in U.S. debt). Particularly if accompanied by investor perceptions that advanced economies do not have in place credible medium-term consolidation plans, such a portfolio shock could lead to an increase in sovereign and corporate spreads (blue lines), especially for the United States. We assume a 225-basis-point increase in the sovereign spread on impact (which retreats to 175 basis points permanently after five years), with a 150-basis-point additional and temporary increase for the corporate sector. The increase in spreads is roughly half the size for the other advanced economies. This leads to an output decline of about 3 percent in the United States, with a very slow recovery thereafter, and of about 0.5 percent in other advanced economies.

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

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

The main author of this box is Michael Kumhof.

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

Box 1.4 *(continued)*

Uncoordinated Rebalancing[1]
(Years on x-axis)

- WEO baseline
- Risk premium shocks against the advanced economies
- Reforms in emerging Asia based on the G20-MAP[2]
- Fiscal consolidation in the advanced economies

United States | **Euro Area Excluding Germany** | **Germany** | **Japan** | **Emerging Asia**

Real GDP (percent deviation from WEO baseline)

Real Short-Term Interest Rate (percent)

Long-Term Interest Rate (percent)

Government Balance (percentage points of GDP)

Current Account (percentage points of GDP)
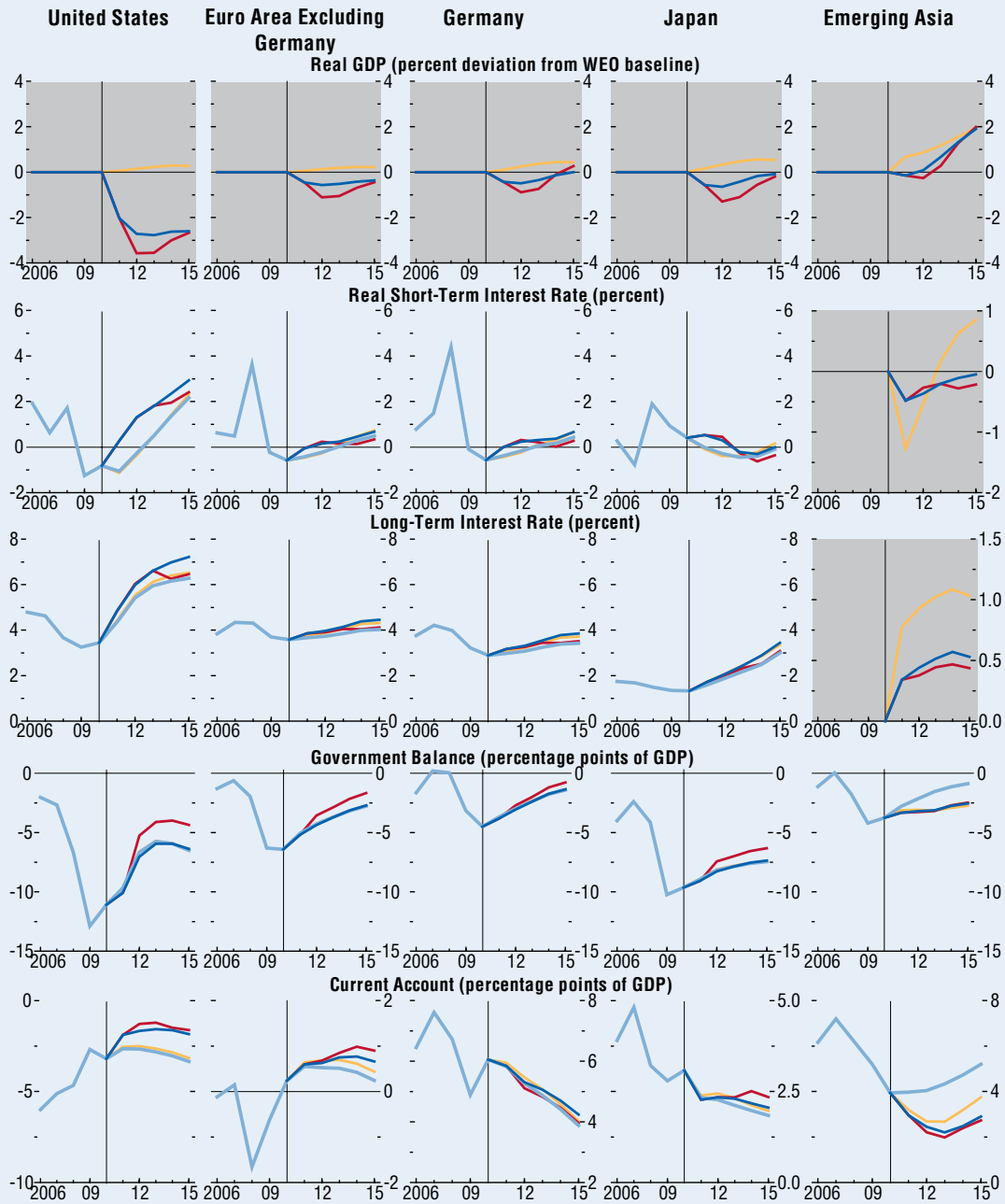
Source: Global Integrated Monetary and Fiscal Model simulations.
[1]Panels with a gray background depict the deviation of the series from the WEO baseline; panels with a blue background depict levels of the series as found in the baseline and alternative scenarios.
[2]G20 Mutual Assessment Process (G20, 2010b).

the United States and emerging Asia improves significantly.

These results are of course sensitive to our assumptions about the size of shocks. Although there is reasonable agreement on the likely magnitude and effects of fiscal measures, the likely magnitude of spread-related shocks is subject to considerable uncertainty. But it seems clear that the negative growth effects of a generalized increase in risk premiums in all advanced economies should be larger than the positive growth effects of higher demand from emerging Asia, except of course

for emerging Asia itself. The reason is that the advanced economies account for a very large share of the world economy. For the United States, the difference between the two effects is even larger, given the limited export flows from the United States to emerging Asia.

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

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

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

- If exchange rate overshooting and falling competitiveness become concerns, countries should consider reducing fiscal deficits to ease pressure on interest rates, some building up of reserves, and possibly imposing some restrictions on capital inflows or removing controls on outflows. As discussed in more detail in Chapter 2, some countries in Latin America fall into this category. However, the restrictions on capital inflows appear to be second-best responses, and it will be important to deploy suitable regulatory and supervisory responses, as is being done in some countries, to obtain more durable protection against speculative excesses.
- If exchange rates are undervalued from a medium-term perspective, then nominal appreciation should be part of the policy response to inflows. This applies to a number of countries in emerging Asia (discussed further in Chapter 2)

and, in some respects, presents a problem that might best be addressed by collective action taken in a coordinated manner. Nonetheless, where inflows are associated with sector-specific overheating, targeted macroprudential measures to address the specific risks can play a useful supplementary role.

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

Structural Reforms Are Needed to Support Growth and Rebalancing

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

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

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

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

In key emerging Asian economies, the removal of distortions that drive high household or corporate saving rates and deter investment in nontradables sectors could boost domestically led growth, as demand from major advanced economies stays below precrisis trends. This could be helped with further deregulation and reform of financial sectors and corporate governance, as well as stronger social

safety nets. Even with the rapid progress under way, however, such reforms will take some time to yield major gains.[24]

Developing Economies Need Help in Coping with Potentially Tighter Financing Constraints

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

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

Policy Coordination Brings Major Benefits

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

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

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

[25]See World Bank (2010b).

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

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

Appendix 1.1. Commodity Market Developments and Prospects

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

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

[26]See G20 (2010b).

surged in July and August. Overall, in August the IMF commodity price index was about 6 percent above its December 2009 level.

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

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

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

Figure 1.19. Commodity and Petroleum Prices

Commodity Price Indices
(January 2003 = 100)

Energy

Metals

Agricultural
raw materials

Beverages

Food

2003 04 05 06 07 08 09 10 11 12

Total Commodity Investment Flows[1]
(billions of U.S. dollars)

■ Estimated inflows into index investments
▪ Other investments: ETPs and MTNs[2]

2005 06 07 08 09 10:
Q2

Continuous Commodity Index Price Prospects[3]
(index points)

— Futures
■ 68 percent confidence interval
▪ 86 percent confidence interval
▫ 95 percent confidence interval

peak as of
July 2, 2008

Trough as of December 5, 2008

2008 09 10 Feb.
11

Average Petroleum Spot and Futures Prices
(U.S. dollars a barrel)

As of September 21, 2010

As of March 18, 2010

As of September 30, 2009

2003 05 07 09 11 Dec.
13

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

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

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

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

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

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

Oil and Other Energy Markets

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

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

Oil production edged up during the first half of 2010, almost matching the rise in demand. About half the supply increase is attributable to rises in total production outside the Organization of Petroleum Exporting Countries (OPEC), notwithstanding production declines in the North Sea and Mexico (middle left panel). The turnaround in overall non-OPEC production reflected widespread

gains, partly due to the incentives from high prices to ramp up production, including through greater use of enhanced recovery techniques where feasible. Still-favorable cost conditions on the oil services side have reinforced these incentives.

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

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

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

Table 1.2. Global Oil Demand and Production by Region
(Millions of barrels a day)

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

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

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

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

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

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

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

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

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

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

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

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

Figure 1.20. World Energy Market Developments
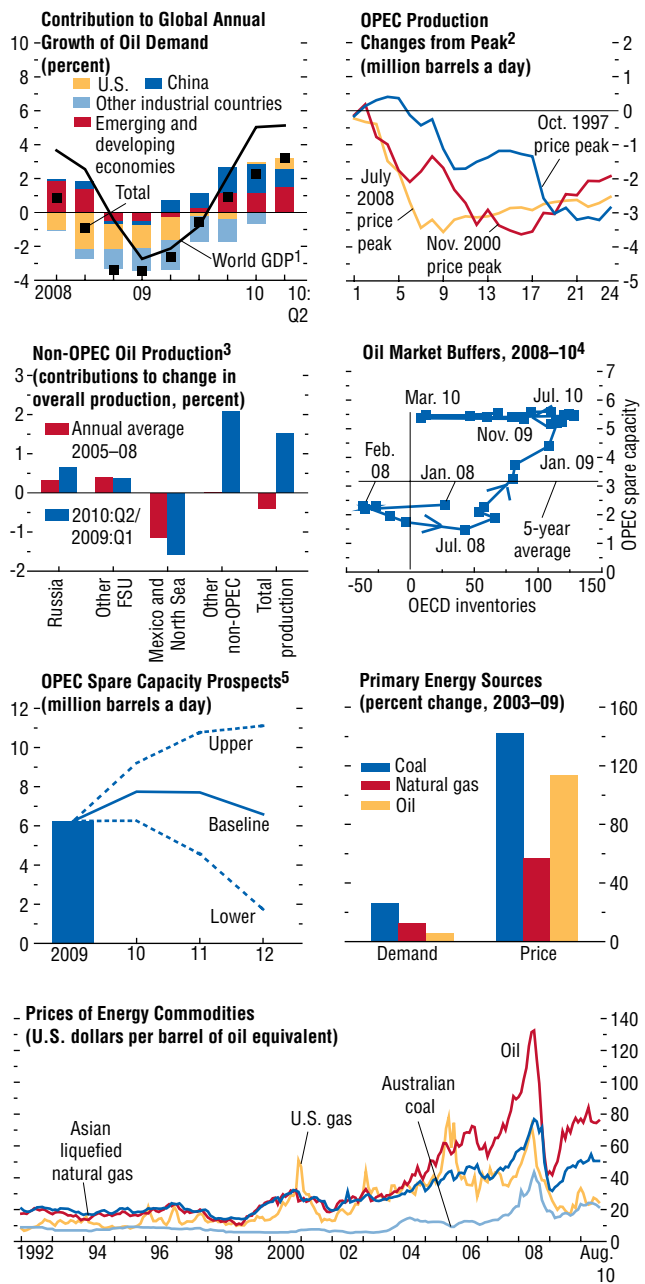
Sources: IMF Primary Commodity Price System; International Energy Agency, *Oil Market Report* September 2010; and IMF staff calculations.
[1]Annual change, in percent.
[2]Organization of Petroleum Exporting Countries (OPEC) membership as of the first month of each episode. Months from oil price peak on x-axis.
[3]North Sea: Norway and United Kingdom. Other FSU: other former Soviet Union.
[4]Organization for Economic Cooperation and Development (OECD) stocks — deviations from five-year average (million barrels) on x-axis, OPEC effective spare capacity (million barrels a day) on y-axis.
[5]The chart shows the expected spare capacity based on supply forecasts by the International Energy Agency and stochastic simulations of regional oil demand equations (estimated over 1981–2008) around the WEO GDP forecasts. The lines labeled "lower" and "upper" show the 14 and 86 percentiles implied by stochastic simulations.

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

Metal Market Developments

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

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

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

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

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

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

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

The author of this box is Shaun Roache.

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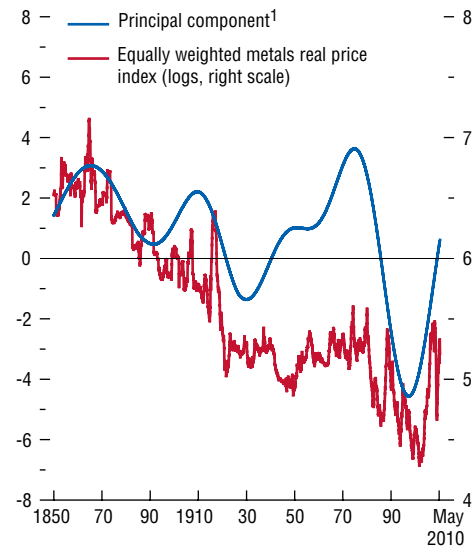
Sources: Bloomberg Financial Markets; London Metal Exchange; and IMF staff calculations.
[1]Spliced principal component incorporating the largest number of metals at each date based on data availability.

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

Box 1.5 *(continued)*

Demand Growth Contributions and Market Balances
(Annual percent change, unless noted otherwise)
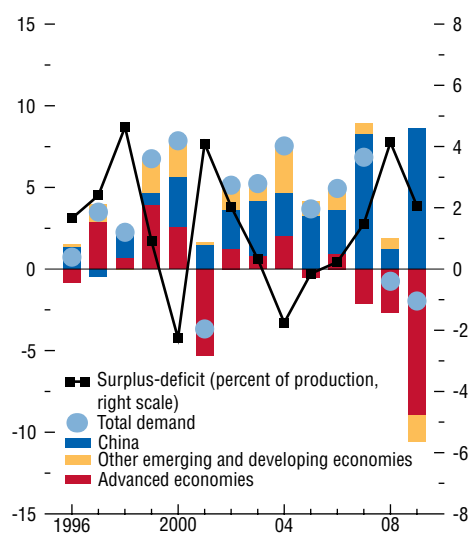
Sources: World Bureau of Metal Statistics; and IMF staff calculations.

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

Some previous studies have suggested the possibility of "super cycles" for commodity prices (Cuddington and Jerrett, 2008), and this is supported by the empirical evidence. For example, a significant contribution to the total variation in real prices comes from slow-moving (or low-frequency) components, which include the effects of long-term scarcity but also the existence of medium-term super cycles.[1] The underlying causes of these super cycles are the long implementation lags for discovery, exploration, and capital investment in minerals industries, rather than

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

true long-term scarcity. For example, for base and precious metals, the average time needed to confirm a discovery following initial exploration can be as long as 20 years, with the average time from discovery to production estimated at about nine years (Sillitoe, 2000). The sluggish supply response to shifts in demand can then give rise to price cycles with a longer duration than the typical two- to eight-year business cycle (Slade, 1982).

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

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

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

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

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

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

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

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

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

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

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

Food Market Developments

Food prices broadly declined during the first two quarters of 2010 but have since recovered to leave the IMF food and beverage price index about 20 percent higher for the year to date (Figure 1.22, top left panel). Price volatility has picked up somewhat in recent months, but it still remains considerably below the elevated levels of the 2008–09 period, and the probability of future extreme price movements—implied from options prices—has fallen modestly (top right panel). In contrast to other commodities, including base metals and energy, food prices have shown little sensitivity in recent months to changing

expectations of global growth or to changing global financial market conditions. Reflecting a return to more normal conditions, the correlation of food prices with other commodities has been steadily declining since peaking in early 2009, and comovement is now approaching the levels that characterized food markets before the 2008–09 boom and bust (middle left panel).

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

Figure 1.21. Developments in Base Metal Markets

Selected Metal Prices
(January 2006 = 100)

- Nickel
- Lead
- Copper
- Aluminum

Futures curves[1]

Metal Prices: Correlation with Global Equity Prices[2]

- 60-day rolling correlation
- 95 percent significance

Dispersion of Monthly Price Changes[3]
(percent)

China's Share of Global Demand
(percent)

- Copper
- Aluminum
- Other base metals[4]

Global Demand Growth Contributions[5]

- China
- Other emerging economies
- Advanced economies[6]
- Total demand growth
- Total supply growth

Stock-to-Use Ratios
(standard deviations from average)

- Copper
- Aluminum
- Other base metals[4]

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

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

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

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

Appendix 1.2. Indicators for Tracking Growth

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

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

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

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

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

Figure 1.22. Recent Developments in Markets for Major Food Crops
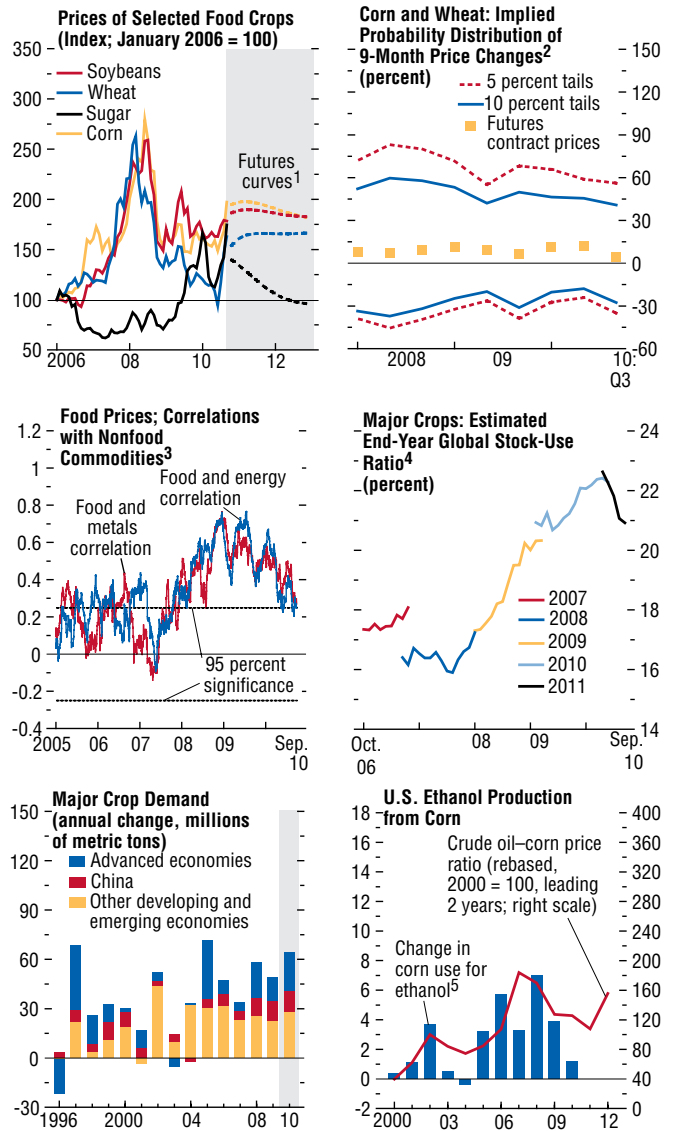
Sources: Bloomberg Financial Markets; U.S. Department of Agriculture estimates; Datastream; and IMF staff calculations.
[1]Prices as of September 22, 2010.
[2]Implied from nine-month maturity option contracts and measured as the unweighted average of corn and wheat percent difference from current spot prices.
[3]Rolling 60-day correlation of log price changes between the IMF food index and the IMF metals and energy indices.
[4]Monthly unweighted average for corn, rice, soybeans, and wheat.
[5]Change in proportion of U.S. corn harvest used for ethanol, percentage points.

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

The Dynamic Factor Model

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

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

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

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

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

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

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

Figure 1.23. Growth Tracker
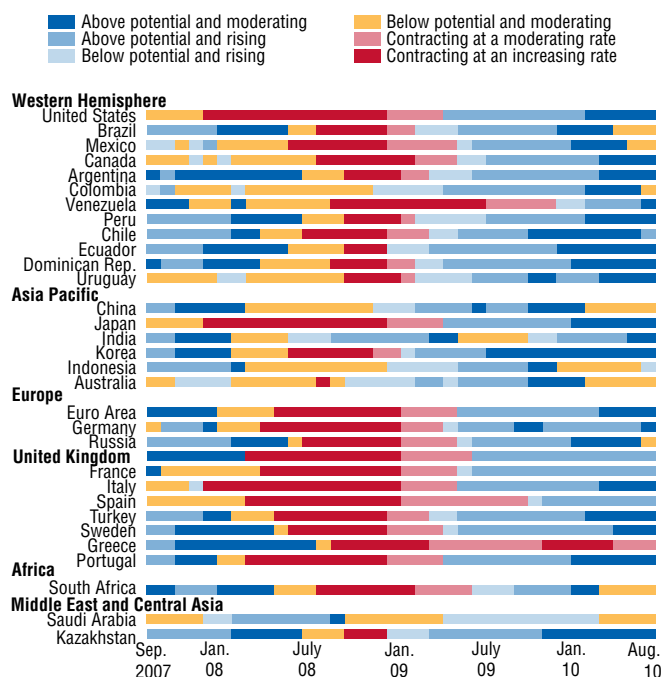
Sources: Haver Analytics; and IMF staff calculations.
Note: The growth trackers are constructed using a large number of daily, monthly, and quarterly indicators and a dynamic factor model that incorporates all available data. The trackers are estimated and forecast at a monthly frequency. The classifications represented in the table are based on the behavior of a centered seven-month moving average. The most recent estimates implicitly include forecasts and can change with the arrival of more data. The trend is the growth rate of potential output in the WEO projections. Within regions, countries are listed by economic size.

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

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

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

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

Data Selection

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

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

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

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

Figure 1.24. Stylized Example Illustrating Heat Map Colors
(Percent; month over month, annualized)
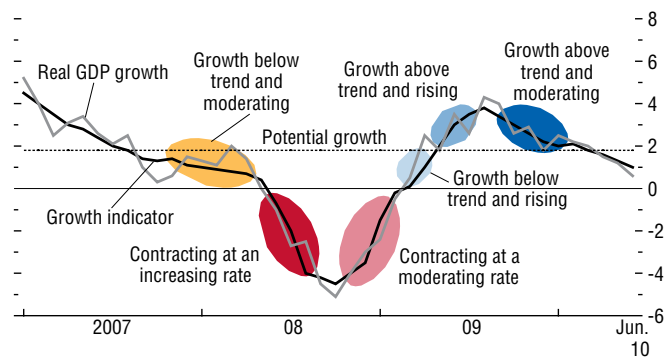
Sources: Haver Analytics; and IMF staff calculations.

Table 1.3. Data Summary and Model Evaluation

(Number of series in each category)

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

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

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

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

Evaluating the Growth Indicators

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

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

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

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

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

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

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

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COUNTRY AND REGIONAL PERSPECTIVES

As discussed in Chapter 1, the global recovery is continuing, but its strength is not yet assured. Economic prospects remain uneven across countries and regions (Figure 2.1). In general, the pace of recovery is expected to be faster in economies that had stronger fundamentals before the crisis, smaller output losses during it, and now have more room for policy maneuver and deep links with fast-growing trading partners.[1] China's increasingly wide trading network is driving growth prospects in numerous economies, especially commodity exporters. Strong internal dynamics are supporting near-term growth in other emerging economies, too. However, economic prospects are subdued in major advanced economies, where much-needed policy adjustments have only just begun—in the form of financial sector repair and reform and medium-

[1]See Chapter 2 of the April 2010 *World Economic Outlook* and IMF (2010a).

term fiscal consolidation. This will weigh on growth in emerging economies, raising the need to boost domestic sources of demand. At the same time, capital will continue to flow toward strong emerging and developing economies, induced by relatively good growth prospects and favorable interest rate differentials.

This chapter begins with Asia, which is leading the global recovery. Then it turns to North America, where there is renewed concern that the recovery may be stalling, with significant implications for the rest of the world. Next, the chapter reviews Europe's economic and policy challenges, which in many ways mirror those at the global level: the need for demand rebalancing within the region, financial sector repair, and medium-term fiscal consolidation. It then outlines the wide range of developments and prospects in Latin America and the Caribbean (LAC), the Commonwealth of Independent States (CIS), the Middle East and North Africa (MENA), and sub-Saharan Africa.

Figure 2.1. Average Projected Real GDP Growth during 2010–11
(Percent)

- Below 0
- Between 0 and 2
- Between 2 and 5
- Above 5
- Insufficient data
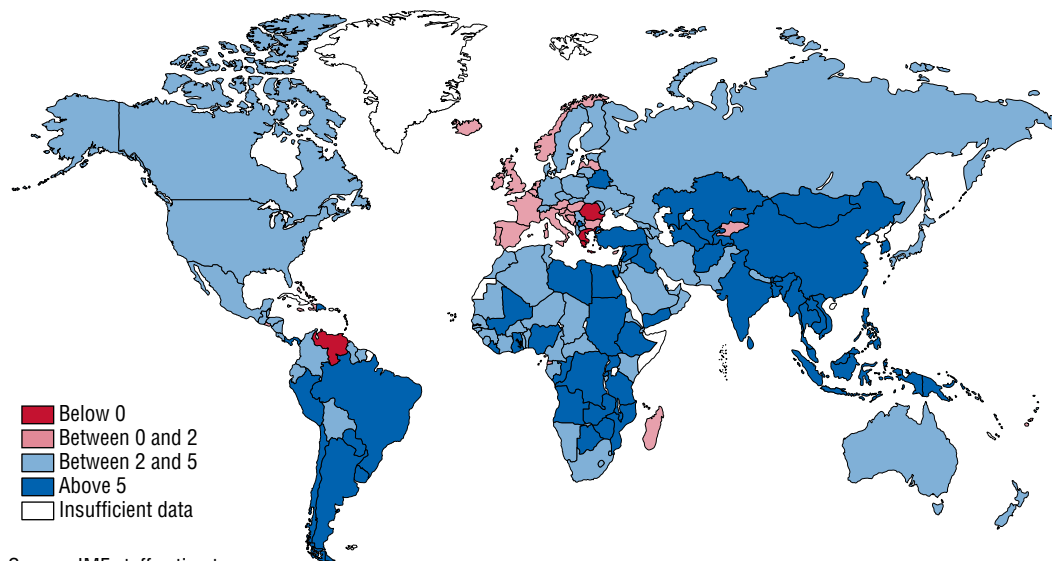
Source: IMF staff estimates.

Asia Is Advancing with Resilience

Asia entered the global crisis on a strong footing and is continuing to lead the global recovery (Figure 2.2). In most parts of the region, resilience in domestic demand—thanks in part to proactive policy stimulus—has offset the drag from net exports (Figure 2.3). The handoff from public-sector-driven to private-sector-driven growth is well under way in most Asian countries. Industrial production and retail sales have been strong in China and India, among others. Robust activity in these countries in turn is helping power growth in the rest of Asia. In fact, China's strong and sustained growth over the past several years has served as a linchpin for global trade, benefiting exporters of commodities (for example, Australia, Indonesia, New Zealand) and capital goods (for example, Germany, Japan, some NIEs).[2,3] More-

over, unlike in previous recoveries, a turnaround in private capital inflows has bolstered domestic demand by providing access to external financing. The region is projected to grow by about 7.9 percent in 2010 and 6.7 percent in 2011 (Table 2.1). Activity is projected to moderate from the second half of 2010 and in 2011 in line with the winding down of policy stimulus and policy tightening in economies facing demand pressures, as well as downdrafts from policy adjustments in advanced economies.

Near-term growth performance will vary across countries because of differences related to the strength of stimulus and private demand along with underlying economic and financial conditions and risks. Thus, a massive fiscal stimulus and credit expansion has boosted domestic demand in China. In India, low reliance on exports, accommodative

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[2]Newly industrialized Asian economies comprise Hong Kong SAR, Korea, Singapore, and Taiwan Province of China.

[3]While China continues to be an important conduit in Asia's global supply chain, the much faster pace of increase in emerging

Asia's exports to China in recent years—relative to China's own exports to advanced economies—points to the rising strength of China's final domestic demand in driving its imports from the rest of Asia (see Figure 2.3 and the April 2010 *Regional Economic Outlook: Asia and Pacific*).

Figure 2.2. Asia: Average Projected Real GDP Growth during 2010–11
(Percent)

- Below 0
- Between 0 and 2
- Between 2 and 5
- Above 5
- Insufficient data
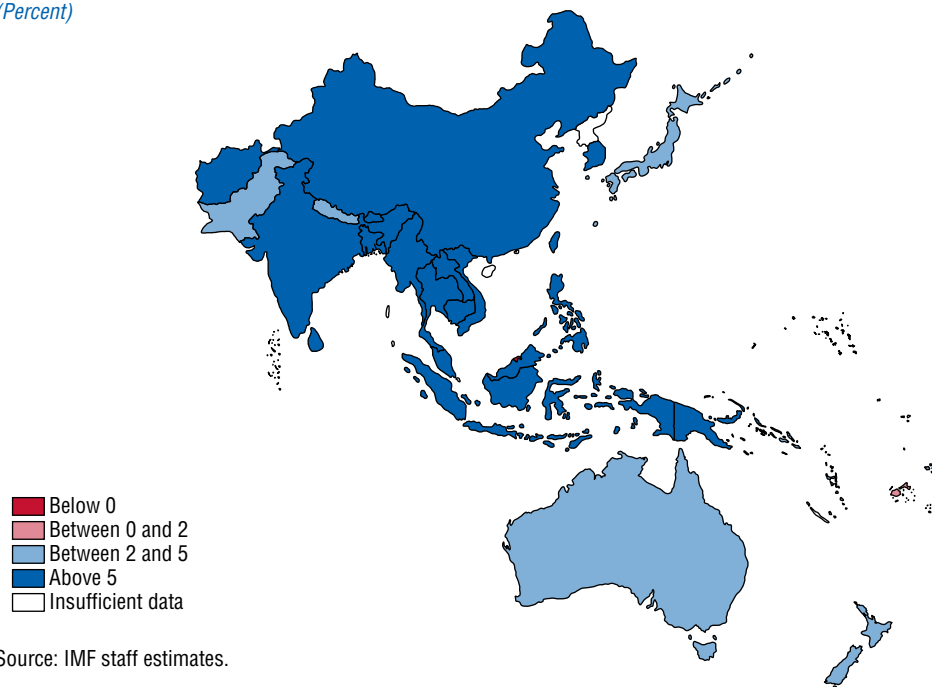
Source: IMF staff estimates.

policies, and strong capital inflows have supported domestic activity and growth. In contrast, Japan's economic prospects remain weak, given lackluster domestic demand and a lack of fiscal room to further boost the economy. Prospects are also weak for economies at the lower end of the quality ladder in manufacturing exports and for those where there is macroeconomic and financial uncertainty (Vietnam). The outlook for Pakistan has deteriorated significantly after the recent massive flooding. Country-specific details are discussed further below:

- In *China*, real GDP grew at 10.3 percent (year over year) in the second quarter, compared with 11.9 percent in the first quarter. Sustained growth in retail sales and industrial production confirms that private sector activity has advanced beyond the lift from government stimulus. Overall, growth is projected to average 10.5 percent in 2010 and 9.6 percent in 2011, driven by domestic demand. The slight moderation in recent activity is expected to continue through 2011 in light of tighter quanitative limits on credit growth, measures to cool off the property market and limit bank exposure to this, and the planned unwinding of fiscal stimulus in 2011. On average over 2010–11, private domestic demand is poised to contribute two-thirds of near-term growth, and government activity about one-third, whereas the contribution from net exports will be close to zero. Notwithstanding the robustness in domestic demand, the pickup in inflation in 2010 reflected mainly higher food prices rather than core inflation.

- *India*'s macroeconomic performance has also been vigorous, with industrial production at a two-year high. Leading indicators—the production manufacturing index and measures of business and consumer confidence—continue to point up. Growth is projected at 9.7 percent in 2010 and 8.4 percent in 2011, led increasingly by domestic demand. Robust corporate profits and favorable external financing will encourage investment. Recent activity (10 percent year-over-year growth in real GDP at market prices in the second quarter) was driven largely by investment, and the contribution from net exports is projected to turn negative in 2011, as the strength

Figure 2.3. Asia: Leading the Global Recovery[1]

Economic activity has bounced back because of domestic demand and rebounding exports. Robust import demand from China—particularly in commodities, machinery, and capital goods—has supported activity in both emerging and advanced Asia. The region is attracting capital inflows, which, while providing easy access to financing, has posed some macroeconomic policy challenges (see Box 2.1).
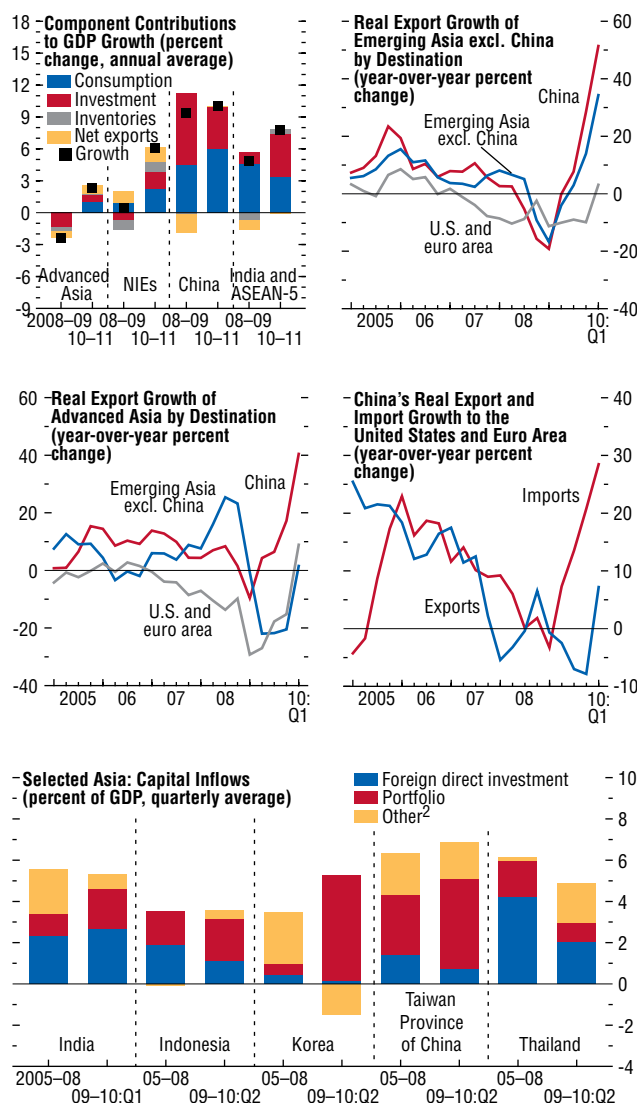
Sources: CEIC Asia database; Haver Analytics; IMF, *Direction of Trade Statistics;* and IMF staff calculations
[1]Advanced Asia: Australia, Japan, and New Zealand; newly industrialized Asian economies (NIEs): Hong Kong SAR, Korea, Singapore, and Taiwan Province of China; ASEAN-5: Indonesia, Malaysia, Philippines, Thailand, and Vietnam; emerging Asia: ASEAN-5, China, India, and NIEs.
[2]Other investment includes financial derivatives.

Table 2.1. Selected Asian Economies: Real GDP, Consumer Prices, Current Account Balance, and Unemployment
(Annual percent change, unless noted otherwise)

	Real GDP			Consumer Prices[1]			Current Account Balance[2]			Unemployment[3]		
		Projections			Projections			Projections			Projections	
	2009	2010	2011	2009	2010	2011	2009	2010	2011	2009	2010	2011
Asia	**3.6**	**7.9**	**6.7**	**2.0**	**4.3**	**3.3**	**3.5**	**3.0**	**2.8**	. . .	. . .	. . .
Advanced Asia	**−3.0**	**4.6**	**2.8**	**−0.1**	**0.7**	**1.2**	**3.0**	**3.1**	**2.6**	**4.9**	**4.7**	**4.6**
Japan	−5.2	2.8	1.5	−1.4	−1.0	−0.3	2.8	3.1	2.3	5.1	5.1	5.0
Australia	1.2	3.0	3.5	1.8	3.0	3.0	−4.4	−2.4	−2.3	5.6	5.2	5.1
New Zealand	−1.6	3.0	3.2	2.1	2.5	5.5	−3.0	−3.2	−4.4	6.2	6.2	5.8
Newly Industrialized Asian Economies	**−0.9**	**7.8**	**4.5**	**1.3**	**2.6**	**2.7**	**8.5**	**7.1**	**6.9**	**4.3**	**3.8**	**3.7**
Korea	0.2	6.1	4.5	2.8	3.1	3.4	5.1	2.6	2.9	3.7	3.3	3.3
Taiwan Province of China	−1.9	9.3	4.4	−0.9	1.5	1.5	11.3	10.0	9.5	5.8	5.3	4.9
Hong Kong SAR	−2.8	6.0	4.7	0.5	2.7	3.0	8.7	8.3	8.3	5.1	4.4	4.1
Singapore	−1.3	15.0	4.5	0.6	2.8	2.4	17.8	20.5	18.4	3.0	2.1	2.2
Developing Asia	**6.9**	**9.4**	**8.4**	**3.1**	**6.1**	**4.2**	**4.1**	**3.0**	**3.0**	. . .	. . .	. . .
China	9.1	10.5	9.6	−0.7	3.5	2.7	6.0	4.7	5.1	4.3	4.1	4.0
India	5.7	9.7	8.4	10.9	13.2	6.7	−2.9	−3.1	−3.1	. . .	. . .	. . .
ASEAN-5	**1.7**	**6.6**	**5.4**	**2.9**	**4.4**	**4.4**	**5.1**	**3.2**	**2.4**	. . .	. . .	. . .
Indonesia	4.5	6.0	6.2	4.8	5.1	5.5	2.0	0.9	0.1	8.0	7.5	7.0
Thailand	−2.2	7.5	4.0	−0.8	3.0	2.8	7.7	3.6	2.5	1.4	1.4	1.4
Philippines	1.1	7.0	4.5	3.2	4.5	4.0	5.3	4.1	3.4	7.5	7.2	7.2
Malaysia	−1.7	6.7	5.3	0.6	2.2	2.1	16.5	14.7	13.8	3.7	3.5	3.2
Vietnam	5.3	6.5	6.8	6.7	8.4	8.0	−8.0	−8.3	−8.1	6.0	5.0	5.0
Other Developing Asia[4]	**4.4**	**5.3**	**4.6**	**11.2**	**9.1**	**9.6**	**−0.9**	**−0.3**	**−1.3**	. . .	. . .	. . .
Memorandum												
Emerging Asia[5]	5.8	9.2	7.9	2.8	5.6	4.0	4.8	3.7	3.7	. . .	. . .	. . .

[1]Movements in consumer prices are shown as the year-over-year changes in annual averages. December–December changes can be found in Tables A6 and A7 in the Statistical Appendix.

[2]Percent of GDP.

[3]Percent. National definitions of unemployment may vary.

[4]Other Developing Asia comprises the Islamic Republic of Afghanistan, Bangladesh, Bhutan, Brunei Darussalam, Cambodia, Fiji, Kiribati, Lao People's Democratic Republic, Maldives, Myanmar, Nepal, Pakistan, Papua New Guinea, Samoa, Solomon Islands, Sri Lanka, Timor-Leste, Tonga, and Vanuatu.

[5]Emerging Asia comprises all economies in Developing Asia and the Newly Industrialized Asian Economies.

in investment further boosts imports. The rapid pace of domestic activity, evidenced by rapidly rising inflation, led the central bank to increase the repo policy rate, in steps, by a cumulative 125 basis points.

- In *Japan*, an export-led recovery since the second quarter of 2009 strengthened in early 2010, thanks to a stronger-than-anticipated recovery in the Western advanced economies and rising demand for capital goods from China. However, sporadic appreciation of the yen (for example, in May 2010, when financial volatility in Europe triggered safe haven inflows) and the recent cooling of the U.S. economy will continue to affect exports. Although investment activity is projected to pick up—sparked by export-oriented businesses—the unwinding of fiscal stimulus and the sluggish labor market are likely to weigh on near-term growth. Real GDP growth is projected at 2.8 percent in 2010 and 1.5 percent in 2011,

although output will remain below its potential level.

- The rapid recovery in the NIEs has been driven by a rebounding inventory cycle, strong domestic activity, and robust regional demand for these economies' exports (electronics for Singapore, services for Hong Kong SAR, capital goods for Korea). Some NIE property markets have been experiencing sizable price increases (for example, Hong Kong SAR, Singapore), which prompted use of macroprudential policies to prevent the emergence of an asset price bubble. Inflation expectations are nevertheless broadly stable.
- The ASEAN economies[4] have also benefited from the strong regional upswing, particularly those exporting commodities and electronics.

[4]Association of Southeast Asian Nations (ASEAN), which includes Indonesia, Malaysia, Philippines, Thailand, and Vietnam.

The broad-based export rebound is now feeding through an autonomous demand-driven recovery, particularly in private investment (although investment activity is not yet fully under way in Malaysia). In Vietnam, the macroeconomic situation has recently stabilized after the 2009 stimulus measures, which had raised perceived risk and triggered market uncertainty, were partly reversed. Overall, near-term growth for the region is projected to be underpinned both by exports and domestic demand.

- In the advanced economies of commodity producers, Australia and New Zealand, early in the year policy stimulus and exports supported activity. Stronger trade links with China have increased these economies' resilience to cyclical downturns in traditional partners, such as the United States.

Notwithstanding impressive performance so far, risks to near-term growth in emerging Asia are tilted slightly to the downside, mainly because of uncertainty in the external environment. Thus, a slower recovery in the United States and the euro area, a greater-than-anticipated slowdown in China, or negative spillovers from unanticipated financial shocks abroad could interrupt the pace of recovery. These risks are somewhat offset by an upside risk of even faster recovery in private sector activity.

In advanced Asia, downside risks dominate as well, but also reflect domestic vulnerability. These risks include yen appreciation and worsening deflation in Japan; higher risk premiums, given high external debt in New Zealand; and, given assessed mild overvaluation, a potential correction in house prices that could hit household wealth and consumer confidence in Australia and New Zealand.

Looking beyond the crisis, Asia's medium-term prospects depend on how successfully it is able to rebalance the drivers of growth—with greater reliance on domestic sources compared with external demand. Such a rebalancing in China is critical to enhance the role of household consumption in domestic growth. To the extent that a stronger Chinese currency eases this process, other surplus countries in the region could follow suit, which would facilitate the needed shift toward domestic sources of growth. However, in addition to China, the

entire region will need to adopt some combination of the following policies to support durable domestic demand: appropriate appreciation of the currency to enhance domestic income and purchasing power, removal of structural bottlenecks to domestic investment or consumption or both, and boosts to productivity in the nontradables or service sector.[5] In addition, the macroeconomic and structural policy mix to address near-term challenges must—to the extent possible—be conducive to meeting the region's medium-term rebalancing needs.

Against this backdrop, fiscal policy—in particular the unwinding of stimulus—needs to be carefully calibrated to strike a balance between supporting a self-sustained recovery in private activity over the near and medium term and avoiding fiscal risk or overheating pressure. Therefore, fiscal withdrawal would be appropriate under the baseline projections, provided a private demand recovery is robustly established. Some postponement of consolidation may be needed, where there is fiscal room to do so, should external downside risks to growth materialize. In addition, some economies could reorient the composition of fiscal spending within the available fiscal envelope to further support the role of domestic demand in growth (for example, measures to encourage consumption in China and to improve the quality of infrastructure services in Indonesia). In contrast, consolidation should be a priority where fiscal risks are building (India, Malaysia, Philippines). In Japan, decisive fiscal consolidation is unavoidable, given the high level of public debt and anticipated fiscal needs related to the aging population. Consolidation should focus on entitlement spending and comprehensive tax reform. New Zealand's high external debt also calls for greater fiscal prudence.

Monetary policy needs to be responsive to the domestic cycle—that is, prospects for inflation, which are influenced by the degree of economic slack. Most economies in the region have already resumed rate hikes (Australia, India, Korea, Malaysia, New Zealand, Thailand), tightened liquidity management (reimposition of quantitative limits

[5]See also the April 2010 and October 2010 issues of the *Regional Economic Outlook: Asia and Pacific*.

to credit growth in China, higher reserve requirements in India and China), or made use of other tools (steady appreciation of the nominal effective exchange rate target by Singapore). The overall monetary stance, however, is still largely accommodative or neutral. Thus, economies that are beginning to face inflation pressure should further tighten monetary policy. If domestic overheating is influenced by strong capital flows, monetary tightening should be accompanied by currency appreciation to help offset inflation pressure, discourage speculative inflows, and support medium-term rebalancing. Conversely, if private demand is not yet fully established and in the absence of inflation pressure, monetary policy would need to remain accommodative to help jump-start private activity. Finally, if broad-based downside risks to growth begin to materialize, most Asian economies can use the available monetary room to support economic activity.

With the return of normal financial sector conditions, the time is also ripe for unwinding special support measures introduced during the crisis. Some countries have already started (for example, removal of guarantees on banks' wholesale funding in Australia and New Zealand, unwinding of the previously expanded central bank liquidity/rediscount window in Hong Kong SAR and Philippines). Others are tightening regulatory measures further to enhance financial system stability. Policymakers in New Zealand introduced a new liquidity policy, including a core funding ratio to improve bank liquidity and reduce banks' dependence on short-term funding. In China, prudential regulations were introduced to reduce banks' exposure to potentially risky property loans, and other direct measures were deployed to cool the property market (for example, increased minimum down payments, lower loan-to-value ratios, higher mortgage rates for second homes). The banking system thus appears well positioned to absorb moderate potential losses (see the October 2010 issue of the *Global Financial Stability Report*—GFSR). Similarly, policymakers in Hong Kong SAR took measures to address risks of property price inflation. These include maximum loan-to-value ratios on high-end properties

and higher stamp duties on property sales, among others. Hong Kong SAR, Malaysia, and Singapore are employing a coordinated approach to withdraw blanket guarantees on banks' wholesale deposits.

The recent resurgence in capital inflows to emerging Asia, after a temporary stop during the global crisis in 2008, has raised potential policy challenges. On the one hand, capital flows have helped support domestic demand. On the other hand, the size of global inflows relative to the comparatively small financial markets has raised or intensified existing concerns, including the risk of inflation, asset price bubbles, financial sector instability (if inflows are not properly intermediated), excessive appreciation, and risks associated with a sudden stop of capital flows. Given wide variation in capital account openness across economies and across alternative types of investment within the same economy, it is possible that some economies may receive more capital inflows than they can efficiently intermediate. Alternatively, capital controls in one sector (for example, foreign direct investment—FDI) may be inducing excessive inflows into others (for example, portfolio, equity). Economies have been implementing a range of measures to deal with their varied situations (Box 2.1). The measures generally address potential financial stability concerns and do not impose wholesale restraint on capital inflows. At the same time, it is not clear how much these policy responses will deliver. A few issues stand out:[6]

- Macroprudential measures should focus primarily on financial stability and should not be used to postpone needed macroeconomic adjustment. Thus, where large current account imbalances may reflect an undervalued exchange rate, currency appreciation is the best response to capital inflows. Conversely, if the exchange rate is broadly at its medium-term equilibrium level, but reserves are assessed to be insufficient, capital inflows should be used to build up reserves. Many economies in emerging Asia are among the largest reserve holders, and so they do not fall into this category.

[6]See also the April 2010 GFSR.

Box 2.1. Emerging Asia: Responding to Capital Inflows

Emerging Asia is experiencing a revival in capital inflows. Total inflows to the region over the past four quarters more than quadrupled relative to 2008 levels (figure), although in many cases, net inflows are negative or dwarfed by large current account surpluses. Many economies are responding to balance of payments surpluses largely through reserve accumulation rather than currency appreciation. In addition, some economies have preemptively adopted a variety of macroprudential measures to address potential financial stability issues and/or discourage speculative inflows:

- Preventing asset price bubbles—setting maximum loan-to-value ratios, increased provisioning vis-à-vis real estate credit, and taking other measures specifically targeting the real estate market (Hong Kong SAR, India, Korea, Singapore).
- Tightening liquidity control and management—taking measures to prevent excessive volatility of capital flows (for example, a one-month holding period for central bank certificates for both resident and nonresident investors in Indonesia); raising required reserves for banks (India).
- Limiting banks' foreign exchange exposure—setting prudential limits on banks' forward open position limits and net open positions (Korea).
- Tightening financial supervision—tightening prudential limits on capital, liquidity, and leverage; enhanced stress testing; enhanced corporate governance (Hong Kong SAR, Singapore).
- Capital controls on inflows—preventing nonresidents from opening short-term time deposit

Emerging Asia: Recent Experience with Capital Inflows[1]
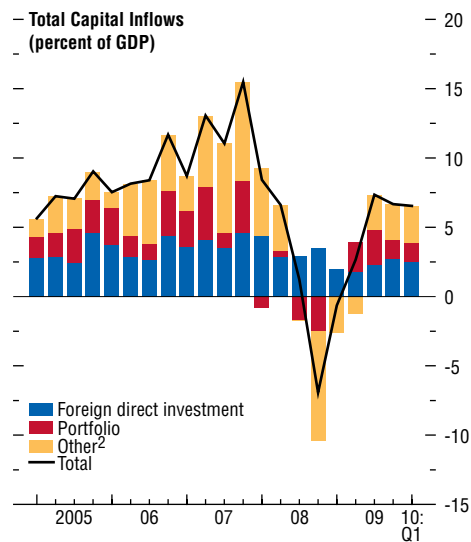
Sources: CEIC Asia database; Haver Analytics; IMF, *International Financial Statistics;* and IMF staff calculations.
[1]Emerging Asia: China, Hong Kong SAR, India, Indonesia, Korea, Malaysia, Philippines, Singapore, Taiwan Province of China, and Thailand.
[2]Other investment includes financial derivatives.

accounts (Taiwan Province of China); setting limits on external borrowing operations (India).
- Further liberalizing selected outflows (India, Malaysia, Thailand).

- Greater exchange rate flexibility can reinforce macroprudential measures. For example, two-way exchange rate flexibility can increase the perception of exchange rate risk and discourage speculative capital inflows. This is especially important for economies with excessive external surpluses, where relatively sizable appreciation—apart from narrowing the current account imbalance—would increase the perception of exchange rate risk and therefore deter speculative capital inflows.

- Other macroeconomic policy options include a more aggressive unwinding of fiscal stimulus or even tightening—if inflows are concentrated in government securities—to prevent vulnerability to a sudden turnaround in investor sentiment or a lowering of interest rates when inflation expectations are well grounded. However, given that the adoption of fiscal policies that improve the recipient economy's macro fundamentals could in fact result in stronger inflows to the private sector, such policies on their own would not

necessarily reduce the need for greater exchange rate flexibility.

- If the financial sector is healthy, restrictions on capital outflows can be eased to limit upward pressure on the currency and alleviate concerns about overvaluation or loss of external competitiveness. Furthermore, measures can be taken to free up restrictions in key growth sectors, which could help attract longer-term capital inflows (for example, FDI).

The best response to capital inflows may be a coordinated one, especially when they are driven by global factors or have global implications.[7] Thus, resistance to currency appreciation by one economy could discourage others because of competitiveness concerns. Alternatively, macro-prudential measures by one economy could divert flows to others in the region. A potential ratchet effect could lead to reserve accumulation in emerging market economies—larger accumulation of reserves by one could induce further accumulation by others in the region if the level of reserves is perceived as a proxy for the credibility of a country's policy framework (see Cheung and Qian, 2009). International coordination could alleviate challenges of this nature.

Asia should also focus on various structural reforms to accomplish its medium-term rebalancing objectives. Specific policy options include implementing reforms to health care, education, and pension systems to enhance the social safety net (China); promoting investment by small and medium-size enterprises (Japan); improving the business climate (Philippines); increasing the productivity of the nontradables or services sector (China, Japan, Korea); facilitating further product and labor market flexibility and productivity (China, Malaysia, some NIEs, Philippines); lowering corporate saving by realigning relative prices for a range of inputs, including capital, land, water, and energy (China); and further financial sector development and capital market deepening (China, India, Philippines, Thailand).

Many economies have already embarked on such reforms. Apart from the recent resumption of a managed floating exchange rate regime in China, the government has launched a number of measures to enhance the social safety net (IMF, 2010c). In Korea, the government recently announced plans to further develop the service industry, including through streamlined regulation and greater competition. Singapore's recent budget contains measures to enhance labor productivity. However, the time needed for these measures to be effective, and the slower pace of adjustment in advanced economies (anticipated in light of the shorter-term economic challenges they face), suggest that the period over which global imbalances may eventually narrow will be protracted.

The U.S. Recovery Is Moderating in the Face of Debt and Continued Uncertainty

The U.S. economy is recovering, thanks to unprecedented macroeconomic policy stimulus, emergency financial stabilization measures, and a modest cyclical upswing. But the rate of expansion is beginning to moderate. The economy grew at an annualized rate of 1.7 percent in the three months to June, a slower pace than the 3.7 percent growth rate posted in the first quarter. Moreover, high-frequency indicators suggest a weak recovery in coming quarters.

Much of the weakness of this recovery is due to sluggish personal consumption—by far the biggest component of U.S. GDP. There are several reasons for this weakness. First, household net worth has deteriorated sharply (Figure 2.4). House prices have fallen by 25 to 30 percent over the past three years (depending on which index is used), with the brunt of the adjustment falling on households that have the highest marginal propensity to consume. Second, unemployment is high: it is currently 9.6 percent of the workforce; a broader measure of unemployment (which takes into account those seeking full-time jobs but finding only part-time work) is 16.7 percent; and the median duration of unemployment, 20 weeks, is nearly twice the peak level of the previous 40

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[7]See also IMF (2010b).

years. A weak labor market hits incomes and the ability to obtain credit, and it raises job uncertainty for those currently employed. Third, banks are still reluctant to lend to consumers, restricting credit for larger purchases, as they struggle to reduce leverage and restore balance sheets. Overall, given the unusually low savings levels before the crisis and the steep decline in personal net worth since, the desire to save is more likely to stay elevated relative to precrisis levels. The personal saving rate since the beginning of 2009 has averaged 6 percent—a level last seen in 1995— and is projected to remain at about 4 to 6 percent through 2015.

In contrast to private consumption, private investment in software and equipment has rebounded strongly. Firms have also increased productivity, and unit labor costs have declined sharply. In the near term, fixed investment is likely to be the principal driver of domestic demand as inventory accumulation slows. The current account deficit is projected to remain at about 3.3 percent of GDP over the medium term—much lower than during the years leading up to the crisis—because the recovery in investment will be financed by strong private saving and improving fiscal balances.

The most likely prospect for the U.S. economy is for a continued but slow recovery, with growth far weaker than in previous recoveries, considering the depth of the recession. GDP growth is projected to be 2.6 percent in 2010 and 2.3 percent in 2011 (Table 2.2; Figure 2.5). This implies that the gap between actual and potential output will remain wide, even though potential growth has itself suffered temporarily from the crisis. The unemployment rate is therefore expected to remain stubbornly high. Against this backdrop, inflation will remain low—it is projected to be 1.4 percent in 2010 and 1 percent in 2011.

Risks to the outlook remain elevated and are tilted to the downside. Residential and commercial real estate markets are still fragile. Further loan write-downs at small and medium-size banks could inhibit recovery of normal credit conditions. The sharp rise in government debt has increased vulnerability to financial market sentiment, although

Figure 2.4. United States and Canada: Differing Fortunes

The pace of recovery in the United States has moderated. Consumers face headwinds of high debt and fallen asset values; weak credit growth, despite extraordinarily loose monetary conditions; and persistently high unemployment. Personal saving rates will remain higher than precrisis levels for a sustained period, and public fiscal balances are projected to deteriorate further. By contrast, the Canadian economy is less hampered by the same factors and is set to recover more strongly.
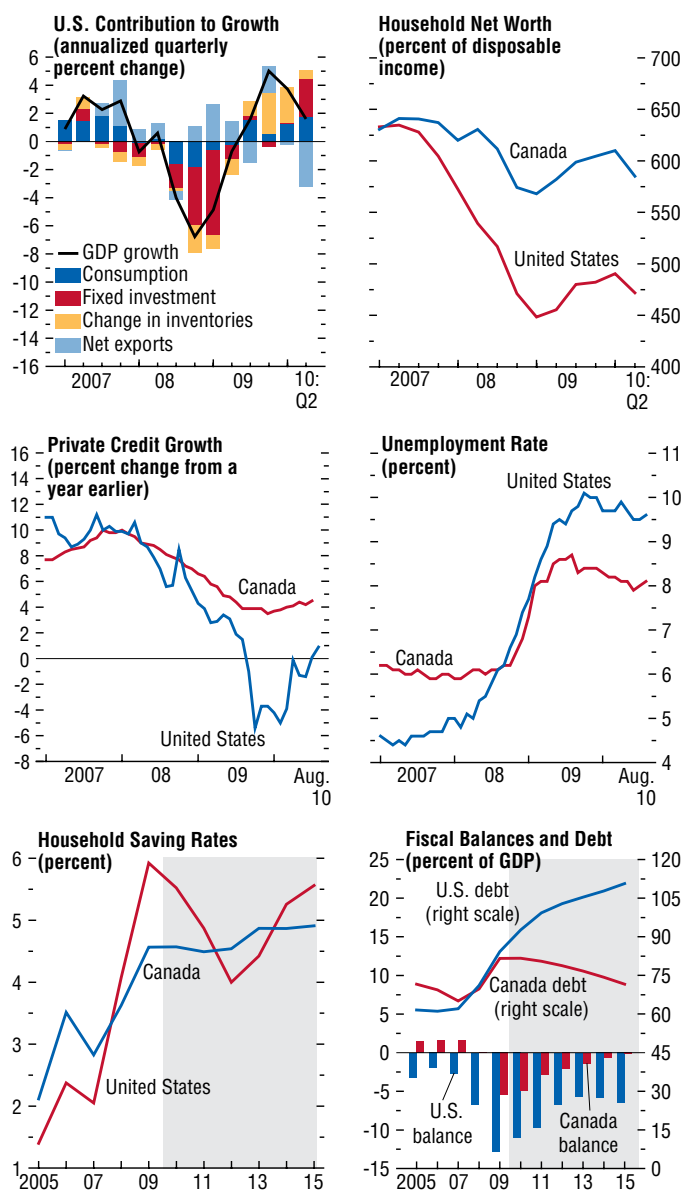
Sources: Haver Analytics; and IMF staff estimates.

Treasury security yields have fallen significantly recently amid economic weakness, flight to quality, and expectations of additional government bond purchases by the Federal Reserve (Fed). Easing consumer price inflation, together with weak labor markets and relatively low consumption demand, points to a tail risk of deflation. On the upside, it is possible that business fixed investment could rebound faster from still-depressed levels.

Against this backdrop, U.S. authorities will need to find a way to exit from extraordinary policy intervention without undermining the fledgling recovery, while dealing with the long-term legacies of fiscal imbalances, gaps and overlaps in financial regulation, and a weakened banking sector.

- A key macroeconomic challenge is to ensure that the public debt is put on a sustainable path without jeopardizing the recovery. Under current policies, the general government deficit is projected to be about 10 percent of GDP in both 2010 and 2011, and gross general government debt will increase to about 110 percent of GDP by 2015. Given the risks posed by budgetary imbalances, the groundwork for fiscal consolidation must begin in 2011. The proposed fiscal tightening of about 1 percent of GDP in 2011 implied by the administration's mid-session review strikes the right balance between near-term support for the recovery

and medium-term credibility. If downside risks to growth materialize, there is some room to reduce up-front adjustment while strengthening medium-term credibility. This could be achieved by further entitlement spending reforms, which would have little immediate impact on demand. However, the existing fiscal plans do not stabilize medium-term debt, which should be put firmly on a downward path to rebuild room for fiscal maneuver and avoid negative effects on lending rates and long-term growth. Hence, a clear commitment to additional consolidation measures under credible economic assumptions (by enshrining targets and/or measures in legislation, for example) would be desirable. In this context, the President's Fiscal Commission is expected to play a key role in fostering political consensus, including in difficult areas such as tax policy and entitlement spending.

- Monetary policy should remain accommodative because of muted inflation, subpar growth, and lingering financial strain. The Fed has maintained the policy rate at a record low while signaling that conditions are likely to warrant keeping the rate at exceptionally low levels for an extended period. In light of larger downside risks, the Fed's recent decision to resume its purchases of government securities (using resources from maturing government-sponsored-enterprise debt

Table 2.2. Selected Advanced Economies: Real GDP, Consumer Prices, Current Account Balance, and Unemployment

(Annual percent change, unless noted otherwise)

	Real GDP			Consumer Prices[1]			Current Account Balance[2]			Unemployment[3]		
		Projections			Projections			Projections			Projections	
	2009	2010	2011	2009	2010	2011	2009	2010	2011	2009	2010	2011
Advanced Economies	**−3.2**	**2.7**	**2.2**	**0.1**	**1.4**	**1.3**	**−0.3**	**−0.3**	**−0.1**	**8.0**	**8.3**	**8.2**
United States	−2.6	2.6	2.3	−0.3	1.4	1.0	−2.7	−3.2	−2.6	9.3	9.7	9.6
Euro Area[4,5]	−4.1	1.7	1.5	0.3	1.6	1.5	−0.6	0.2	0.5	9.4	10.1	10.0
Japan	−5.2	2.8	1.5	−1.4	−1.0	−0.3	2.8	3.1	2.3	5.1	5.1	5.0
United Kingdom[4]	−4.9	1.7	2.0	2.1	3.1	2.5	−1.1	−2.2	−2.0	7.5	7.9	7.4
Canada	−2.5	3.1	2.7	0.3	1.8	2.0	−2.8	−2.8	−2.7	8.3	8.0	7.5
Other Advanced Economies	−1.2	5.4	3.7	1.5	2.4	2.5	4.8	5.0	4.9	5.0	4.8	4.7
Memorandum												
Newly Industrialized Asian Economies	−0.9	7.8	4.5	1.3	2.6	2.7	8.5	7.1	6.9	4.3	3.8	3.7

[1]Movements in consumer prices are shown as annual averages. December–December changes can be found in Table A6 in the Statistical Appendix.
[2]Percent of GDP.
[3]Percent. National definitions of unemployment may vary.
[4]Based on Eurostat's harmonized index of consumer prices.
[5]Current account position corrected for reporting discrepancies in intra-area transactions.

Figure 2.5. United States and Canada:
Average Projected Real GDP Growth during 2010–11
(Percent)

Below 0
Between 0 and 2
Between 2 and 5
Above 5
Insufficient data
Covered in a different map
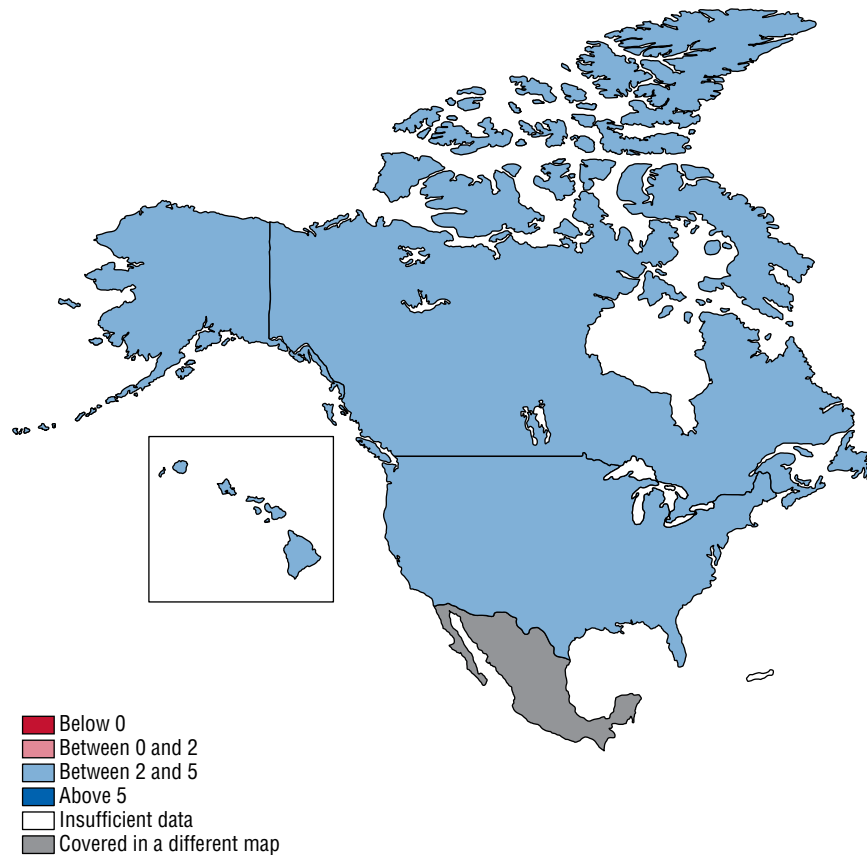
Source: IMF staff estimates.

and mortgage-backed securities in its portfolio) is appropriate. In the event that such risks material-ize, policy responses could include a strengthened commitment to maintaining the ultra-low policy rate for an extended period, expanding asset pur-chases, and relaunching facilities to aid stressed markets. Meanwhile, the Fed has been developing a well-diversified toolkit for managing monetary conditions, which will help facilitate monetary exit when needed.

• Notwithstanding considerable efforts to improve financial stability, the banking system remains vulnerable. Capital will probably need to be raised to meet higher regulatory requirements. The newly enacted Dodd-Frank Wall Street Reform and Consumer Protection Act expands

oversight of systemically important financial firms. It establishes a special resolution authority, with the aim of facilitating orderly intervention procedures for systemically important nonbank financial institutions. It increases regulation of over-the-counter derivatives markets and estab-lishes the Bureau of Consumer Financial Protec-tion. The legislation also authorizes the Financial Stability Oversight Council (FSOC), which encompasses all the major financial supervisory bodies at the federal level and is chaired by the Treasury secretary. The FSOC is authorized to (1) recommend higher prudential require-ments; (2) designate financial firms, activities, or market utilities as systemically important; and (3) approve the breakup of large and complex

companies if financial stability is threatened. However, the specifics will need to be worked out before it will be clear how the legislation will be implemented in practice, especially concerning the setting of new prudential norms, the cross-border implementation of resolution procedures, and the functioning of the FSOC.

Policy choices in the United States matter greatly for the rest of the world. The huge prospective funding requirements of the government may have implications for other economies. To the extent that 10-year Treasury bonds set a benchmark for other assets, market nervousness about the fiscal position of the United States could cause an international increase in interest rates. In addition, because of the U.S. dollar's role as a reserve currency and the importance of the United States as a financial center, policy inaction by the U.S. authorities would have far greater effects on other economies than that implied by trade linkages alone. Shocks to confidence in the United States could cause an international increase in bond and equity risk premiums.

The Canadian economy has been relatively buoyant. Household balance sheets are healthier than in the United States, and banks have very solid books. Monetary and fiscal stimulus and strong international demand for commodities helped boost the growth rate in the first quarter of this year to 5.8 percent, double that of the United States, with consumer spending especially robust. House prices held up relatively well during the crisis. The unemployment rate, at 8.1 percent, is well below that in the United States and has been declining steadily since early 2009. However, recent data indicate a moderation in growth, which nonetheless seems to remain above potential. Risks to the Canadian economy are mainly external. The economy is vulnerable to a dip in commodity prices, particularly for minerals and energy, and a slowdown in the U.S. economy, which buys about three-quarters of its exports.

Improving conditions have allowed policymakers in Canada to start unwinding policy stimulus. The Bank of Canada has already raised the overnight rate from 0.25 percent, where it had been since the crisis, to 1 percent as of September. The fiscal stimulus package has been implemented as sched-

uled. Should conditions worsen unexpectedly, fiscal policy would be able to respond—the Canadian fiscal deficit is projected to be 2.9 percent of GDP in 2011, with net public debt hovering around 33.5 percent of GDP.

Europe Is Facing a Gradual and Uneven Recovery

In Europe, the road to recovery has been bumpy. Largely caused by unsustainable policies in some member countries, the sovereign debt crisis in the spring erupted before the euro area's recovery could gain traction. The crisis spread internationally, threatening the financial system as well as regional and global recovery. A strong and far-reaching policy response contained the situation. Unprecedented liquidity and credit support, new European financing instruments, and substantial fiscal action in affected countries arrested the financial turmoil, moderating its adverse impact on Europe's economic activity.

The recovery has finally gained some vigor, but it is still likely to be moderate and uneven (Figures 2.6 and 2.7). Advanced Europe's GDP is projected to grow at 1.7 percent in 2010 and 1.6 percent in 2011 (Table 2.3). Emerging Europe's growth is expected to be 3.7 percent in 2010 and 3.1 percent in 2011. There are pronounced differences in economic prospects across the region, depending on the condition of public and private sector balance sheets and the extent to which macroeconomic policies can support the recovery.

- Despite robust manufacturing exports in recent months, moderate recovery is expected in Germany because weak growth is expected among its trading partners. In France, growth is projected to be modest, as private consumption is weakened by high unemployment and the withdrawal of stimulus measures. In Italy, the recovery is expected to be even more subdued, as a persistent competitiveness problem limits the scope for export growth, and planned fiscal consolidation weakens private demand. Constrained by fiscal and competitiveness imbalances, growth in Greece, Ireland, Portugal, and Spain is projected to be much lower. Outside the euro area, the

Figure 2.6. Europe: Average Projected Real GDP Growth during 2010–11
(Percent)

Below 0
Between 0 and 2
Between 2 and 5
Above 5
Insufficient data
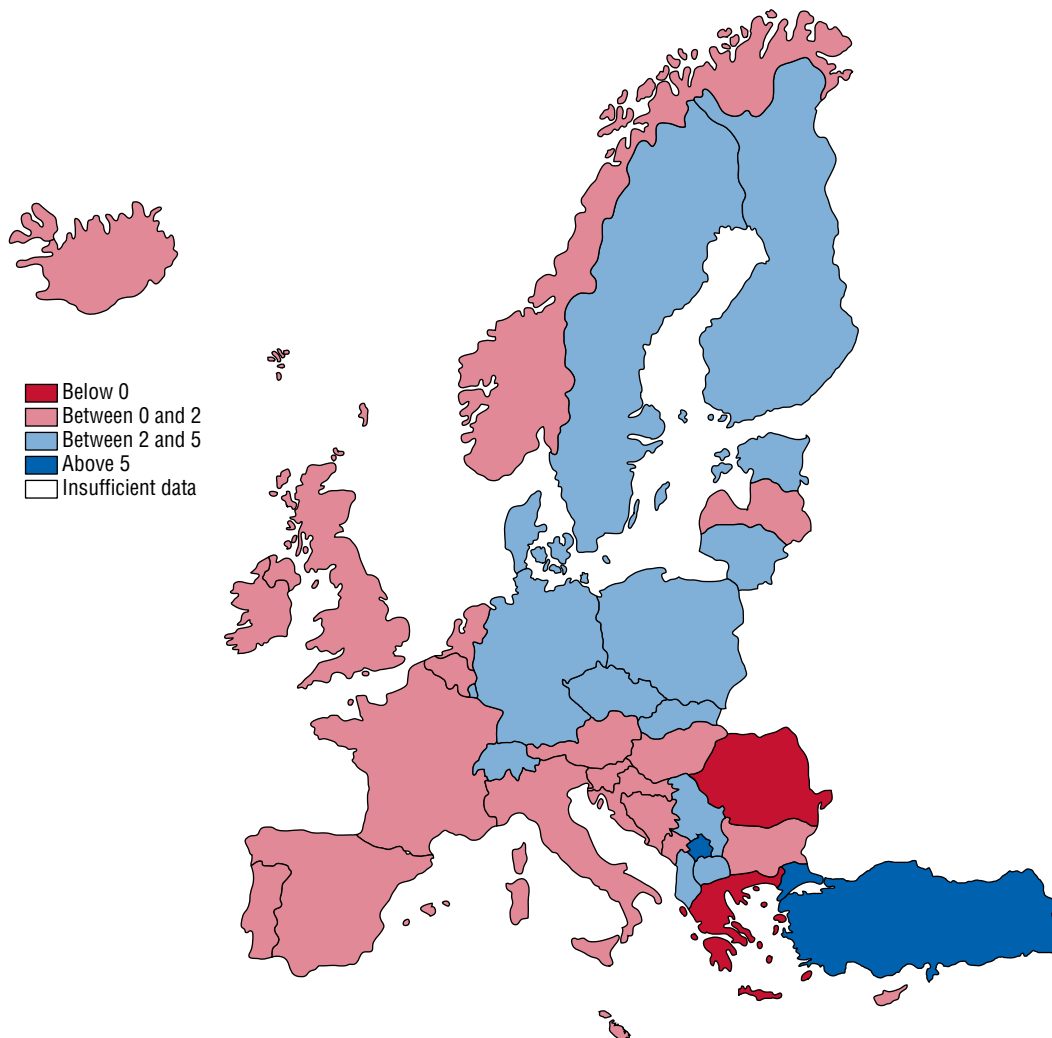
Source: IMF staff estimates.

prospects for recovery are similarly diverse. In the United Kingdom, domestic demand is expected to remain relatively subdued, particularly following the recent measures to cut the budget deficit.

- In emerging Europe, growth in economies that experienced the mildest downturns (Poland), and others that faced the crisis with relatively strong household and bank balance sheets (Turkey), is projected to continue gaining strength, helped by the normalization of global trade and capital flows. However, those that had experienced unsustainable domestic booms (Bulgaria, Latvia)

or have vulnerable private or public sector balance sheets (Hungary, Romania) are expected to recover more slowly. These problems have tightly constrained the room for policy maneuver.

Risks to the outlook have become more balanced. Although downside risks continue to threaten Europe's recovery, some upside risks have recently emerged. The main upside risk comes from higher-than-expected real activity in Germany, which could lift growth in Europe more generally, given the country's substantial trade and production linkages. Nevertheless, downside risks still loom large. In the

Figure 2.7. Europe: A Gradual and Uneven Recovery

The recovery is gradually taking hold, but domestic demand is expected to remain sluggish, especially in advanced Europe. Fiscal consolidation plans across Europe are rightfully differentiated: economies facing market pressure or external financing constraints have larger and more front-loaded adjustments than those with more manageable debt dynamics. Economic prospects are closely connected via cross-border bank flows and trade linkages, especially with Germany.
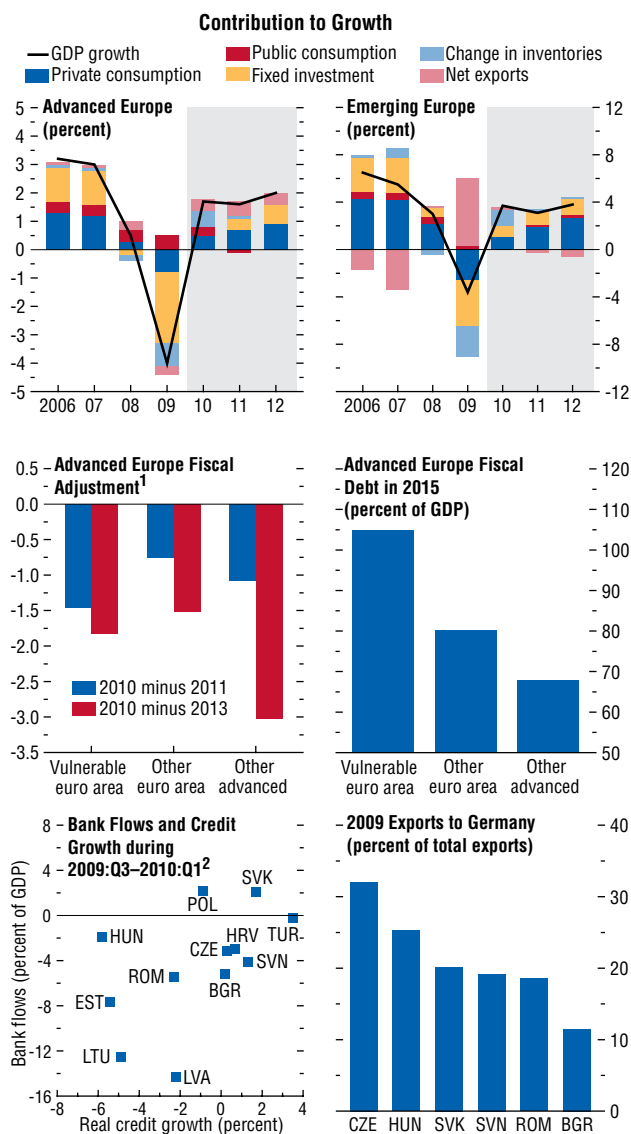
Sources: Bank for International Settlements; Haver Analytics; IMF, *Direction of Trade Statistics*; and IMF staff estimates.
[1]Change in structural balance in percent of potential GDP. Vulnerable euro area comprises Greece, Ireland, Italy, Portugal, and Spain. Other euro area comprises euro area economies excluding vulnerable euro area. Other advanced comprises advanced Europe excluding the euro area.
[2]BGR: Bulgaria; CZE: Czech Republic; EST: Estonia; HRV: Croatia; HUN: Hungary; LTU: Lithuania; LVA: Latvia; POL: Poland; ROM: Romania; SVK: Slovak Republic; SVN: Slovenia; TUR: Turkey.

near term, as discussed in Chapter 1 of the GFSR, the potential for financial spillovers across sovereigns remains elevated in the euro area, particularly among peripheral economies. European banking systems are still heavily reliant on government support and are highly vulnerable to deterioration in the real economy, sovereign shocks, and funding strains. Hence, if unaddressed, renewed financial sector stress could spread—including to emerging Europe via trade and cross-border bank flows—and could have significant adverse effects on real activity. In the medium term, the main risk is that fiscal and competitiveness imbalances in peripheral economies and insufficient action to tackle weak banks could lead to a protracted period of subpar growth and occasional crises.

Against this backdrop, the overarching policy challenge is to use the window of opportunity afforded by the unprecedented policy support to address underlying problems through national and EU-level action.

Establishing public debt sustainability remains a top priority for many European economies. Across Europe, current fiscal consolidation plans are going in the right direction. They are rightfully differentiated—economies facing market pressure or severe external financing constraints (for example, Greece, Iceland, Ireland, Portugal, Spain) have larger and more front-loaded adjustments than others. Nevertheless, given the considerable near-term easing in Germany, the overall fiscal stance in the euro area will remain broadly neutral in 2010—as is appropriate, given the still-fragile recovery. Plans for medium-term fiscal adjustment, however, need to be strengthened considerably to deliver permanent savings in the face of looming age-related spending. Ambitious entitlement spending reforms would deliver large credibility gains at a lesser cost in terms of short-term growth; they would also forestall a need for more painful reforms in the future. Some economies have taken steps in that direction (for example, France, Italy), but more could be done. Key items will be raising the retirement age to reflect increased life expectancy, more efficient health care spending, and reform of social security funding that reduces distortions to the labor supply.

Table 2.3. Selected European Economies: Real GDP, Consumer Prices, Current Account Balance, and Unemployment
(Annual percent change, unless noted otherwise)

	Real GDP			Consumer Prices[1]			Current Account Balance[2]			Unemployment[3]		
		Projections			Projections			Projections			Projections	
	2009	2010	2011	2009	2010	2011	2009	2010	2011	2009	2010	2011
Europe	**−4.0**	**2.0**	**1.8**	**1.3**	**2.3**	**2.0**	**0.1**	**0.3**	**0.5**	**. . .**	**. . .**	**. . .**
Advanced Europe	**−4.1**	**1.7**	**1.6**	**0.7**	**1.8**	**1.6**	**0.3**	**0.8**	**1.0**	**8.8**	**9.4**	**9.3**
Euro Area[4],[5]	−4.1	1.7	1.5	0.3	1.6	1.5	−0.6	0.2	0.5	9.4	10.1	10.0
Germany	−4.7	3.3	2.0	0.2	1.3	1.4	4.9	6.1	5.8	7.5	7.1	7.1
France	−2.5	1.6	1.6	0.1	1.6	1.6	−1.9	−1.8	−1.8	9.4	9.8	9.8
Italy	−5.0	1.0	1.0	0.8	1.6	1.7	−3.2	−2.9	−2.7	7.8	8.7	8.6
Spain	−3.7	−0.3	0.7	−0.2	1.5	1.1	−5.5	−5.2	−4.8	18.0	19.9	19.3
Netherlands	−3.9	1.8	1.7	1.0	1.3	1.1	5.4	5.7	6.8	3.5	4.2	4.4
Belgium	−2.7	1.6	1.7	0.0	2.0	1.9	0.3	0.5	1.8	7.7	8.7	8.5
Greece	−2.0	−4.0	−2.6	1.4	4.6	2.2	−11.2	−10.8	−7.7	9.4	11.8	14.6
Austria	−3.9	1.6	1.6	0.4	1.5	1.7	2.3	2.3	2.4	4.8	4.1	4.2
Portugal	−2.6	1.1	0.0	−0.9	0.9	1.2	−10.0	−10.0	−9.2	9.6	10.7	10.9
Finland	−8.0	2.4	2.0	1.6	1.4	1.8	1.3	1.4	1.6	8.3	8.8	8.7
Ireland	−7.6	−0.3	2.3	−1.7	−1.6	−0.5	−3.0	−2.7	−1.1	11.8	13.5	13.0
Slovak Republic	−4.7	4.1	4.3	0.9	0.7	1.9	−3.2	−1.4	−2.6	12.1	14.1	12.7
Slovenia	−7.8	0.8	2.4	0.9	1.5	2.3	−1.5	−0.7	−0.7	6.0	7.8	8.1
Luxembourg	−4.1	3.0	3.1	0.4	2.3	1.9	5.7	6.9	7.2	6.0	5.8	5.6
Cyprus	−1.7	0.4	1.8	0.2	2.2	2.3	−8.3	−7.9	−7.4	5.3	7.1	6.9
Malta	−2.1	1.7	1.7	1.8	1.9	2.1	−6.1	−5.4	−5.3	7.0	6.9	6.9
United Kingdom[5]	−4.9	1.7	2.0	2.1	3.1	2.5	−1.1	−2.2	−2.0	7.5	7.9	7.4
Sweden	−5.1	4.4	2.6	2.0	1.8	1.9	7.2	5.9	5.7	8.3	8.2	8.2
Switzerland	−1.9	2.9	1.7	−0.5	0.7	0.5	8.5	9.6	10.3	3.6	3.6	3.4
Czech Republic	−4.1	2.0	2.2	1.0	1.6	2.0	−1.1	−1.2	−0.6	6.7	8.3	8.0
Norway	−1.4	0.6	1.8	2.2	2.5	1.4	13.1	16.6	16.4	3.2	3.5	3.6
Denmark	−4.7	2.0	2.3	1.3	2.0	2.0	4.2	3.4	3.0	3.6	4.2	4.7
Iceland	−6.8	−3.0	3.0	12.0	5.9	3.5	−6.5	−0.9	2.1	8.0	8.6	8.4
Emerging Europe[6]	**−3.6**	**3.7**	**3.1**	**4.7**	**5.2**	**4.1**	**−2.5**	**−3.7**	**−4.0**	**. . .**	**. . .**	**. . .**
Turkey	−4.7	7.8	3.6	6.3	8.7	5.7	−2.3	−5.2	−5.4	14.0	11.0	10.7
Poland	1.7	3.4	3.7	3.5	2.4	2.7	−1.7	−2.4	−2.6	8.2	9.8	9.2
Romania	−7.1	−1.9	1.5	5.6	5.9	5.2	−4.5	−5.1	−5.4	6.3	7.2	7.1
Hungary	−6.3	0.6	2.0	4.2	4.7	3.3	0.2	0.5	0.7	10.1	10.8	10.3
Bulgaria	−5.0	0.0	2.0	2.5	2.2	2.9	−9.5	−3.0	−3.1	6.8	8.3	7.6
Croatia	−5.8	−1.5	1.6	2.4	1.9	2.8	−5.3	−3.8	−4.7	9.2	9.5	9.0
Lithuania	−14.8	1.3	3.1	4.2	1.0	1.3	4.2	1.9	0.2	13.7	18.0	16.0
Latvia	−18.0	−1.0	3.3	3.3	−1.4	0.9	8.6	5.5	2.9	17.3	19.8	17.5
Estonia	−13.9	1.8	3.5	−0.1	2.5	2.0	4.5	4.2	3.4	13.8	17.5	16.4

[1]Movements in consumer prices are shown as annual averages. December–December changes can be found in Tables A6 and A7 in the Statistical Appendix.

[2]Percent of GDP.

[3]Percent. National definitions of unemployment may vary.

[4]Current account position corrected for reporting discrepancies in intra-area transactions.

[5]Based on Eurostat's harmonized index of consumer prices.

[6]Includes Albania, Bosnia and Herzegovina, Kosovo, former Yugoslav Republic of Macedonia, and Serbia.

Monetary policy should remain very supportive for the foreseeable future in most European economies. In advanced Europe, inflation remains low because output gaps are large, and inflation expectations are well anchored. Core inflation is projected to remain at about 1½ percent in the euro area. Thus, in the euro area, it is appropriate to keep interest rates exceptionally low, and, given

continued financial strain, to very gradually unwind nonstandard support measures and collateral-requirement changes. This will help support the recovery by dampening the adverse short-term effects of fiscal consolidation on domestic demand. If downside risks to growth materialize, central banks in advanced Europe may need to again rely more strongly on their balance sheets to further ease

monetary conditions. In emerging Europe, inflation prospects are a bit mixed—reflecting different exchange rate regimes and varying degrees of economic slack—but are generally contained. In some economies, value-added tax hikes are likely to temporarily drive up inflation (for example, Poland, Romania).

The resilience of Europe's financial sector must be improved and its stability secured. Resolving banking sector issues is essential to spur lending, which is very important to firms' external funding. As discussed in the October 2010 GFSR, however, European banks continue to face challenges. These include heavy reliance on European Central Bank financing facilities—or on government support—and large exposure to risky sovereign debt. The stress tests conducted by the Committee of European Banking Supervisors have been helpful in improving disclosure regarding banks' condition. These tests also provide a useful guide to the need to recapitalize, restructure, or resolve vulnerable banks. In this respect, some economies (for example, Ireland, Spain) have made more progress than others (for example, Germany) in tackling weak banks. Nonetheless, as discussed in the GFSR, an adverse funding scenario could have a significant impact on the European banking system. To cope with the looming wall of maturing bank debt, some blanket financial support measures may need to be extended, but not at the cost of postponing much-needed restructuring. Meanwhile, it will be important to resolve uncertainty about regulatory reforms, which would help increase banks' willingness to supply credit and support the recovery. Invigorating credit is also a challenge in emerging Europe, particularly given the deterioration in bank credit portfolios during the crisis.

Another crucial task ahead is the reform of EU policy frameworks. The cross-border dimension of many issues argues for a stronger role at the EU level. The crisis exposed long-standing problems in existing fiscal, structural, and financial stability policies. Such weaknesses need to be addressed in order to ensure Europe's future stability and growth.

A key challenge is the future of fiscal surveillance and sovereign crisis management. An arrangement along the lines of the European Stabilization Mech-

anism (ESM) is likely to prove useful, but sharing fiscal burdens implies a need for shared responsibility for fiscal policy. This principle was recognized with the adoption of the Stability and Growth Pact. However, economies failed to live up to its letter and spirit by not adjusting sufficiently during good times. Thus, the Pact needs to be strengthened to feature better incentives for preventing and resolving fiscal imbalances. It needs to encourage the building up of sufficient buffers in good times, establish credible procedures for the enforcement of the common fiscal rules, and beef up centralized crisis management capabilities—a gap now temporarily filled by the ESM and the larger European Financial Stability Facility, the latter designed specifically for euro area members.

In addition, the crisis has shown how financial sector problems in specific countries can very quickly have pan-European consequences. Differences in prudential policies and practices across countries encourage complex business structures, regulatory arbitrage, and rent seeking, with deleterious consequences for Europe's financial stability. Supervisory or regulatory gaps have major spillovers. Hence, joint accountability and responsibility for Europe's common good of "financial stability"—in the form of an integrated European financial stability framework—are urgently needed. Such a framework needs to be built on two pillars: (1) integrated crisis management and resolution—for example, through a European resolution authority—and (2) integrated supervision, to make burden sharing acceptable. Both are necessary to achieve a fully integrated, efficient, and stable market for financial services. Steps in this direction are being taken—for instance, the establishment of the European Systemic Risk Board and discussions about a more integrated resolution framework. Nevertheless, considering the devastating consequences of the crisis and the magnitude of the challenge, progress is still very slow, hampered by narrow national interests.

Last, a better structural policy framework is also necessary to help improve competitiveness, address macroeconomic imbalances, and boost growth.

The current policy agenda (Europe 2020) could be improved in several ways. Specifically, surveil-

lance over structural bottlenecks, competitiveness, and imbalances needs to become more binding. It should also consider the fiscal and financial policy challenges facing countries. To speed the process of reform, priority should be given to a narrow range of strategic objectives that have major cross-border implications. For instance, most Mediterranean economies need to address labor market segmentation, inadequate wage flexibility, and skill mismatches; upgrade education systems; and foster capital deepening and innovation. In addition, reform to bankruptcy proceedings in these economies will help facilitate firm turnover and entrepreneurship. For all EU economies, further liberalization of product and service markets under the Single Market program will strengthen the employment effects of labor market reform.

Latin America Is Sustaining Its Growth Momentum

The LAC region is exiting the global crisis at a faster pace than anticipated (Figures 2.8 and 2.9). This reflects solid macroeconomic policy fundamentals, sizable policy support, favorable external financing conditions, and strong commodity revenues. Robust commodity export revenues have boosted domestic income, which along with easy financing conditions has supported domestic demand. For many of these economies, the potential negative effect from subdued demand for imports by the advanced economies will be manageable, given lower reliance on external trade[8] and greater dependence on commodity exports, for which external demand is projected to remain robust (see Chapter 1, Appendix 1.1). However, Mexico, with its deep real and financial links to the U.S. economy, and the commodity-importing Central American and Caribbean regions, with their dependence on tourism and remittance flows from the United States, will be more vulnerable than others to weak U.S. economic conditions.

[8]For instance, the share of exports plus imports in total GDP—a very rough measure of openness—averaged less than 50 percent in the LA-5 (Brazil, Chile, Colombia, Mexico, Peru) in the past five years (compared with more than 125 percent for the ASEAN economies).

Growth in the region is projected to average 5.7 percent in 2010 and 4 percent in 2011 (Table 2.4). Risks to the outlook emerge from both external and domestic factors. External risks are tilted to the downside, reflecting mainly a worse-than-anticipated recovery in advanced economies, with its negative spillovers on commodity prices. An additional contagion channel arises from the large presence of foreign banks in Latin America, although the fact that these banks have relied primarily on subsidiaries funded by local deposits rather than cross-border flows mitigates the risk. On the other side, there are also risks of overheating, particularly if unwinding of earlier stimulus takes longer than currently anticipated (see below).

Prospects within the LAC region are quite diverse given the varying strength of macroeconomic policy frameworks, the role of domestic demand, and different degrees of exposure to spillovers from global trade and financial markets:

- Impressive improvements in macroeconomic policy frameworks over the past two decades, combined with accommodative policies, easy external financing conditions, and strong commodity prices, are driving a robust recovery in the LA-4 (Brazil, Chile, Colombia, Peru). Despite the expected dynamism in domestic demand, current account balances are projected to deteriorate only marginally in 2010 and 2011. High commodity prices and continued vitality in Asia are expected to sustain exports. Similarly, Uruguay, which has made substantial progress in macroeconomic policy management and faces a favorable external environment, is expected to experience strong growth dynamics in 2010–11.

- Mexico is also staging a steady recovery, despite the 2009 hard landing and the drag from the U.S. economy. As in the LA-4, recovery has been underpinned by strong policy frameworks in the run-up to the crisis. However, Mexico's outlook arguably faces larger downside risks than that of the LA-4. A weaker-than-projected recovery in the U.S. economy would have important implications for Mexico. Furthermore, with more than 80 percent of domestic financial system assets owned by systemic global banks, substantially higher capital charges arising from global

Figure 2.8. Latin America and the Caribbean: Average Projected Real GDP Growth during 2010–11
(Percent)

Below 0
Between 0 and 2
Between 2 and 5
Above 5
Insufficient data
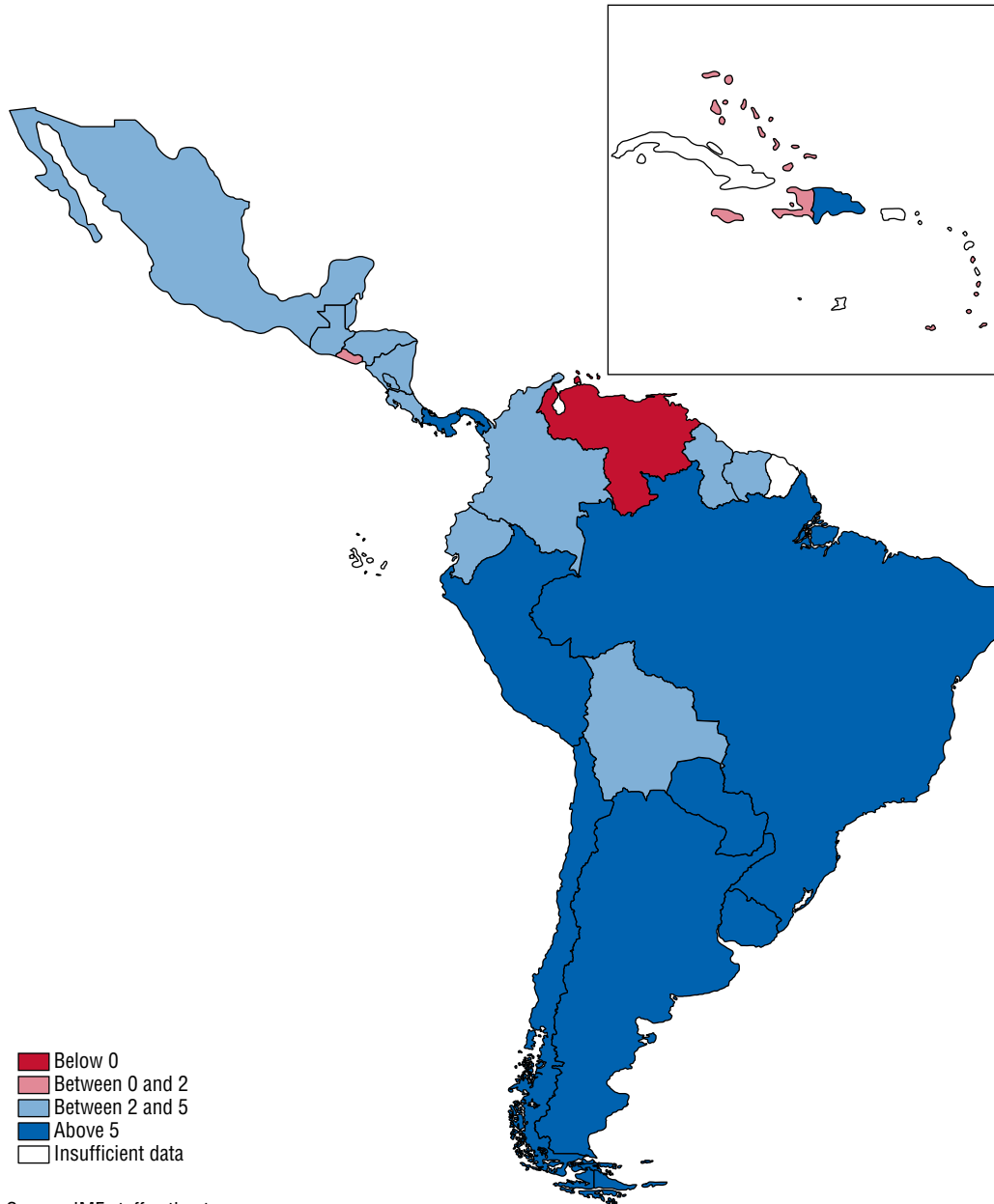
Source: IMF staff estimates.

financial sector regulatory reform could affect the availability of credit for the private sector in Mexico.

- The outlook for the rest of the LAC region is somewhat mixed. Overall, the commodity

exporters will continue to benefit from the strength in their terms of trade, growing links with China, and strong intraregional link-ages. Thus, Argentina and Paraguay are set to experience high growth, supported in large part

by strong trade ties vis-à-vis Brazil and a sharp rebound in agricultural production following last year's severe drought. Conversely, despite high oil prices, Ecuador's recovery will be muted given supply-side constraints. Venezuela's recession will continue in 2010, reflecting severe supply bottlenecks, challenges from capital flight, and generally weak policy frameworks. Growth in most of the Caribbean countries will be subdued amid weak prospects for tourism and remittances and limited room for policy support in light of chronic public debt burdens.[9]

LAC economies need to establish policies to achieve strong and sustainable growth like Asia. However, unlike Asia, medium-term policy priorities are not driven by rebalancing more toward domestic demand (given relatively low reliance on external trade, although the tourism-dependent Caribbean countries are notable exceptions) but rather by a need to ensure that strong growth does not give rise to balance sheet vulnerabilities in the private or public sector. Macroeconomic and prudential policies will need to be designed to ensure that the recovery becomes well entrenched and at the same time to contain the risks of overheating and the buildup of fiscal and financial sector risks.

Thus, the priority for the region is now to use the window provided by the cyclical upswing to start unwinding stimulus, regain room for policy maneuver, and sustain its relatively recent track record of strong macroeconomic policy management. In many economies the policy mix should favor early withdrawal of the fiscal stimulus, while allowing the withdrawal of monetary stimulus to proceed at a slower pace. Fiscal tightening will help address risks of inflation pressure (Peru, Uruguay) and exchange rate overvaluation (Brazil), reduce the generally high public debt and associated vulnerability, and provide a cushion for future contingencies. Moreover, given policy challenges arising from strong and persistent capital inflows

[9]See the October 2010 *Regional Economic Outlook: Western Hemisphere* for a more detailed discussion of the challenges and prospects in the rest of the LAC region.

Figure 2.9. Latin America and the Caribbean (LAC): Advancing with Strength[1]

A proactive crisis response and favorable terms of trade have driven Latin America's speedy recovery. Commodity exporters are also benefiting from increasing demand from emerging Asia, particularly China. Capital inflows have picked up sharply in some economies. Although inflows have boosted the equities market, the recovery in private credit has remained sluggish.
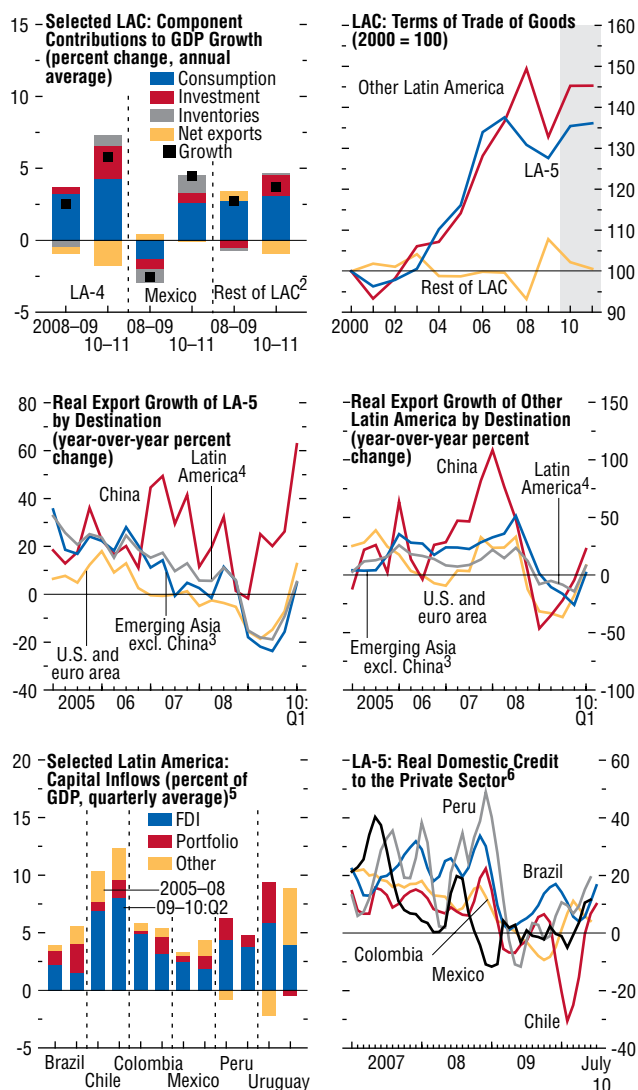
Sources: CEIC EMED database; Haver Analytics; IMF, *Balance of Payments Statistics;* IMF, *Direction of Trade Statistics;* and IMF staff estimates.
[1]LA-4: Brazil, Chile, Colombia, and Peru; LA-5: LA-4 and Mexico; Other Latin America: Argentina, Bolivia, Ecuador, Paraguay, Uruguay, and Venezuela.
[2]Rest of LAC in this panel excludes Antigua and Barbuda, Dominica, Grenada, Guyana, Jamaica, St. Kitts and Nevis, St. Lucia, and St. Vincent and the Grenadines due to lack of data on GDP components.
[3]Emerging Asia: ASEAN-5, China, India, and NIEs. See Figure 2.3 for list of NIEs and ASEAN-5.
[4]Latin America: LA-5 and Other Latin America (see footnote 1).
[5]Data for Peru only up to 2009:Q4. Data for Colombia and Uruguay only up to 2010:Q1. FDI = foreign direct investment. Other investment includes financial derivatives.
[6]Annualized percent change of three-month moving average over previous three-month moving average.

Table 2.4. Selected Western Hemisphere Economies: Real GDP, Consumer Prices, Current Account Balance, and Unemployment
(Annual percent change, unless noted otherwise)

	Real GDP			Consumer Prices[1]			Current Account Balance[2]			Unemployment[3]		
		Projections			Projections			Projections			Projections	
	2009	2010	2011	2009	2010	2011	2009	2010	2011	2009	2010	2011
North America	**−3.0**	**2.9**	**2.5**	**0.2**	**1.7**	**1.2**	**−2.6**	**−3.0**	**−2.6**	. . .	. . .	. . .
United States	−2.6	2.6	2.3	−0.3	1.4	1.0	−2.7	−3.2	−2.6	9.3	9.7	9.6
Canada	−2.5	3.1	2.7	0.3	1.8	2.0	−2.8	−2.8	−2.7	8.3	8.0	7.5
Mexico	−6.5	5.0	3.9	5.3	4.2	3.2	−0.6	−1.2	−1.4	5.5	5.0	4.5
South America	**−0.2**	**6.3**	**4.1**	**6.4**	**6.8**	**6.9**	**−0.3**	**−1.0**	**−1.4**	. . .	. . .	. . .
Brazil	−0.2	7.5	4.1	4.9	5.0	4.6	−1.5	−2.6	−3.0	8.1	7.2	7.5
Argentina[4]	0.9	7.5	4.0	6.3	10.6	10.6	2.0	1.7	1.2	8.4	8.0	8.6
Colombia	0.8	4.7	4.6	4.2	2.4	2.6	−2.2	−2.7	−2.8	12.0	12.0	11.5
Venezuela	−3.3	−1.3	0.5	27.1	29.2	32.2	2.6	7.8	8.2	7.9	8.6	8.1
Peru	0.9	8.3	6.0	2.9	1.7	2.5	0.2	−1.3	−2.2	8.6	8.0	7.5
Chile	−1.5	5.0	6.0	1.7	1.7	3.0	2.6	−0.7	−2.0	9.6	9.0	8.7
Ecuador	0.4	2.9	2.3	5.2	4.0	3.5	−0.7	−0.8	−1.6	8.5	8.6	8.5
Bolivia	3.4	4.0	4.5	3.3	1.7	4.1	4.6	6.5	5.2	. . .	. . .	. . .
Uruguay	2.9	8.5	5.0	7.1	6.5	6.4	0.7	−0.1	−0.7	7.3	7.0	6.9
Paraguay	−3.8	9.0	5.0	2.6	4.6	5.2	−1.0	−1.2	−1.6	5.6	5.3	5.2
Central America[5]	**−0.5**	**3.1**	**3.7**	**3.8**	**3.9**	**4.1**	**−1.8**	**−5.1**	**−5.5**	. . .	. . .	. . .
The Caribbean[6]	**0.4**	**2.4**	**4.3**	**3.5**	**7.2**	**5.5**	**−4.2**	**−3.0**	**−2.9**	. . .	. . .	. . .
Memorandum												
Latin America and the Caribbean[7]	−1.7	5.7	4.0	6.0	6.1	5.8	−0.6	−1.2	−1.6	. . .	. . .	. . .

[1]Movements in consumer prices are shown as annual averages. December–December changes can be found in Tables A6 and A7 in the Statistical Appendix.
[2]Percent of GDP.
[3]Percent. National definitions of unemployment may vary.
[4]Private analysts estimate that consumer price index inflation has been considerably higher. The authorities have created a board of academic advisors to assess these issues. Private analysts are also of the view that real GDP growth has been significantly lower than the official reports since the last quarter of 2008.
[5]Central America comprises Costa Rica, El Salvador, Guatemala, Honduras, Nicaragua, and Panama.
[6]The Caribbean comprises Antigua and Barbuda, The Bahamas, Barbados, Belize, Dominica, Dominican Republic, Grenada, Guyana, Haiti, Jamaica, St. Kitts and Nevis, St. Lucia, St. Vincent and the Grenadines, Suriname, and Trinidad and Tobago.
[7]Comprises Mexico and economies from the Caribbean, Central America, and South America.

in some economies, fiscal tools are likely better options to deal with overheating pressures than monetary tools. However, in Chile, fiscal stimulus can be withdrawn only gradually in the context of earthquake-related reconstruction spending, and so tighter monetary conditions may be needed to rein in inflation. For the rest of Latin America as well, it is also critical to use the cyclical upswing to rebuild fiscal room and avoid procyclical policies. However, the pace of stimulus withdrawal could be slowed if downside risks to growth were to materialize, especially for countries with available policy room.

With respect to the approach to capital inflows, the focus among the LA-5 (LA-4 plus Mexico) has appropriately been to deepen capital markets and improve the supervisory and regulatory framework to enable absorption of capital inflows without endangering financial stability. Other priorities for

the region include structural reforms to improve the investment climate, which would attract stable FDI inflows and improve external competitiveness (for example, streamlining business regulations, upgrading infrastructure, labor and product market reforms). However, these reforms will take time to implement. In the meantime, economies have begun to use a combination of macroeconomic and macroprudential measures to address the challenges posed by capital inflows (Box 2.2). Regarding the use of capital controls, preliminary indications are that they may have helped somewhat in changing the composition of inflows but not the volume (see the April and October 2010 issues of the GFSR). In this context, the possible use of capital controls should be supported by other measures—for example, continued two-way exchange rate flexibility to discourage speculative inflows, fiscal consolidation (where public debt is high and private sector

Box 2.2. Latin America-5: Riding Another Wave of Capital Inflows

After a brief hiatus during the height of the global crisis in 2008, the LA-5 economies are experiencing a resurgence in capital inflows (figure). Strong capital inflows have been a mixed blessing. On the one hand, they have provided cheap and readily available financing to boost domestic demand. On the other hand, these flows have increased concern about domestic overheating, external competitiveness (given considerable currency appreciation in the context of exchange rates that are mostly at or above their medium-term values), increased sterilization costs (with sizable interest rate differentials vis-à-vis external rates), and heightened risks of a potential boom-bust cycle—problems this region has confronted in the past. The situation today raises fewer financial stability concerns because domestic credit is staging a relatively slow recovery. However, capital inflows have induced booms in many equity markets, and concerns about asset price bubbles have been growing.

Against this backdrop, country authorities have responded by adopting a number of measures to safeguard financial sector stability, eliminate asset price bubbles, and discourage inflows:

- Financial sector supervision—all the LA-5 countries are at various stages of further enhancing financial sector regulatory standards for capital adequacy, liquidity, and asset quality.
- Tighter liquidity control and management—required reserves for banks have been raised (Brazil).
- Capital controls on inflows—These include a direct tax on fixed income and equity inflows (reintroduced in October 2009 by Brazil after a brief break) and minimum-stay rules for FDI

LA-5: Handling the Capital Inflows Bonanza[1]
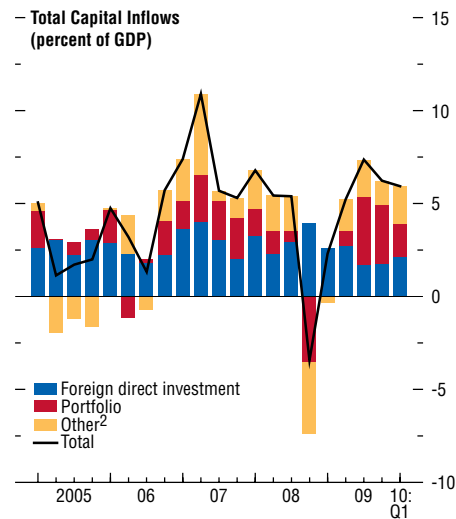
Sources: CEIC EMED database; Haver Analytics; IMF, *Balance of Payments Statistics;* and IMF staff calculations.
[1]LA-5: Brazil, Chile, Colombia, Mexico, and Peru. Data for Peru only up to 2009:Q4.
[2]Other investment includes financial derivatives.

(implemented by Colombia before the crisis but removed in October 2008).

- Prudential capital controls—these include unremunerated reserve requirements on foreign borrowing (maintained by Colombia from before the crisis but currently zero rated) and higher reserve requirements on short-term (less than two years) external loans (Peru).
- Further liberalization of selected outflows—Chile, Colombia, Peru.

recovery entrenched), and enhanced financial sector monitoring and supervision.

The CIS Region Is Experiencing a Modest Recovery

The recovery in the CIS region has been supported by high commodity prices, normalizing trade and capital flows, accommodative policies, and positive regional spillovers (Figures 2.10 and 2.11). The

region is benefiting from Russia's gradual recuperation. Some economies in the region have already experienced an increase in remittances from Russia.[10]

[10]Alturki, Espinosa-Bowen, and Ilahi (2009) find that Russia appears to influence regional growth mainly through the remittance channel. In particular, a 10 percentage point increase in growth of remittances from Russia is associated with a 0.3 percentage point GDP increase in growth in the CIS countries, with a 0.4 percentage point increase in oil-importing CIS countries' growth.

Figure 2.10. Commonwealth of Independent States: Average Projected Real GDP Growth during 2010–11[1]
(Percent)

Below 0
Between 0 and 2
Between 2 and 5
Above 5
Insufficient data
Covered in a different map
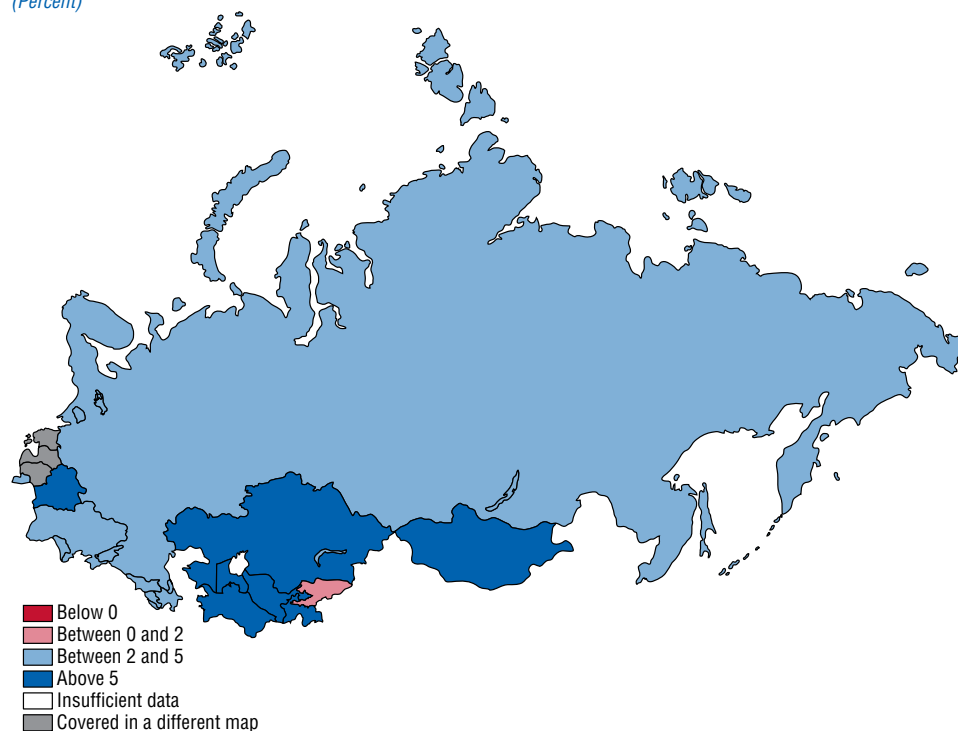
Source: IMF staff estimates.
[1]Includes Georgia and Mongolia.

Real activity for the CIS region is expected to grow at 4.3 percent in 2010 and 4.6 percent in 2011 (Table 2.5). As in other regions, prospects vary considerably. Exposure to commodity prices, the degree of integration with global financial markets, the extent of policy support, and links to Russia are factors that differ importantly across economies.

- In Russia, despite relatively high oil prices, the near-term outlook is for a modest recovery. Output growth is projected to reach 4 percent in 2010 and 4.3 percent in 2011. Although the current heat wave and related wildfires could detract from near-term growth, and the ongoing rebound still depends on policy support, a self-sustained consumption-led recovery should gradually take hold. The adjustment of bank balance sheets appears to have run its course, and banks seem poised to cautiously expand lending.

Gradually rising real wages and lower unemployment should support consumption.

- High commodity prices also benefit other energy exporters in the region. Large-scale investment and higher volumes of gas exports are projected to boost growth in Turkmenistan to 9.4 percent in 2010 and 11.5 percent in 2011. In Uzbekistan, real activity is expected to expand by 8 percent in 2010 and 7 percent in 2011. Kazakhstan is set for a slower recovery, due to lingering problems in its financial system.

- For energy importers as a group, growth is projected to pick up to 4.6 percent in 2010 and 5 percent in 2011, reflecting the global recovery and financial stability (for example, Ukraine). Some of these economies (for example, Armenia, Moldova, Tajikistan) will benefit from the rebound in remittances from Russia.

Overall, near-term risks to growth in the region are broadly balanced. On the upside, more favorable external developments—particularly higher commodity prices and a renewal of capital inflows—or a more rapid recovery in credit could push growth higher. The recently launched customs union among Belarus, Kazakhstan, and Russia could enhance trade and provide an additional boost to growth within the union. On the downside, external shocks—adverse changes in commodity prices or a shock to investor confidence—present the key downside risks. With some exceptions (for example, Kazakhstan), foreign banks have a minor role in CIS economies. At the same time, the region—and Russia in particular— continues to be very vulnerable to volatility in capital flows and global risk appetite. For instance, the euro area crisis in May led to a fresh bout of volatility in Russian stock markets and renewed downward pressure on the ruble. A worse-than-expected growth outcome in Russia would have second-round effects throughout the region, mainly through remittances and trade.

The fiscal challenges vary across the region. In Russia, the task is to ensure that the large fiscal stimulus (about 9 percent of GDP) is unwound as the global economy gathers strength—in this regard, a key concern is that some three-quarters of the fiscal package entailed permanent measures (for example, higher pension outlays). Given the composition of government spending, reversing the fiscal stimulus will be difficult without undertaking significant public sector reforms that allow savings in socially sensitive areas such as health care, social protection, and pensions. Energy importers in the region have limited fiscal room and are mostly aiming for a neutral fiscal stance or modest fiscal adjustment in 2010.

Most economies in the region operate under pegged or heavily managed exchange rate regimes, which deprive them of one means of adjusting to shocks. In this respect, the recent greater exchange rate flexibility in Russia is welcome. So far, the more flexible exchange rate regime, alongside cuts in policy interest rates, has helped deter speculative capital inflows. But the focus now should be on inflation control, and the monetary easing cycle has been appropriately paused. In Kazakhstan, the economy

Figure 2.11. Commonwealth of Independent States (CIS): A Modest Recovery

The recovery in the CIS region is gaining traction, supported by high commodity prices, normalizing trade and capital flows, accommodative policies, and positive spillovers from Russia. Amid a more favorable external environment, capital flows are expected to pick up, but to lower levels than before the crisis. In Russia, the more flexible exchange rate regime, alongside cuts in policy interest rates, has helped deter speculative capital inflows. But the focus now should be on inflation control.
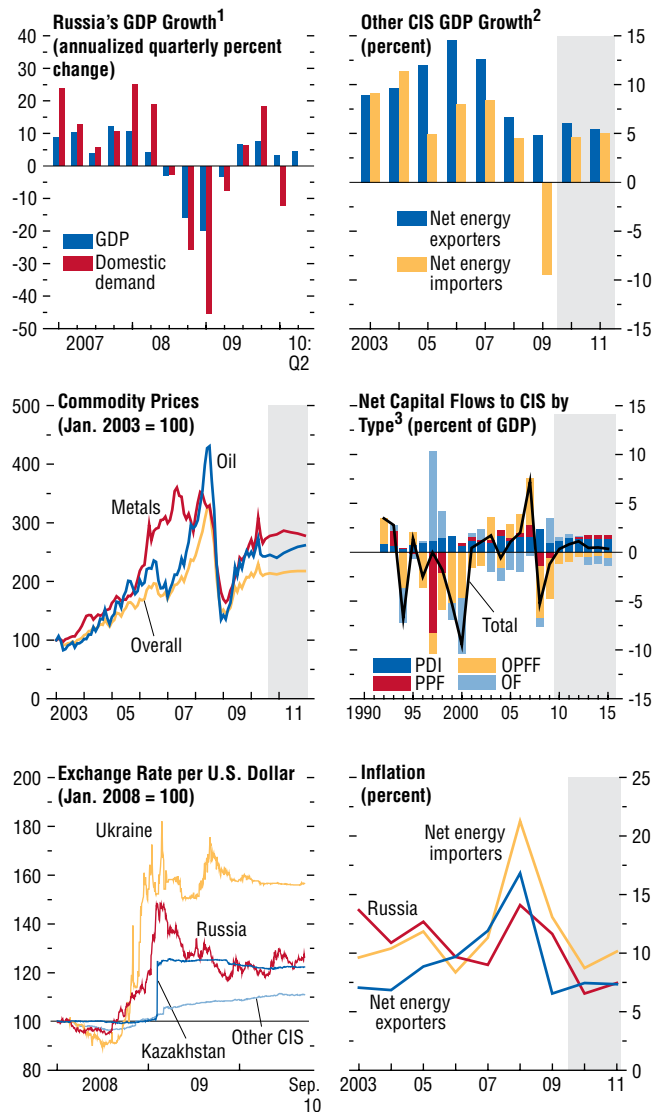
Sources: Haver Analytics; IHS Global Insight; IMF Primary Commodity Price System; and IMF staff estimates.
[1]Domestic demand data available only through 2010:Q1.
[2]Net energy exporters include Azerbaijan, Kazakhstan, Turkmenistan, and Uzbekistan. Net energy importers include Armenia, Belarus, Georgia, Kyrgyz Republic, Moldova, Mongolia, Tajikistan, and Ukraine.
[3]OF: official flows; OPFF: other private financial flows; PDI: private direct investment; PPF: private portfolio investment.

Table 2.5. Commonwealth of Independent States: Real GDP, Consumer Prices, Current Account Balance, and Unemployment
(Annual percent change, unless noted otherwise)

	Real GDP			Consumer Prices[1]			Current Account Balance[2]			Unemployment[3]		
		Projections			Projections			Projections			Projections	
	2009	2010	2011	2009	2010	2011	2009	2010	2011	2009	2010	2011
Commonwealth of Independent States (CIS)[4]	**−6.5**	**4.3**	**4.6**	**11.2**	**7.0**	**7.9**	**2.6**	**3.8**	**3.0**	. . .	. . .	. . .
Russia	−7.9	4.0	4.3	11.7	6.6	7.4	4.0	4.7	3.7	8.4	7.5	7.3
Ukraine	−15.1	3.7	4.5	15.9	9.8	10.8	−1.5	−0.4	−1.3	8.8	8.8	7.7
Kazakhstan	1.2	5.4	5.1	7.3	7.6	6.6	−3.2	3.2	2.0	8.0	7.8	7.6
Belarus	0.2	7.2	6.2	13.0	7.3	10.8	−13.1	−14.0	−13.9	0.9	0.9	0.9
Azerbaijan	9.3	4.3	1.8	1.5	5.5	6.0	23.6	24.1	22.2	6.0	6.0	6.0
Turkmenistan	6.1	9.4	11.5	−2.7	3.9	4.8	−16.1	−4.7	3.4	. . .	. . .	. . .
Mongolia	−1.6	8.5	7.0	6.3	10.5	8.9	−9.8	−13.9	−22.9	11.6	3.0	3.0
Low-Income CIS	**4.8**	**5.3**	**4.5**	**6.2**	**7.6**	**8.1**	**7.1**	**8.2**	**8.4**	. . .	. . .	. . .
Uzbekistan	8.1	8.0	7.0	14.1	10.6	11.4	2.7	3.8	6.3	0.2	0.2	0.2
Georgia	−3.9	5.5	4.0	1.7	6.4	7.4	−11.7	−12.0	−12.5	16.9	16.8	16.7
Armenia	−14.2	4.0	4.6	3.5	7.8	5.5	−16.0	−14.6	−12.6	6.8	7.0	7.0
Tajikistan	3.4	5.5	5.0	6.5	7.0	8.0	−4.9	−3.6	−5.7	. . .	. . .	. . .
Kyrgyz Republic	2.3	−3.5	7.1	6.8	4.8	5.7	2.1	−5.4	−9.4	5.8	5.6	5.4
Moldova	−6.5	3.2	3.5	0.0	7.4	6.0	−8.1	−11.2	−11.4	6.4	7.5	6.5
Memorandum												
Net Energy Exporters[5]	−6.0	4.3	4.5	10.8	6.7	7.4	3.8	5.1	4.2	. . .	. . .	. . .
Net Energy Importers[6]	−9.5	4.6	5.0	13.1	8.7	10.2	−5.8	−5.4	−6.1	. . .	. . .	. . .

[1]Movements in consumer prices are shown as annual averages. December–December changes can be found in Table A7 in the Statistical Appendix.
[2]Percent of GDP.
[3]Percent. National definitions of unemployment may vary.
[4]Georgia and Mongolia, which are not members of the Commonwealth of Independent States, are included in this group for reasons of geography and similarities in economic structure.
[5]Net Energy Exporters comprise Azerbaijan, Kazakhstan, Russia, Turkmenistan, and Uzbekistan.
[6]Net Energy Importers comprise Armenia, Belarus, Georgia, Kyrgyz Republic, Moldova, Mongolia, Tajikistan, and Ukraine.

would benefit from greater exchange rate flexibility, once the problems in the banking system have been resolved. This would facilitate monetary management, help the economy adjust to external shocks, and promote local-currency financial market development.

Banking sector balance sheets remain impaired in several CIS economies and call for continued policy attention. In Russia, restoring normal credit expansion will require decisive actions to improve provisioning standards and to enhance the powers of the supervisory authority, including over connected lending. In Kazakhstan, a transparent and comprehensive strategy to resolve bad debts—which involves an independent assessment of systemic banks to evaluate recapitalization needs—is critical for restoring financial sector health. In Ukraine, financial sector reforms are also essential to revitalizing the banking system, by ensuring an adequate level of capitalization. More independence for the central bank to pursue monetary and financial stability would also be desirable.

Over the medium term, the overarching challenges in the region are to improve the investment climate and diversify the pattern of growth. In Russia, for instance, there is a need for public administration reform, civil service reform, and judicial reform to ensure a level playing field for all investors. Such reforms will be critical to modernizing the economy. It will also be important to use capital flows wisely, in order to help move the economy from its dependence on oil revenues. In other energy exporters in the region, the priority is to facilitate private sector development and, in some economies, diversify away from the hydrocarbon sector. Such policies will help achieve sustained welfare gains.

The Middle East and North Africa Region Is Recovering Strongly

The strength of the recent economic recovery in the MENA region is largely underpinned by the rebound in oil prices from their trough in 2009,

which has boosted receipts for oil exporters in the region. In addition, a sizable and rapid fiscal policy response, especially in oil-exporting economies, has played a substantial role in supporting the non-oil sector in these economies. These expansionary policies have had spillover effects on the region's oil importers—where fiscal expansion was of a more moderate size—due to close trade links between these two groups of economies (Figures 2.12 and 2.13).

These positive factors contribute to an expected growth rate for the region as a whole of 4.1 percent in 2010 and 5.1 percent in 2011 (Table 2.6).

- Average growth rates among oil exporters are projected to be higher over the next two years, compared with 2009. Supported by sizable government infrastructure investment, real activity in Saudi Arabia is expected to grow at 3.4 percent in 2010 and 4.5 percent in 2011.

- Growth in oil-importing economies is expected to remain robust in 2010 and 2011. Members of this group managed to weather the global recession relatively well, partly due to relatively limited global financial links. Some economies that

experienced a boom-bust cycle in capital flows, such as Egypt, responded by drawing down reserves to limit the impact on the exchange rate and the real economy. In fact, net capital inflows have already turned positive in Egypt since the second half of 2009. Within the group, Lebanon continued to register strong growth through the recession, supported by signs of political stability and strong capital inflows.

The economic outlook in the region is closely linked to global developments, primarily through the impact of global economic activity on oil prices. The impact is not confined to the MENA exporters. Oil-importing economies in the region also benefit (roughly one-fourth of their exports go to oil exporters). Although oil prices have rebounded from the lows in 2009, future increases are projected to be modest. Expansion in demand by rapidly growing emerging markets is expected to be offset by stagnant demand from advanced economies. Oil and gas production capacity is set to increase, particularly in Saudi Arabia and Qatar, underpinned by continued expansion of productive capacity. The balance of

**Figure 2.12. Middle East and North Africa:
Average Projected Real GDP Growth during 2010–11**
(Percent)

Below 0
Between 0 and 2
Between 2 and 5
Above 5
Insufficient data
Covered in different map
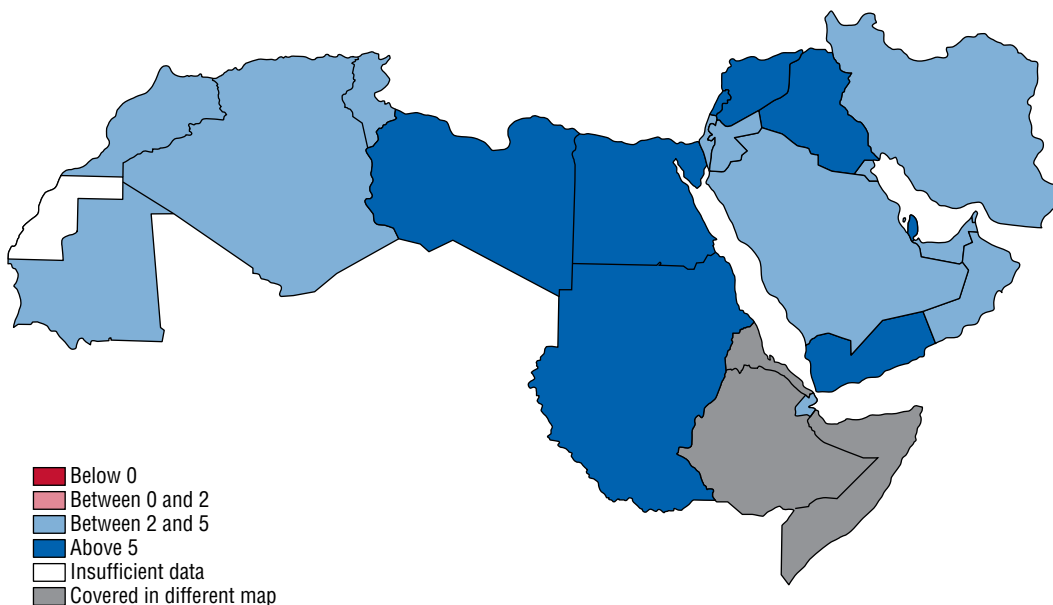
Source: IMF staff estimates.

Figure 2.13. Middle East and North Africa (MENA): Recovering Strongly

Recovery in the region is supported largely by the rebound in oil prices from their trough in 2009. In addition, government spending programs, especially in the oil-exporting economies, have played a significant role in supporting the non-oil sector in these economies. This fiscal stimulus has had positive spillovers to the oil-importing economies, which have close trade and financial links with the oil exporters.[1]

Real GDP Growth (percent change)

- MENA
- Oil exporters
- Oil importers

Real GDP Growth of Oil Exporters (percent change)

- Oil sector
- Non-oil sector

Fiscal Net Lending/Borrowing (percent of GDP)

Oil exporters
MENA
Oil importers

Government Debt (percent of GDP)

- MENA
- Oil exporters
- Oil importers

Oil Importers' Exports to Various Regions (2010:Q1 share of total exports to the world)

- Asia
- Europe
- LAC
- MENA oil exporters
- US/Canada
- Other

52%
12%
4%
8%
1%
23%

Inward Financial Flows[2] (percent of GDP)

- Oil Exp: FDI
- Oil Exp: Port.
- Oil Imp: FDI
- Oil Imp: Port.

Sources: Haver Analytics; IMF, *Direction of Trade Statistics;* IMF, *International Financial Statistics;* and IMF staff estimates.

[1]Oil exporters include Algeria, Bahrain, Islamic Republic of Iran, Iraq, Kuwait, Libya, Oman, Qatar, Saudi Arabia, Sudan, United Arab Emirates, and Republic of Yemen. Oil importers include Djibouti, Egypt, Jordan, Lebanon, Mauritania, Morocco, Syrian Arab Republic, and Tunisia. LAC is Latin America and the Caribbean. Other includes Africa and the Commonwealth of Independent States.

[2]"Exp" refers to exporters and "Imp" to importers. "FDI" refers to "direct investment in the reporting economy," and "Port." refers to "portfolio investment, liabilities."

risks to oil prices, as evidenced in options prices, is currently to the upside, which augurs well for the region. Nevertheless, the tail risk of a collapse in oil prices has significant implications for the region, especially for lower-income oil-exporting economies. The prospective increase in world shale gas production is also likely to weigh on receipts of MENA gas exporters (see Appendix 1.1 in Chapter 1 for further discussion of commodity developments).

The possibility of heightened economic turbulence in Europe poses a significant downside risk for oil importers in the MENA region. Europe is their largest trading partner, accounting for about half of their total exports. In addition, the Maghreb economies (for example, Tunisia, Morocco) are heavily reliant on Europe as a source of tourism, remittances, and FDI flows. The volatile global environment poses significant policy challenges for the region. Fiscal policy strategies have varied, largely due to the respective strengths of public sector balance sheets. Most oil exporters are continuing to implement stimulus measures in 2010. Although particular country circumstances vary, plans to consolidate should be in place once recovery is more entrenched or if signs of incipient overheating emerge. Some oil importers, on the other hand, have already begun the process of consolidation. Debt levels in these economies are, on average, higher than in oil-exporting economies.

Monetary policy in the region largely mirrors that of the United States because of the large number of economies that have fixed exchange rates vis-à-vis the U.S. dollar. Economies that have independent monetary policies, mostly the oil importers, have appropriately halted their easing in the face of growing inflation pressure.

An immediate challenge for policymakers in this region is to revive the financial intermediation process. In many economies, credit growth has been sluggish in the aftermath of the crisis due to weak balance sheets both for the banking sector and the nonfinancial corporate sector. Prominent corporate defaults in Dubai, Kuwait, and Saudi Arabia have contributed to increased uncertainty regarding the health of the corporate sector generally. The spillover from these episodes to broader lending conditions in other MENA economies, however, has thus far been

Table 2.6. Selected Middle East and North African Economies: Real GDP, Consumer Prices, Current Account Balance, and Unemployment
(Annual percent change, unless noted otherwise)

	Real GDP			Consumer Prices[1]			Current Account Balance[2]			Unemployment[3]		
		Projections			Projections			Projections			Projections	
	2009	2010	2011	2009	2010	2011	2009	2010	2011	2009	2010	2011
Middle East and North Africa	**2.0**	**4.1**	**5.1**	**6.7**	**6.8**	**6.2**	**2.6**	**4.4**	**5.2**	. . .	. . .	. . .
Oil Exporters[4]	**1.1**	**3.8**	**5.0**	**5.9**	**6.4**	**5.9**	**4.6**	**6.7**	**7.8**	. . .	. . .	. . .
Islamic Republic of Iran	1.1	1.6	3.0	10.8	9.5	8.5	3.6	4.2	4.5	. . .	. . .	. . .
Saudi Arabia	0.6	3.4	4.5	5.1	5.5	5.3	6.1	6.7	6.2	10.5	10.5	10.8
Algeria	2.4	3.8	4.0	5.7	5.5	5.2	0.3	3.4	3.6	10.2	10.0	9.8
United Arab Emirates	−2.5	2.4	3.2	1.2	2.0	2.5	4.0	5.4	5.6	. . .	. . .	. . .
Kuwait	−4.8	2.3	4.4	4.0	4.1	3.6	29.1	30.1	30.3	1.6	1.6	1.6
Iraq	4.2	2.6	11.5	−2.8	5.1	5.0	−25.7	−14.4	−8.6	. . .	. . .	. . .
Qatar	8.6	16.0	18.6	−4.9	1.0	3.0	14.3	15.6	23.0	. . .	. . .	. . .
Sudan	4.5	5.5	6.2	11.3	10.0	9.0	−12.9	−8.9	−7.1	14.9	13.7	12.6
Oil Importers[5]	**4.6**	**5.0**	**5.2**	**9.1**	**7.9**	**6.9**	**−4.0**	**−4.2**	**−3.9**	. . .	. . .	. . .
Egypt	4.7	5.3	5.5	16.2	11.7	10.0	−2.4	−2.0	−1.6	9.0	9.2	9.0
Morocco	4.9	4.0	4.3	1.0	1.5	2.2	−5.0	−5.3	−4.9	9.1	9.6	9.1
Syrian Arab Republic	4.0	5.0	5.5	2.8	5.0	5.0	−4.5	−3.9	−3.4	. . .	. . .	. . .
Tunisia	3.1	3.8	4.8	3.5	4.5	3.5	−2.8	−4.4	−4.1	13.3	13.2	13.1
Lebanon	9.0	8.0	5.0	1.2	5.0	3.5	−9.5	−11.1	−11.2	. . .	. . .	. . .
Jordan	2.3	3.4	4.2	−0.7	5.5	5.0	−5.0	−7.2	−8.5	13.0	13.0	12.5
Memorandum												
Israel	0.8	4.2	3.8	3.3	2.3	2.8	3.8	6.2	5.7	7.7	7.4	7.2
Maghreb[6]	2.4	5.0	4.6	3.7	4.2	3.9	1.1	3.7	4.1	. . .	. . .	. . .
Mashreq[7]	4.8	5.4	5.4	11.9	9.8	8.4	−3.8	−3.8	−3.5	. . .	. . .	. . .

[1]Movements in consumer prices are shown as annual averages. December–December changes can be found in Tables A6 and A7 in the Statistical Appendix.
[2]Percent of GDP.
[3]Percent. National definitions of unemployment may vary.
[4]Includes Bahrain, Libya, Oman, and Republic of Yemen.
[5]Includes Djibouti and Mauritania.
[6]The Maghreb comprises Algeria, Libya, Mauritania, Morocco, and Tunisia.
[7]The Mashreq comprises Egypt, Jordan, Lebanon, and Syrian Arab Republic.

limited—possibly due to relatively rapid and orderly restructuring. The decline in external sources of funds, along with slow deposit growth, has nevertheless curtailed the ability of banks to extend loans.

The region has largely been bypassed by the recent surge in capital flows to emerging markets, with the notable exception of Egypt and Lebanon. Portfolio flows turned negative in 2009 and are expected to remain so over the next two years. Bank flows to the region are also unlikely to rebound quickly because of the ongoing restructuring and regulatory changes in advanced economies.

In line with the improvement in oil prices, the overall external balance in the region is expected to recover, although not to precrisis levels. For oil exporters, the current account balance, which fell from a surplus of close to 20 percent of GDP in 2008 to 4.6 percent in 2009, is projected to increase to 6.7 percent of GDP in 2010 and 7.8 percent of GDP in 2011. Surpluses of roughly this magnitude

are expected to continue through 2015. The counterpart is a large buildup in net foreign assets, which historically have flowed into government securities and private equity investments in the United States and advanced economies in Europe.

As discussed in the October 2010 *Regional Economic Outlook: Middle East and Central Asia*, a key medium-term objective is to raise potential growth and create jobs for the region's rapidly growing population. The region needs to redirect trade toward today's growth engines, attract FDI from these economies, and exploit the potential for intraregional trade and FDI. This underlines the need for structural measures to enhance competitiveness. Improving the business environment, including through the establishment of strong legal and regulatory frameworks, is essential. Building human capital through greater emphasis on education and training will be particularly important. And, as in all emerging market regions, increased financial

Figure 2.14. Sub-Saharan Africa:
Average Projected Real GDP Growth during 2010–11
(Percent)

Below 0
Between 0 and 2
Between 2 and 5
Above 5
Insufficient data
Covered in a different map
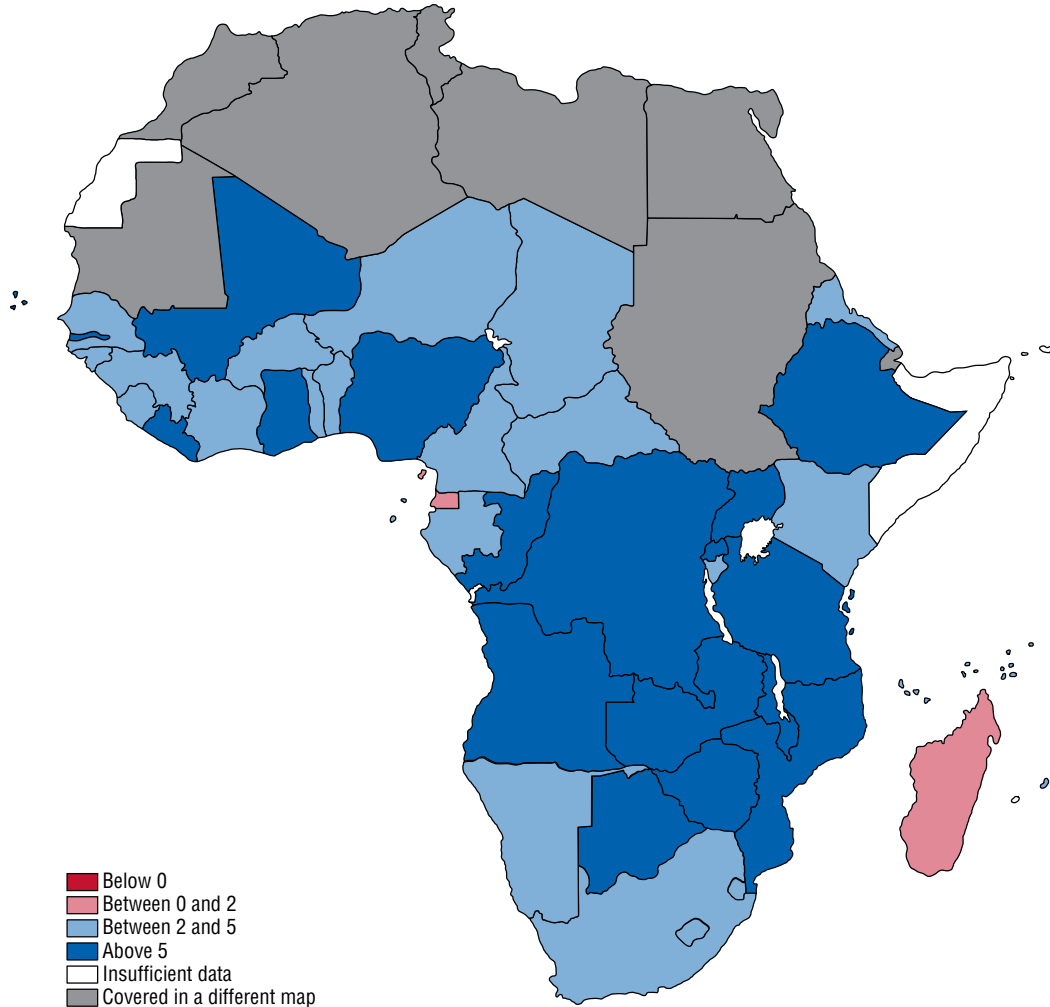
Source: IMF staff estimates.

sector depth and stability and a track record of macroeconomic stability and policy would increase the prospects for robust, self-sustaining growth.

Africa's Growth Is Accelerating

As sub-Saharan Africa rebounds from the slowdown in 2009, strong macroeconomic fundamentals through much of the region leave it well positioned to benefit from the global recovery now under way (Figure 2.14). The slowdown to 2.6 percent in 2009 was brief, limited also by the rapid implementation of countercyclical policies made possible by the policy room that many economies had built prior to the downturn. Output growth in the region is projected to accelerate to 5 percent in 2010 and 5.5 percent in 2011, supported not only by the recovery in exports and commodity prices,

but also by robust domestic demand in a number of economies (Table 2.7). Foreign inflows to the region, including official flows, FDI, and remittances, were less affected by the global downturn than had been feared, although the outlook remains uncertain (Figure 2.15).

The pickup in global demand and the strengthening of oil prices are supporting growth in Africa's oil-exporting economies. In the region's largest oil exporter, Nigeria, continued strong growth in the non-oil sector is being supported by increasing oil production, a result of reduced instability in the Niger Delta region. Thus, Nigeria's output growth is expected to accelerate from 7 percent in 2009 to 7.4 percent in both 2010 and 2011. Growth in Angola, the region's second-largest oil exporter, is also expected to recover in 2010, following the decline in oil exports and the tightening of its budget in 2009. Angola's growth is projected to increase from less than 1 percent in 2009 to about 6 percent in 2010 and about 7 percent in 2011.

Sub-Saharan Africa's middle-income economies—whose output contracted in 2009 due to their stronger global trade linkages—are now firmly on the path to recovery. The region's largest economy, South Africa, has benefited from continued strong demand for commodities from emerging Asia and from a recovery in demand for manufactures from its largest export market, the euro area. There are also signs that the monetary easing pursued last year is supporting a recovery in domestic demand. After contracting by almost 2 percent in 2009, South Africa's output is expected to grow by 3 percent in 2010 and by 3.5 percent in 2011.

The relatively low degree of exposure of the region's low-income economies to international trade and financial flows shielded them from the worst of the global downturn. Correspondingly, the acceleration of growth this year is expected to be modest. Output growth in these economies is expected to rise from 4.5 percent in 2009 to 4.9 percent in 2010, and further to 6 percent in 2011. Growth in low-income economies is generally expected to be driven as much by domestic factors as by the global recovery. In Kenya, for example, a recovery in tourism inflows and an improvement in

Figure 2.15. Sub-Saharan Africa (SSA): Growth Is Accelerating

The slowdown in 2009 was brief, in part due to rapid implementation of countercyclical policies. A recovery in exports and commodity prices is helping support the rebound, as is robust domestic demand in many economies. Nonportfolio flows have been stable. Although the United States is the main trading partner of oil exporters, Europe is the main export destination for many low- and middle-income economies in the region.
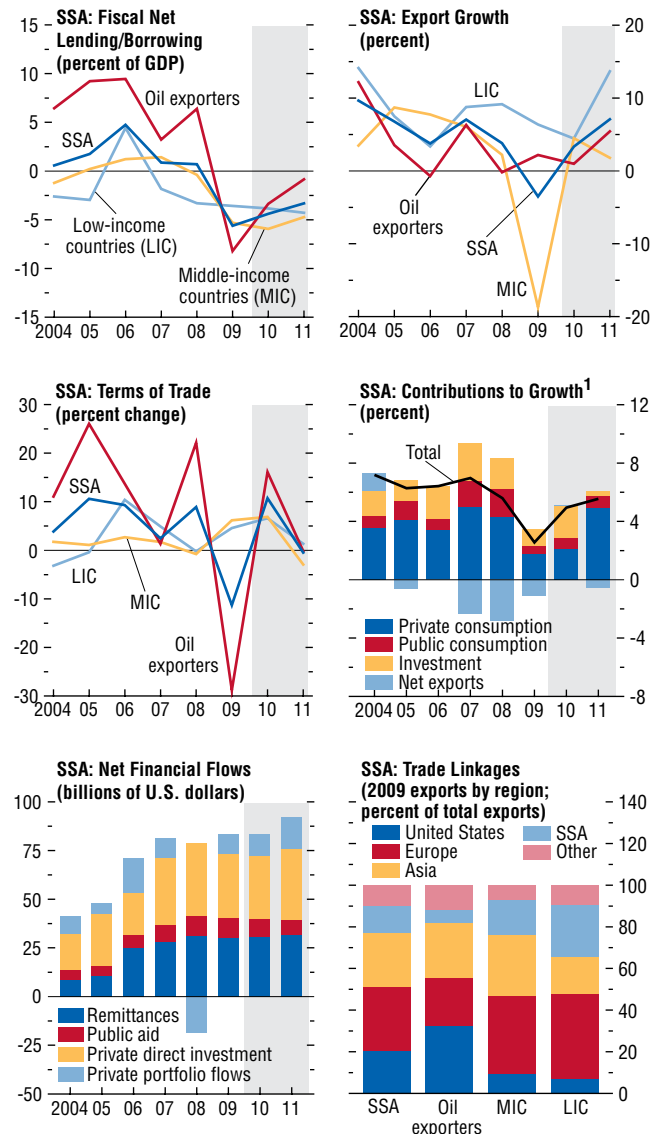
Sources: IMF, *Direction of Trade Statistics*; and IMF staff estimates.
[1]Excluding Liberia, São Tomé and Príncipe, and Zimbabwe.

Table 2.7. Selected Sub-Saharan African Economies: Real GDP, Consumer Prices, Current Account Balance, and Unemployment
(Annual percent change, unless noted otherwise)

	Real GDP			Consumer Prices[1]			Current Account Balance[2]			Unemployment[3]		
		Projections			Projections			Projections			Projections	
	2009	2010	2011	2009	2010	2011	2009	2010	2011	2009	2010	2011
Sub-Saharan Africa	**2.6**	**5.0**	**5.5**	**10.4**	**7.5**	**7.0**	**−1.7**	**−1.1**	**−1.9**	...	...	...
Oil Exporters	**5.0**	**6.7**	**7.0**	**11.6**	**11.3**	**9.4**	**6.0**	**8.2**	**7.4**	...	...	...
Nigeria	7.0	7.4	7.4	12.4	11.9	9.8	14.1	13.0	11.8	4.5	4.5	4.5
Angola	0.7	5.9	7.1	13.7	13.3	11.3	−5.0	1.6	1.3	...	...	...
Equatorial Guinea	5.3	0.9	2.1	7.2	8.0	7.1	−16.0	−2.8	−11.6	...	...	...
Gabon	−1.4	4.5	5.0	2.1	3.0	3.5	16.6	15.2	14.3	...	...	...
Chad	−1.6	4.3	3.9	10.1	6.0	3.0	−33.7	−32.0	−25.4	...	...	...
Congo, Republic of	7.5	10.6	8.7	4.3	5.2	4.5	−7.7	4.2	7.9	...	...	...
Middle-Income	**−1.7**	**3.3**	**3.6**	**7.1**	**5.5**	**5.7**	**−4.1**	**−4.4**	**−5.8**	...	...	...
South Africa	−1.8	3.0	3.5	7.1	5.6	5.8	−4.0	−4.3	−5.8	24.3	24.8	24.4
Botswana	−3.7	8.4	4.8	8.1	6.7	6.3	−2.1	−0.5	−0.4	...	...	...
Mauritius	2.5	3.6	4.1	2.5	2.5	2.6	−7.8	−9.4	−9.0	8.0	7.5	7.3
Namibia	−0.8	4.4	4.8	9.1	6.5	5.9	−1.7	−2.6	−6.0	...	...	...
Swaziland	1.2	2.0	2.5	7.6	6.2	5.6	−6.2	−12.6	−12.3	30.0	30.0	30.0
Cape Verde	3.0	4.1	6.0	1.0	1.8	2.0	−9.9	−18.6	−18.2	17.0	17.0	17.0
Seychelles	0.7	4.0	5.0	31.8	−2.4	2.5	−35.1	−39.5	−35.5	5.1	4.6	4.1
Low-Income[4]	**4.5**	**4.9**	**6.0**	**12.6**	**6.2**	**6.0**	**−6.8**	**−7.4**	**−8.3**	...	...	...
Ethiopia	9.9	8.0	8.5	36.4	2.8	9.0	−5.0	−3.9	−8.0	...	...	...
Kenya	2.4	4.1	5.8	9.3	4.1	5.0	−6.7	−6.7	−7.4	...	...	...
Tanzania	6.0	6.5	6.7	12.1	7.2	5.0	−10.0	−8.8	−8.8	...	...	...
Cameroon	2.0	2.6	2.9	3.0	3.0	2.7	−2.7	−3.9	−4.1	...	...	...
Uganda	7.2	5.8	6.1	14.2	9.4	5.5	−4.0	−6.4	−9.2	...	...	...
Côte d'Ivoire	3.8	3.0	4.0	1.0	1.4	2.5	7.2	6.8	2.5	...	...	...

[1]Movements in consumer prices are shown as annual averages. December–December changes can be found in Table A7 in the Statistical Appendix.
[2]Percent of GDP.
[3]Percent. National definitions of unemployment may vary.
[4]Includes Benin, Burkina Faso, Burundi, Central African Republic, Comoros, Democratic Republic of the Congo, Eritrea, The Gambia, Ghana, Guinea, Guinea-Bissau, Lesotho, Liberia, Madagascar, Malawi, Mali, Mozambique, Niger, Rwanda, São Tomé and Príncipe, Senegal, Sierra Leone, Togo, Zambia, and Zimbabwe.

rainfall are expected to support the acceleration of output growth, to 4.1 percent in 2010.

The primary risk to the outlook for the region is a faltering global recovery. But different economies in the region have differing exposures. For the oil-exporting economies, spillovers from a global slowdown would be manifested primarily through its impact on oil prices. In contrast, middle- and low-income economies' exposure comes from their exports to Europe, which are about one-third of total exports, nearly four times the share of their exports to the United States. In addition to these trade linkages, continued weakness and measures to cut budget deficits in advanced economies may affect the low-income economies of sub-Saharan Africa by reducing aid and private financial flows to the region. For example, remittances are an important source of foreign inflows to the region, amounting, for example, to almost 10 percent of GDP in Senegal. These may be susceptible to weaker conditions in economies employing migrant workers from sub-Saharan Africa.

Asset market spillovers resulting from increased global volatility or risk aversion are likely to be limited. Portfolio flows are a less critical component of overall capital flows in sub-Saharan Africa than in the rest of the world, and most economies in the region have relatively underdeveloped financial markets. South Africa is the notable exception: its equity and currency markets are often more sensitive to shifts in global sentiment than other emerging markets in Asia or Latin America, because nonresident transactions account for a relatively high share of turnover.

Finally, with the recovery in progress, fiscal policies in many economies in the region should begin addressing medium-term priorities. As private and external demand recovers, economies will need to rebuild fiscal room and reorient its use. Where output growth has recovered, debt levels are rising, and primary deficits are above levels that will stabilize

debt over the medium term, more prudent fiscal balances are in order. However, where output growth is still weak, outstanding debt is low, and fiscal deficits are in check, there may be scope to sustain higher levels of spending in priority areas such as education, health, and infrastructure investment. One of the positive aspects of the response to the recent downturn was the ability of many economies in the region to shield such pro-poor and pro-growth public spending. As highlighted in the April 2010 *Regional Economic Outlook: Sub-Saharan Africa*, spending on health and education actually increased in real terms in 20 of 29 low-income economies in 2009. Public capital spending also increased in real terms in half the economies in the region.

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WILL IT HURT? MACROECONOMIC EFFECTS OF FISCAL CONSOLIDATION

This chapter examines the effects of fiscal consolidation —tax hikes and government spending cuts—on economic activity. Based on a historical analysis of fiscal consolidation in advanced economies, and on simulations of the IMF's Global Integrated Monetary and Fiscal Model (GIMF), it finds that fiscal consolidation typically reduces output and raises unemployment in the short term. At the same time, interest rate cuts, a fall in the value of the currency, and a rise in net exports usually soften the contractionary impact. Consolidation is more painful when it relies primarily on tax hikes; this occurs largely because central banks typically provide less monetary stimulus during such episodes, particularly when they involve indirect tax hikes that raise inflation. Also, fiscal consolidation is more costly when the perceived risk of sovereign default is low. These findings suggest that budget deficit cuts are likely to be more painful if they occur simultaneously across many countries, and if monetary policy is not in a position to offset them. Over the long term, reducing government debt is likely to raise output, as real interest rates decline and the lighter burden of interest payments permits cuts to distortionary taxes.

Budget deficits and government debt soared during the Great Recession. In 2009, the budget deficit averaged about 9 percent of GDP in advanced economies, up from only 1 percent of GDP in 2007.[1] By the end of 2010, government debt is expected to reach about 100 percent of GDP—its highest level in 50 years. Looking ahead, population aging could create even more serious problems for public finances.

In response to these worrisome developments, virtually all advanced economies will face the challenge of fiscal consolidation. Indeed, many governments are already undertaking or planning large spending cuts and tax hikes. An important and timely question is, therefore, whether fiscal retrenchment will hurt economic performance.

Although there is widespread agreement that reducing debt has important long-term benefits, there is no consensus regarding the short-term effects of fiscal austerity. On the one hand, the conventional Keynesian view is that cutting spending or raising taxes reduces economic activity in the short term. On the other hand, a number of studies present evidence that cutting budget deficits can stimulate the economy even in the short term. The notion that fiscal retrenchment stimulates growth in the short term is often referred to as the "expansionary fiscal contractions" hypothesis. A key factor explaining such effects is an improvement in household and business confidence.[2] The truth could be a mixture. For example, it may be that the short-term effects are usually contractionary, but that expansionary effects can occur when government solvency is in question, or when the consolidation is structured in a way that increases confidence.

This chapter offers new evidence regarding these important issues by studying fiscal consolidation in advanced economies over the past 30 years. It examines budget policies to identify periods of fiscal consolidation, and then uses simple statistical techniques to investigate the short-term growth effects of consolidation and how those effects are influenced by such factors as monetary policy, international trade, the form of the consolidation, and perceived sovereign risk. To complement the historical analysis, the chapter employs simulations of the IMF's GIMF to explore additional issues such as the long-term effects of debt reduction. In particular, the chapter attempts to answer the following questions:

The main authors of this chapter are Daniel Leigh (team leader), Pete Devries, Charles Freedman, Jaime Guajardo, Douglas Laxton, and Andrea Pescatori, with support from Murad Omoev, Min Kyu Song, and Jessie Yang.

[1]Advanced economies are defined as the 33 economies so designated based on the *World Economic Outlook* classification described in the Statistical Appendix.

[2]For a summary of how such expansionary effects can arise in the short term, see, for example, Alesina (2010). Under some strict assumptions, Ricardian equivalence can imply that fiscal consolidation has no impact on economic activity, as changes in private demand exactly offset changes in government demand.

- What are the short-term effects of fiscal retrenchment on economic activity? Does output typically contract or expand in response to tax hikes and spending cuts? What happens to unemployment?
- What factors dampen or exacerbate the short-term effects? In particular, what are the roles of monetary policy, the composition of the package (taxes versus spending), and the perceived risk of sovereign default in shaping the outcome? What are the consequences of many countries cutting deficits at the same time?
- Does fiscal consolidation have different effects when interest rates are near zero? Interest rates have rarely been near zero in the past—with the exception of Japan since the 1990s—but they are near zero in many advanced economies today. Would fiscal consolidation in this environment be more or less painful than in the past?
- What are the long-term effects on output of reducing government debt? Do the long-term effects depend on whether the savings from lower interest payments are used to provide tax cuts or to finance new spending?

Given the importance of these issues, this chapter is not the first to address them. In particular, previous work by Giavazzi and Pagano (1990, 1996), Alesina and Perotti (1995, 1997), and Alesina and Ardagna (1998, 2010) has been extremely influential in the debate regarding the consequences of fiscal adjustment.[3] A key conclusion of these studies is that fiscal adjustments tend to be expansionary when they rely primarily on spending cuts.[4] However, these studies often identify periods of fiscal consolidation using a statistical concept—the increase in the cyclically adjusted budget surplus—that, as this chapter shows, is a highly imperfect measure of actual policy actions. The chapter finds that this way of selecting cases of consolidation

biases the analysis toward downplaying contractionary effects and overstating expansionary ones.

To avoid the problems associated with these existing studies, we use an alternative method for identifying periods of fiscal consolidation. In particular, our approach focuses on policy actions intended to reduce the budget deficit. As we explain later, this approach helps us obtain more accurate estimates of the effects of tax hikes and spending cuts on economic activity. Methodologically, our approach is close to that of Romer and Romer (1989, 2010), who examine the effects on U.S. output of changes in monetary policy and tax rates in the United States.

The main findings of the chapter are as follows:
- Fiscal consolidation typically has a contractionary effect on output. A fiscal consolidation equal to 1 percent of GDP typically reduces GDP by about 0.5 percent within two years and raises the unemployment rate by about 0.3 percentage point. Domestic demand—consumption and investment—falls by about 1 percent.
- Reductions in interest rates usually support output during episodes of fiscal consolidation. Central banks offset some of the contractionary pressures by cutting policy interest rates, and longer-term rates also typically decline, cushioning the impact on consumption and investment. For each 1 percent of GDP of fiscal consolidation, interest rates usually fall by about 20 basis points after two years. The model simulations also imply that, if interest rates are near zero, the effects of fiscal consolidation are more costly in terms of lost output.[5]
- A decline in the real value of the domestic currency typically plays an important cushioning role by spurring net exports and is usually due to nominal depreciation or currency devaluation. For each 1 percent of GDP of fiscal consolidation, the value of the currency usually falls by about 1.1 percent, and the contribu-

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[3] Note that the literature on fiscal consolidation is part of a broader empirical literature on the effects of fiscal policy, which includes, among others, the work of Blanchard and Perotti (2002), Barro and Redlick (2009), Hall (2009), Ramey and Shapiro (1998), Ramey (2009), and Romer and Romer (2010).

[4] Many studies have followed the Alesina and Perotti (1995) methodology, including Broadbent and Daly (2010), Tsibouris and others (2006), and Von Hagen and Strauch (2001).

[5] For simplicity, the model simulations ignore the possibility that the central bank responds to fiscal consolidation using unconventional monetary tools, such as quantitative and credit easing. To the extent that such tools would be used to support output, the simulations may overstate the impact of the zero interest rate floor.

tion of net exports to GDP rises by about 0.5 percentage point. Because not all countries can increase net exports at the same time, this finding implies that fiscal contraction is likely to be more painful when many countries adjust at the same time.

- Fiscal contraction that relies on spending cuts tends to have smaller contractionary effects than tax-based adjustments. This is partly because central banks usually provide substantially more stimulus following a spending-based contraction than following a tax-based contraction. Monetary stimulus is particularly weak following indirect tax hikes (such as the value-added tax, VAT) that raise prices.
- Fiscal retrenchment in countries that face a higher perceived sovereign default risk tends to be less contractionary. However, even among such high-risk countries, expansionary effects are unusual.
- Model simulations suggest that over the long term, reducing debt is likely to be beneficial. In particular, the GIMF simulations considered here suggest that lower government debt levels reduce real interest rates, which stimulates private investment. Also, the lower burden of interest payments creates fiscal room for cutting distortionary taxes. Both of these effects raise output in the long term. Overall, the simulations imply that for every 10 percentage point fall in the debt-to-GDP ratio, output rises by about 1.4 percent in the long term.

The remainder of the chapter is organized as follows. The first section provides an empirical assessment of the short-term impact of fiscal consolidation using a new database of historical episodes of fiscal consolidation during 1980–2009. The second section complements the historical analysis by conducting model simulations to address additional issues, such as the consequences of being near the zero bound on nominal interest rates, the impact of having many countries consolidating simultaneously, and the long-term consequences of reducing debt levels. The concluding section draws lessons from the analysis for countries considering fiscal consolidation in the current environment.

Looking at History: What Is the Short-Term Impact of Fiscal Consolidation?

In this section, we examine the history of fiscal retrenchment in advanced economies over the past 30 years and evaluate the short-term effects on economic activity. The section starts by explaining how we identify periods of fiscal consolidation, and contrasts our approach to the standard approach used in previous studies. It then reports the estimated effects of fiscal consolidation, and compares our results with those based on the standard approach.

Identifying Cases of Fiscal Consolidation

The usual approach to identifying historical cases of fiscal retrenchment is to focus on swings in the cyclically adjusted primary budget balance (CAPB). The CAPB is calculated by taking the actual primary balance—non-interest revenue minus non-interest spending—and subtracting the estimated effect of business cycle fluctuations on the fiscal accounts. For example, Alesina and Perotti (1995) and Alesina and Ardagna (2010) correct the primary surplus for year-to-year changes in the unemployment rate.[6] Cyclical adjustment offers an intuitive way of dealing with the fact that tax revenue and government spending move automatically with the business cycle. The idea is that, once they are cyclically adjusted, changes in fiscal variables reflect policymakers' decisions to change tax rates and spending levels. A sharp increase in the CAPB would therefore provide evidence of deliberate deep deficit cuts.

However, the conventional approach used to identify cases of fiscal consolidation is far from perfect and can bias the results toward finding

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[6] In particular, these studies use a method proposed by Blanchard (1990) following which "the cyclically adjusted value of the change in a fiscal variable is the difference between a measure of the fiscal variable in period t computed as if the unemployment rate were equal to the one in $t − 1$ and the actual value of the fiscal variable in year $t − 1$" (Alesina and Ardagna, 2010, p. 7). Most studies also use a statistical threshold for identifying large increases in the CAPB. For example, Alesina and Ardagna (2010) identify a period of fiscal adjustment as a year in which the ratio of the CAPB to GDP improves by at least 1.5 percentage points.

expansionary effects.[7] Two key problems relate to measurement errors and to policy motivation:

- The first problem is that cyclical adjustment methods suffer from measurement errors that are likely to be correlated with economic developments. For example, standard cyclical-adjustment methods fail to remove swings in government tax revenue associated with asset price or commodity price movements from the fiscal data, resulting in changes in the CAPB that are not necessarily linked to actual policy changes.[8] Thus, including episodes associated with asset price booms—which tend to coincide with economic expansions—and excluding episodes associated with asset price busts from the sample introduces an expansionary bias.[9] For example, in the case of Ireland in 2009, the collapse in stock and housing prices induced a sharp reduction in the CAPB despite the implementation of tax hikes and spending cuts totaling 4.5 percent of GDP.[10]

- The second problem with the standard approach is that it ignores the motivation behind fiscal actions. Thus, it omits years during which actions aimed at fiscal consolidation were followed by an adverse shock and an offsetting discretionary stimulus. For example, imagine that two countries adopt identical consolidation policies, but then one is hit by an adverse shock and so adopts discretionary stimulus, while the other is hit with a favorable shock. Here, the change in the CAPB would show a smaller increase for the

first country than for the second country, despite the presence of identical consolidation measures. The standard approach would therefore tend to miss cases of consolidation followed by adverse shocks, because there may be little or no rise in the CAPB despite the consolidation measures. The case of Germany in 1982 provides a real-world counterpart to this hypothetical example: the CAPB-to-GDP ratio rose by only 0.4 percentage point, despite the fact that the authorities implemented fiscal austerity measures amounting to about 1.4 percent of GDP.[11] The impact of these measures on the CAPB was partly offset by countercyclical stimulus measures introduced in response to the recession that year.[12]

Moreover, the problems with the usual approach are not just hypothetical or limited to a few specific cases. As we show in Appendix 3.3, the change in the CAPB-to-GDP ratio is an unreliable guide regarding the presence of fiscal consolidation. The standard approach tends to select periods associated with favorable outcomes but during which no austerity measures were actually taken. It also tends to omit cases of fiscal austerity associated with unfavorable outcomes.

Therefore, rather than focusing on the CAPB, we look at policy actions. In particular, we identify cases in which the government implemented tax hikes or spending cuts (at the general government level) to reduce the budget deficit and put public finances on a more sustainable footing. Thus, whereas the usual strategy identifies periods of consolidation based on successful (cyclically adjusted) budget *outcomes*, our approach identifies episodes based on fiscal policy *actions* motivated by deficit reduction, irrespective of the outcomes.

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[7] Appendix 3.3 provides a number of specific examples that illustrate the problems associated with the conventional approach.

[8] As Morris and Schuknecht (2007) explain, "asset price movements are a major factor behind unexplained changes in the cyclically adjusted balance, which, if not accounted for, can lead to erroneous conclusions regarding underlying fiscal developments" (p. 4).

[9] A similar problem occurs during sharp recessions. As Wolswijk (2007) explains, standard cyclical adjustment methods assume that the automatic response (elasticity) of fiscal variables to the business cycle is constant over time. However, there is evidence that sharp recessions have a stronger-than-average automatic effect on fiscal variables. Therefore, if a fiscal consolidation coincides with a sharp recession, it is less likely to be picked up by the standard approach, which searches for an increase in the CAPB.

[10] See 2009 *OECD Economic Surveys: Ireland*; EC (2008); and 2009 IMF Staff Report for Ireland (Country Report No. 09/195).

[11] The source of the data for the CAPB-to-GDP ratio is Alesina and Ardagna (2010). The concept of government used for the CAPB is that of the general government.

[12] For similar reasons, the standard approach is likely to identify cases of fiscal tightening that are unrelated to deficit-reduction concerns. For example, imagine that two countries adopt no consolidation measures, but then one is hit by a favorable shock and so adopts countercyclical tightening to cool the economy, while the other does nothing. Here, the change in the CAPB would show tightening for the first country, and no change for the second country, despite the lack of consolidation measures in both countries. The standard approach would therefore tend to include cases associated with economic booms despite the lack of measures aimed at fiscal consolidation.

Although our action-based approach addresses the problems associated with the conventional approach to identifying fiscal consolidation, both the standard approach and our approach *are* subject to two additional criticisms. First, if countries sometimes postpone fiscal consolidation until the economy recovers, then the consolidation exercise will be associated with good economic outcomes in both the standard approach and our approach. Second, if a country is committed to a deficit-reduction path and the economy falls into a recession, it may implement additional fiscal consolidation measures, thus associating fiscal consolidation with unfavorable economic outcomes in both the standard approach and our approach. Thus, biases may remain even in our approach, although it is unclear in which direction they would go overall.

In addition, in contrast to some previous studies, we do not focus on periods of "sustained" (multiyear) fiscal consolidation. A key problem with such an approach is that governments may choose to interrupt a program of fiscal austerity due to unfavorable output developments. For example, Japan's six-year fiscal adjustment plan, initiated in 1997, was suspended in December 1998 following a sharp economic downturn. In contrast, favorable output developments are likely to help governments complete a sustained fiscal consolidation. Therefore, focusing on cases of sustained consolidation would bias toward finding expansionary effects.

In sum, not only does the standard approach sometimes select years that bear no relation to actual changes in fiscal policy, it also biases the results toward downplaying contractionary effects and overstating the expansionary effects of fiscal adjustment. In contrast, a key contribution of this chapter is to reduce these bias problems and therefore allow us to better estimate the causal impact on output of fiscal consolidation.

Implementing the Action-Based Approach

Our approach requires identifying policy actions motivated by deficit reduction. Therefore, we examine accounts and records of what countries actually did. In particular, we analyze *OECD Economic Surveys*, *IMF Staff Reports*, *IMF Recent Economic*

*Development*s reports, country budget documents, and additional country-specific sources.[13] The estimated effect on the budget deficit is based on these sources. In this respect, our methodology is closely related to the "narrative approach" proposed by Romer and Romer (1989, 2004, 2010).[14] The analysis also distinguishes between permanent and temporary measures. Temporary measures are recorded as generating positive savings when they are introduced and negative savings when they expire.

The sample includes the fiscal actions taken to reduce the deficit in 15 advanced economies during 1980–2009.[15] The main reason the analysis focuses on advanced economies is that fiscal policy adjustment needs are particularly large, on average, for the group of advanced economies, as discussed in the IMF's May 2010 *Fiscal Monitor* (IMF, 2010).

For the 15 countries covered—Australia, Belgium, Canada, Denmark, Finland, France, Germany, Ireland, Italy, Japan, Portugal, Spain, Sweden, the United Kingdom, and the United States—we identified 173 years in which there were budgetary measures aimed at fiscal consolidation. Thus, on average across the sample countries, about 40 percent of years saw the introduction of budgetary measures aimed at reducing the deficit (Figure 3.1). The average size of fiscal consolidation was about 1 percent of GDP per year, but the range was wide (see Figure 3.1). Fiscal contractions of more

[13] Additional country-specific sources used to clarify the motivation behind the fiscal consolidation measures include Kuttner and Posen (2002), Nakagawa (2009), and Takahashi and Tokuoka (2010) for Japan; Lawson (1992) for the United Kingdom; and Romer and Romer (2009) and the sources cited therein, for the United States. We find that the estimates of the measures' expected impact on the fiscal deficit at the time they were implemented are similar across the various sources.

[14] Focusing on the United States, Romer and Romer (2010) use the narrative record, such as congressional reports, to identify the size and motivation for all post–World War II tax policy actions. They find that only a small share of observed changes in government revenue reflect actual changes in tax policy and use the changes in tax policy identified by means of their narrative approach to obtain estimates of the causal impact of tax changes on the economy.

[15] The complete list of periods of fiscal adjustments is reported in Appendix 3.1. A companion paper, available on request, shows how we implement the approach. In particular, it provides quotations and citations for each case to show how we determined the presence of fiscal consolidation measures.

Figure 3.1. Action-Based Fiscal Consolidation

There were about 170 cases of action-based fiscal consolidation over the past 30 years in advanced economies. Consolidation has often relied primarily on spending cuts. On average, action-based fiscal consolidation amounted to 1 percent of GDP a year, but the range was wide.

Fiscal Consolidation over Time
(Number of fiscal contractions by year)
- Spending-based
- Tax-based
- Other

Size of Fiscal Consolidation
(In percent of GDP a year)
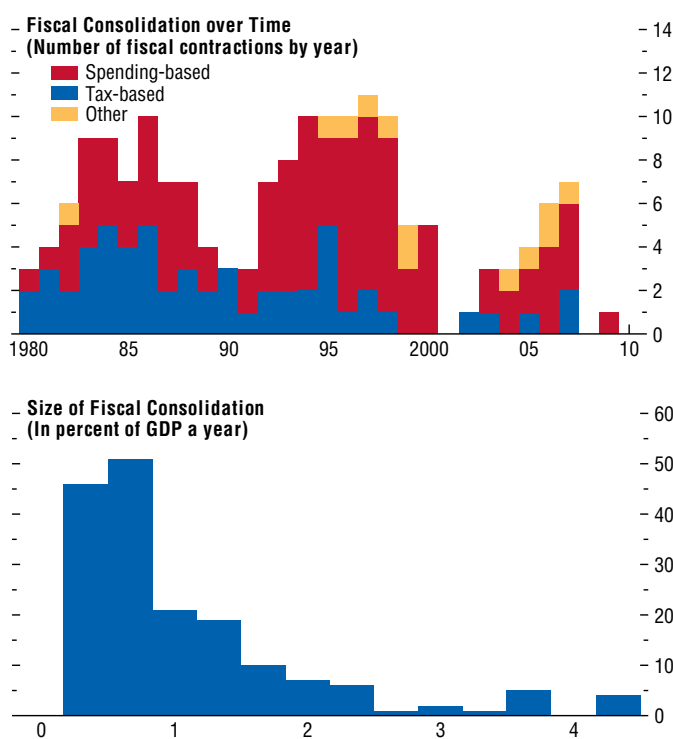
Source: IMF staff calculations.
Note: The 15 advanced economies in the sample are Australia, Belgium, Canada, Denmark, Finland, France, Germany, Ireland, Italy, Japan, Portugal, Spain, Sweden, United Kingdom, and United States. "Spending-based" consolidation relied primarily on spending cuts. "Tax-based" consolidation relied primarily on tax hikes. The "other" category denotes contractions for which composition details were either not available or for which no category accounted for the majority of the adjustment.

than 1.5 percent of GDP per year represent about one-fifth of all cases of consolidation. Therefore, on average, countries implemented such large fiscal adjustments once every 14 years. As we show later on, the estimated effects of these large adjustments on output are similar to the effects of smaller adjustments.

Estimated Effects of Fiscal Consolidation

With periods of fiscal consolidation now identified, this section employs statistical techniques to assess the impact of the fiscal measures on economic activity. The statistical methodology is standard and follows that of Cerra and Saxena (2008), Romer and Romer (2010), and others. In particular, we estimate the average impulse response of output to action-based fiscal consolidation using panel data analysis. The estimated equation makes use of an autoregressive model in growth rates estimated on annual data for 1980–2009 for the 15 countries in our sample. The growth rates are then cumulated to obtain the estimated impact of fiscal consolidation on the level of output.[16]

A key result is that fiscal consolidation is typically contractionary. A fiscal consolidation equal to 1 percent of GDP typically reduces real GDP by about 0.5 percent after two years (Figure 3.2). The effect on the unemployment rate is an increase of

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[16] In particular, the estimated equation has the growth rate of real GDP as the dependent variable on the left-hand side. On the right-hand side, the explanatory variables are the current and lagged values of the fiscal consolidation measures identified as discussed above. Including lags allows for a delayed impact of fiscal consolidation on growth. In addition, the approach controls for lags of real GDP growth, to distinguish the effect of fiscal consolidation from that of normal output dynamics. Thus, the equation estimated is

$$g_{it} = \alpha + \sum_{j=1}^{2} \beta_j g_{i,t-j} + \sum_{s=0}^{2} \beta_s ABFC_{i,t-s} + \mu_i + \lambda_t + \nu_{it},$$

where the subscript i denotes the ith country, and the subscript t denotes the tth year; g is the percent change in real GDP; and $ABFC$ is the estimated size of the action-based fiscal consolidation measures as a percent of GDP. The approach includes a full set of country dummies (μ_i) to take account of differences among countries' normal growth rates. The estimated equation also includes a full set of time dummies (λ_t) to take account of global shocks such as shifts in oil prices or the global business cycle.

about 0.3 percentage point after two years.[17] The results are statistically significant at conventional levels. Overall, the idea that fiscal austerity stimulates economic activity in the short term finds little support in the data.[18]

However, the average effect of fiscal consolidation shown in Figure 3.2 hides a range of experiences related to a number of factors. In particular, we now turn to three key factors that shape the outcomes: the role of interest rates and exchange rates, the composition of the fiscal package, and the role of perceived sovereign risk of the country undertaking the consolidation.

The Mitigating Role of Interest Rates and Exchange Rates

This section looks at the role of interest rate cuts and declines in the value of the currency in mitigating the impact of fiscal consolidation. In addition, to clarify how interest rates and exchange rates shape the outcome, we examine the behavior of the components of GDP, including exports and imports. To explore these channels, we use the same statistical approach as described above, but apply it to studying the impact of fiscal consolidation on exchange rates and interest rates instead of on output.[19]

Figure 3.2. Impact of a 1 Percent of GDP Fiscal Consolidation on GDP and Unemployment

Fiscal consolidation is normally contractionary. A fiscal consolidation equal to 1 percent of GDP typically reduces real GDP by about 0.5 percent and raises the unemployment rate by about 0.3 percentage point.

Source: IMF staff calculations.
Note: t = 1 denotes the year of consolidation. Dotted lines equal one standard error bands.

[17]To explore the impact on the unemployment rate, we replace all the GDP growth terms in the estimated equation with the change in the unemployment rate. We then cumulate the impulse responses to obtain the impact of fiscal consolidation on the level of the unemployment rate.

[18]Several robustness checks were performed, as reported in Appendix 3.2. In particular, excluding lags of growth had little effect on the results; using different lag lengths (up to four) yielded similar results. Although the country dummies are correlated with the lagged dependent variables in the estimated equation, the bias is small here given the large number of observations per country relative to the number of countries (30 years for each of our 15 countries). When the estimation is conducted using the Arellano-Bond estimator, which corrects for this possible bias, the results are very similar.

[19]For example, to examine the response of the real exchange rate to fiscal consolidation, we repeat the estimation of the equation described above, while replacing all the GDP growth terms with the change in the log of the real exchange rate. We then cumulated the impulse responses to obtain the impact of fiscal consolidation on the (log) level of the real exchange rate.

Figure 3.3. Response of Monetary Conditions to a 1 Percent of GDP Fiscal Consolidation

Interest rate cuts and a decline in the value of the domestic currency usually play a key supportive role during episodes of fiscal consolidation.
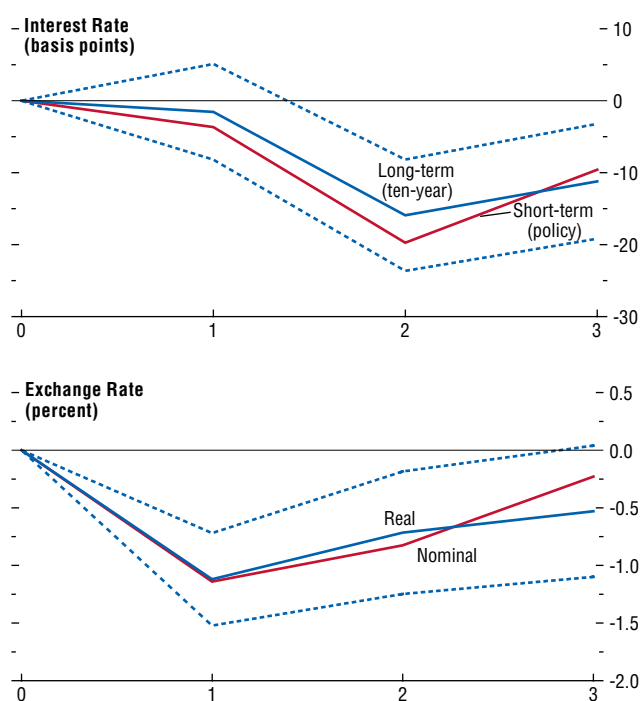
Source: IMF staff calculations.
Note: $t = 1$ denotes the year of consolidation. Dotted lines equal one standard error bands.

Interest rates

The short-term policy interest rate typically falls by about 20 basis points in response to a fiscal consolidation of 1 percent of GDP (Figure 3.3). Since the rate of inflation usually does not change much following fiscal consolidation, the fall in real interest rates is similar. At the same time, the long-term nominal interest rate on government bonds falls broadly in line with short-term rates. In particular, the yield on government bonds with a maturity of 10 years declines by about 15 basis points after two years in response to a fiscal consolidation equal to 1 percent of GDP. The response of long-term rates suggests that fiscal consolidation may reduce risk premiums.[20]

Exchange rates

In response to a fiscal consolidation of 1 percent of GDP, the exchange rate depreciates by about 1.1 percent in real terms (see Figure 3.3). Interestingly, this real depreciation is almost fully explained by nominal exchange rate depreciation or currency devaluation. Examples of large devaluations during fiscal consolidation include, among others, Finland (1992), Ireland (1987), and Italy (1992).

Transmission channel: the role of net exports

How do these changes in interest rates and exchange rates affect the economy? The fall in interest rates is likely to support consumption and investment. And the real depreciation should support economic activity by boosting net exports.

Decomposing the response of GDP into its demand components confirms that net exports expand in response to fiscal consolidation, providing a key cushioning role. In particular, the contribution of net exports to GDP increases by about 0.5 percentage point (Figure 3.4). The increase in net exports reflects both an increase in real exports in response to the real exchange rate depreciation

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[20] The effect of fiscal consolidation on longer-term interest rates may be influenced by two factors: the decline in the current and future short-term interest rate and a reduction in the risk premium related to the perceived improvement in the fiscal outlook.

and a decline in real imports, which also reflects the fall in income (see Figure 3.4).[21]

Meanwhile, domestic demand (consumption and investment) declines substantially in response to fiscal retrenchment. In particular, a consolidation of 1 percent of GDP reduces the contribution of domestic demand to GDP by about 1 percentage point after two years. This result is broadly consistent with textbook (Keynesian) effects on demand of spending cuts and tax hikes.

Overall, this section confirms that a fall in the value of the currency plays a key role in softening the impact of fiscal consolidation on output through the impact on net exports. Without this increase in net exports, the output cost of fiscal consolidation would be roughly twice as large, with output falling by 1 percent instead of 0.5 percent. Cuts in interest rates also help cushion the impact on consumption and investment.

Taxes versus Spending: Does Composition Matter?

Does the composition of fiscal consolidation across taxes and spending matter? A number of studies suggest that fiscal contraction associated primarily with declines in spending is accompanied by an expansion of the economy in the short term, whereas adjustments based primarily on revenue increases feature output contractions.[22] In this section, using our data set of periods of action-based fiscal consolidation, we revisit these stylized facts to test whether the composition of consolidation measures makes a difference in terms of their impact on growth. We also investigate the role of interest rates and exchange rates in explaining the effects of different types of fiscal consolidation measures.

Basic results

To address the issue, we repeat the estimation approach used above for two types of fiscal con-

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[21] Since the analysis controls for shifts in global demand (time dummies), the estimated increase in exports does not reflect an upswing in external demand. Also, the estimated response of exports and imports is consistent with that implied by standard elasticities with respect to the real exchange rate, as reported, for example, in Bayoumi and Faruqee (1998).

[22] See, for example, Alesina and Perotti (1995, 1997), Alesina and Ardagna (2010), Broadbent and Daly (2010), and others.

Figure 3.4. Impact of a 1 Percent of GDP Fiscal Consolidation on GDP Components
(Percent)

Net exports typically expand in response to fiscal consolidation, providing a key cushion for GDP. In contrast, domestic demand contracts. The boom in net exports reflects both an increase in exports in response to the real exchange rate depreciation and a decline in imports reflecting the fall in income.

Source: IMF staff calculations.
Note: *t* = 1 denotes the year of consolidation. Dotted lines equal one standard error bands.

solidation. The first type, denoted "tax-based," corresponds to years in which the contribution of tax hikes to fiscal consolidation is greater than the contribution of spending cuts. The second type, denoted "spending-based," corresponds to years in which the contribution of spending cuts to fiscal consolidation is greater than that of tax hikes.[23]

The following main results emerge from the analysis:

- Spending-based adjustments are less contraction-ary than tax-based adjustments. In the case of tax-based programs, the effect of a fiscal con-solidation of 1 percent of GDP on GDP is –1.3 percent after two years (Figure 3.5). In the case of spending-based programs, the effect is –0.3 percent after two years, and is not statistically significant.[24] Similarly, while deficit cuts that rely on tax hikes raise the unemployment rate by about 0.6 percentage point, spending-based deficit cuts raise the unemployment rate only by about 0.2 percentage point (see Figure 3.5). However, as will be shown below, a key rea-son the costs of spending-based deficit cuts are relatively small is that they typically benefit from a large dose of monetary stimulus, as well as an expansion in exports.

- Domestic demand contracts for both types of fiscal consolidation, but by more in the case of tax-based packages. In particular, in the case of spending-based measures, domestic demand falls by about 0.9 percent after two years, whereas the decline exceeds 1.8 percent in the case of tax-based packages (see Figure 3.5).

- A rise in net exports mitigates the impact of the consolidation on GDP in both cases. However, there is a considerably larger improvement in exports associated with spending-based measures than with tax-based measures, whereas imports fall more for tax-based adjustments (see Figure 3.5).

Why are spending-based adjustments less contractionary?

Much of the difference is due to the response of monetary conditions to fiscal consolidation: interest rates and the value of the currency tend to fall more following spending-based consolidation (Figure 3.6). Existing estimates in the literature can provide a rough sense of how much of the difference in output performance stems from the difference in monetary conditions. The difference in interest rate responses between tax-based and spending-based fiscal consolidation is about 50 basis points in the first year (see Figure 3.6).[25] Mean-while, the output cost for tax-based consolidation exceeds that for spending-based consolidation by about 0.3 percentage point in the first year and by about 1 percentage point in the second year (see Figure 3.5). Therefore, for the difference in output outcomes to be attributable entirely to the different monetary policy responses, a 100 basis point rise in interest rates would need to reduce output by about 0.6 percent in the first year and 2 percent in the second. Such impacts are within the range of estimates found in the empirical literature, though toward the high end.[26] Thus, it appears that the difference in monetary policy responses accounts for much, though probably not all, of the difference in output performance.

These findings are in line with the notion that central banks view spending-based deficit cuts more favorably, possibly because they interpret them as a signal of a stronger commitment to fiscal discipline, and are therefore more willing to provide monetary stimulus following spending-based adjustments. It is also plausible that an increase in taxes, if it involves indirect tax hikes (sales and excise taxes, VAT), raises inflation on impact, making interest rate cuts

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[23] Similar results are obtained if the tax-based type corresponds to years in which the contribution of tax hikes to fiscal consoli-dation was more than 60 percent of the total; the same holds true for the spending-based type.

[24] The difference between the tax-based and spending-based responses is strongly statistically significant.

[25] Note that part of the effect of interest rates on output works through the exchange rate. Therefore, to avoid double counting, the difference in output costs due to the difference in exchange rate behavior is not considered separately here.

[26] Romer and Romer (2004) find that an unexpected 100 basis point increase in interest rates reduces output (measured by industrial production) by 4.3 percent after two years. Sims (1992) estimates the maximum impact on industrial production at about –1.5 percent, while Bernanke and Mihov (1998) and Christiano, Eichenbaum, and Evans (1996) find a maximum effect on real GDP close to –1 percent.

Figure 3.5. Impact of a 1 Percent of GDP Fiscal Consolidation: Taxes versus Spending

Spending-based consolidation is less contractionary than tax-based consolidation. GDP falls by less and unemployment increases less. Domestic demand contracts significantly as a result of both spending-based and tax-based consolidation, but the contraction is sharper after tax-based adjustments. A boom in net exports mitigates the contraction in both cases. A surge in exports drives the net export boom associated with spending-based consolidation. After tax-based consolidation, net exports rise mainly because imports fall.

Source: IMF staff calculations.
Note: $t = 1$ denotes the year of consolidation. Dotted lines equal one standard error bands.

by an inflation-averse central bank less likely. In line with this notion, Figure 3.7 provides evidence that the policy rate rises on impact for tax-based adjustments, and even more so when they include some indirect tax hikes. In the case of tax-based packages that include indirect tax hikes, the output costs are particularly large.[27]

The results reported above suggest that spending-based measures are less contractionary than tax-based measures, but do the effects differ across different types of spending cuts? In particular, a number of studies, such as Alesina and Perotti (1995), predict that spending-based adjustments have relatively benign effects if they involve cuts to politically sensitive items, such as transfer programs, or government consumption, such as the public sector wage bill. The key idea is that cutting politically sensitive items may signal a credible commitment to long-term deficit reduction and that, in these cases, positive "non-Keynesian" confidence effects offset the negative "Keynesian" impact on aggregate demand. On the other hand, cuts to less politically sensitive items, such as government investment, might have weaker confidence effects. To investigate this possibility, we divide the spending-based adjustments into three groups: those that rely mainly on cuts to government transfers (31 percent of all spending-based packages), those that rely mainly on cuts to government consumption (46 percent), and those that rely mainly on cuts to public investment (9 percent).[28]

The estimated impact on output of these three types of deficit cuts provides some evidence suggesting that spending cuts based on cuts to govern-

Figure 3.6. Composition and Monetary Conditions: Impact of a 1 Percent of GDP Fiscal Consolidation

Why are spending-based consolidations less contractionary? Partly because they benefit from monetary stimulus, whereas tax-based adjustments feature monetary tightening.

Source: IMF staff calculations.
Note: $t = 1$ denotes the year of consolidation. Dotted lines equal one standard error bands.

[27] Similarly, long-term interest rates tend to rise following tax-based adjustments that include indirect tax hikes, but tend to fall for those based on direct tax hikes or spending cuts. These results suggest that markets may perceive governments that make spending cuts or direct tax hikes as more serious about carrying out fiscal consolidation over time. This perception might be based on the notion that it is more difficult politically in most jurisdictions to cut spending or to raise direct taxes than to raise indirect taxes and that governments willing to invest political capital in the former measures are more likely to persist in their endeavor to reduce government debt.

[28] The remainder (14 percent of cases) features spending-based adjustments without sufficient documentation regarding the types of spending cuts or where no category accounted for the majority of the adjustment.

ment transfers are relatively benign (Figure 3.8). In particular, the point estimates indicate a modest expansion. For adjustments based mainly on cuts to government consumption or investment, the output costs are larger. However, the estimates reported in Figure 3.8 are based on a small sample of observations for which we have details regarding the types of spending cuts implemented. Hence, these results should be interpreted with caution. In particular, even for the cases of consolidation based on transfer cuts, there is no strong evidence of expansionary effects, as the results are statistically indistinguishable from zero.

The Role of Perceived Sovereign Risk

One would expect expansionary fiscal contraction to be more likely in situations where doubts about solvency raise borrowing costs and where the consolidation could reduce those costs sharply. In line with this notion, Giavazzi and Pagano (1990) found evidence of "expansionary fiscal contractions" in Denmark in 1983 and Ireland in 1987—two countries that had experienced a rapid deterioration in their sovereign debt rating.[29] In this subsection, we examine the role of sovereign risk perception.

To explore this issue, we split the sample into two groups. The first group includes fiscal adjustment preceded by high (above-median) levels of perceived sovereign credit risk in the three years before fiscal consolidation. The second group includes adjustment preceded by low (below-median) perceived sovereign credit risk. Our measure of perceived solvency risk is the Institutional Investor Ratings (IIR) index.[30] These ratings are based on assessments of sovereign risk by private sector analysts. Each country is rated on a scale of zero to 100, with a rating of 100 assigned to the

Figure 3.7. Composition and Monetary Conditions: Impact of a 1 Percent of GDP Fiscal Consolidation

The policy rate usually rises on impact for episodes of tax-based consolidation, particularly when they include some indirect tax hikes. In the case of indirect tax hikes, the output costs are particularly high.
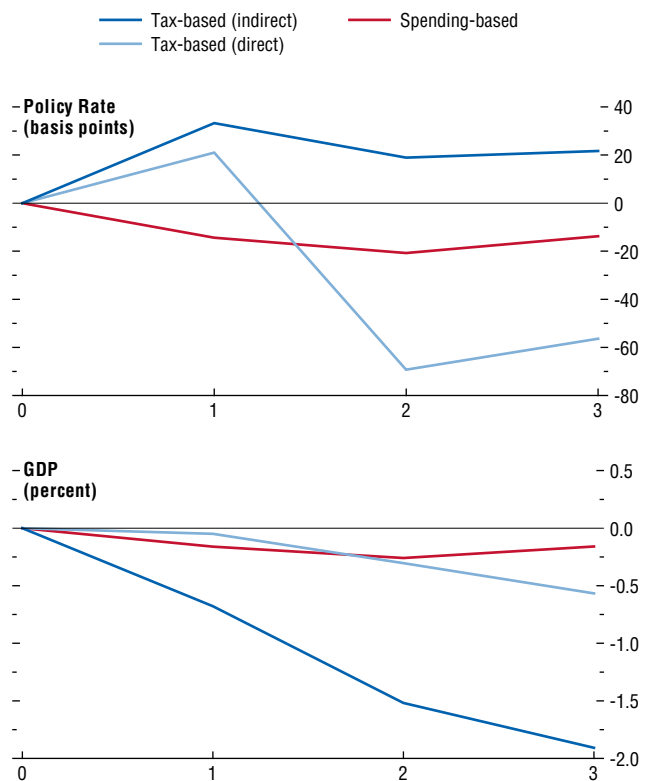
Source: IMF staff calculations.
Note: $t = 1$ denotes the year of consolidation.

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[29] Based on our identification strategy, Denmark (1983) and Ireland (1987) undertook spending-based fiscal consolidation measures amounting to about 3 percent of GDP each.

[30] Studies that use the IIR as a proxy for sovereign default risk include Reinhart, Rogoff, and Savastano (2003) and Eichengreen and Mody (2004). Similar results are obtained when the sample is split into three groups—high, medium, and low risk.

Figure 3.8. Impact on GDP of a 1 Percent of GDP Spending-Based Consolidation
(Percent)

Fiscal consolidation based on cuts to government transfers is less contractionary than that based on cuts to government consumption or government investment. But the differences between the three spending types are within the margin of error.
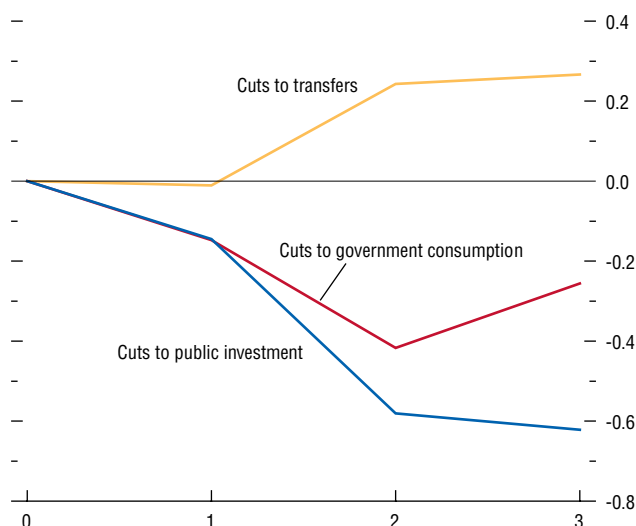
Source: IMF staff calculations.
Note: The three lines indicate consolidation in which most of the spending cuts fell on government transfers, government consumption, and public investment, respectively. *t* = 1 denotes the year of consolidation.

lowest perceived sovereign default probability.[31] The median level of this index, 80, is close to that of Portugal in 2007.[32]

The estimation results suggest that deficit cuts preceded by high perceived sovereign risk are indeed less contractionary than those preceded by low perceived sovereign default risk (Figure 3.9). This finding is consistent with the notion that confidence or credibility effects help mitigate the impact of fiscal consolidation on high-risk countries and that low perceived sovereign default risk is associated with a more typical contraction.

At the same time, however, even for the group of high-risk countries, the results are not usually expansionary. The point estimates imply that output on average still falls following fiscal consolidation in these countries by about 0.4 percent after two years. However, when the only two episodes of fiscal consolidation considered are those of Denmark (1983) and Ireland (1987), the estimated effect on output is indeed positive (although not statistically significant). These findings are consistent with the finding of Giavazzi and Pagano (1990) that Denmark and Ireland experienced "expansionary fiscal contractions." However, the results also suggest that these two cases are not representative of the normal output response, even among countries with a relatively poor initial credit rating.

Comparison with Other Studies

How do our results compare with those obtained using the standard set of fiscal consolidation episodes? To answer this question, we consider the sample of large fiscal adjustments identified by Alesina and Ardagna (2010) for our same sample of 15 countries—years in which the CAPB-to-GDP ratio increases by at least 1.5 percentage points.[33] For this sample, the estimation results suggest that fiscal austerity usually stimulates GDP and

[31] Note that these ratings are strongly correlated with sovereign bond yields (although the latter reflect more than just default risk).
[32] Note that Denmark (1983) and Ireland (1987)—the two cases studied by Giavazzi and Pagano (1990)—fall into this high-perceived-risk category.
[33] The episodes identified by Alesina and Ardagna (2010) are listed in Table 3.5.

reduces the rate of unemployment in the short term (Figure 3.10). In contrast, for a comparable set of large consolidation episodes identified according to our action-based approach (those greater than 1.5 percent of GDP), the impact on GDP is negative and unemployment rises.

What explains this stark contrast? Why is fiscal contraction usually painless based on the standard set of episodes but contractionary based on our sample of action-based episodes? As described above, the standard approach to identification of consolidation based on the behavior of the CAPB may be imperfect and create bias in the estimated effects of consolidation. Appendix 3.3 demonstrates that these problems are substantial. It shows that there are large differences between the episodes identified by the two approaches. It then examines the 10 cases in which the difference between the size of the consolidation identified by the two approaches is largest and establishes two results. First, the action-based measure appears to be substantially more accurate. In the majority of the 10 episodes, there were specific economic or budgetary developments that cause the CAPB-based approach to inaccurately measure the size of the consolidation; in the remainder, there were economic developments that very likely had a large effect on the CAPB-based measure. Second, the errors are correlated with economic developments. Most notably, the CAPB-based approach often fails to identify consolidation when governments took substantial actions to reduce the deficit but the actions were associated with severe economic downturns. It is therefore not surprising that the estimates based on the CAPB-based measure do not find that consolidations are on average contractionary.

Finally, Figure 3.10 also illustrates another interesting finding: based on our set of fiscal adjustments, the incremental impact of fiscal consolidation on economic activity appears to be unrelated to the size of the package. In particular, the estimated responses of output and unemployment to these large deficit cuts (greater than 1.5 percent of GDP) are similar to those reported before for our full sample of fiscal consolidation. For each additional fiscal consolidation of 1 percent of GDP, the impact

Figure 3.9. Estimated Impact on GDP of a 1 Percent of GDP Fiscal Consolidation
(Percent)

Fiscal consolidation preceded by high perceived sovereign risk is less contractionary than when preceded by low perceived default risk. But even for the group with high perceived risk, fiscal retrenchment rarely triggers faster growth. Exceptions include Denmark (1983) and Ireland (1987)—two cases of fiscal consolidation studied by Giavazzi and Pagano (1990)—which were expansionary.
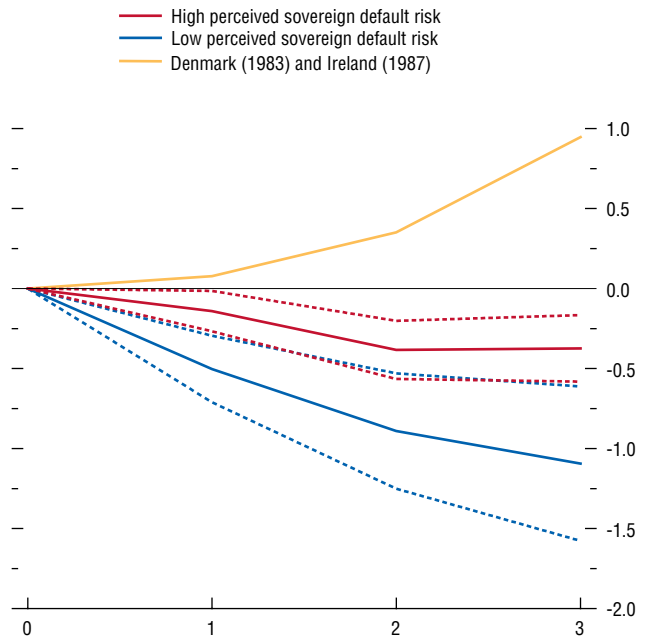
Source: IMF staff calculations.
Note: $t = 1$ denotes the year of consolidation. Dotted lines equal one standard error bands.

Figure 3.10. Impact of Large Fiscal Consolidation on GDP and Unemployment: Action-Based Approach versus Standard Approach
(Impact of each additional 1 percent of GDP fiscal consolidation)

Fiscal retrenchment usually triggers faster growth and lower unemployment according to the standard approach, exemplified by Alesina and Ardagna (2010). But according to our action-based approach, the opposite is true.
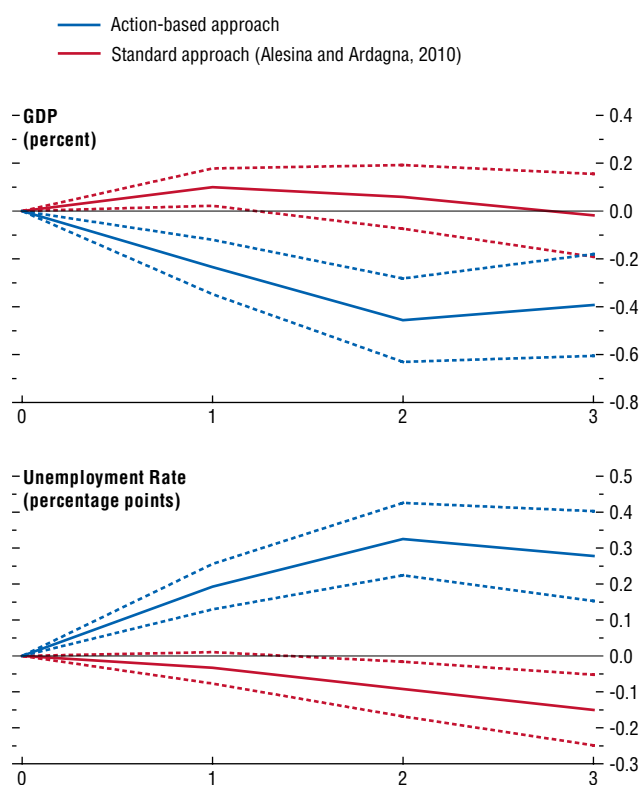
Source: IMF staff calculations.
Note: *t* = 1 denotes the year of consolidation. Dotted lines equal one standard error bands.

on output is about –0.5 percent, and the impact on the unemployment rate is about 0.3 percentage point, which is similar to the baseline results for all adjustments, large and small, reported earlier.[34]

Additional Insights from Model Simulations

The previous section looked at historical episodes of fiscal consolidation in advanced economies to assess the short-term effects. But historical analysis goes only so far. For example, the empirical framework used above is not well suited to providing estimates of the effects of fiscal consolidation over long periods such as 10 or 20 years. Moreover, historical analysis cannot fully address specific issues that are relevant for today but that rarely arose in the past, such as the zero floor on nominal interest rates. Therefore, to complement the empirical analysis, this section looks at fiscal consolidation in the controlled "laboratory" setting of the GIMF, a dynamic general equilibrium model designed to simulate the effects of fiscal and monetary policy measures.[35]

In particular, we examine the following questions:

- How do the effects of fiscal consolidation change when nominal interest rates are near zero?
- How do the effects change when many countries conduct fiscal consolidation simultaneously?
- What are the long-term effects of reducing government debt from high levels?

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[34] Additional analysis suggests that the proportional impact is also similar for *very* large deficit cuts (equal to more than 3 percent of GDP per year), although the estimation results are less precise for these cases due to the smaller number of observations.

[35] For presentations of the structure of the GIMF, see Kumhof and Laxton (2007); Kumhof, Muir, and Mursula (2010); Freedman and others (2009, forthcoming); and Clinton and others (2010). A companion paper, available on request, shows that the GIMF produces short-term expenditure and tax multipliers that are in line with those reported in the previous section of the chapter. In addition, it explains why fiscal multipliers associated with fiscal consolidation are likely to be smaller than those associated with fiscal stimulus, including the fact that monetary policy stimulus partly offsets the effect of fiscal consolidation but reinforces the effect of fiscal stimulus.

Fiscal Consolidation when Policy Rates Are Near the Zero Interest Rate Floor

Since the onset of the Great Recession, short-term interest rates in the largest advanced economies have been near the zero interest rate floor. Yet of the historical episodes considered above, only those of Japan since the 1990s occurred in an environment of near-zero interest rates. In the other episodes, interest rate cuts typically followed fiscal consolidation.

Therefore, to look at the effects of fiscal consolidation when interest rates are near zero, we use model simulations. In particular, we look at what happens when a small open economy, which we calibrate to fit the main features of Canada, implements fiscal consolidation with and without the zero interest rate floor. For simplicity, the analysis ignores the possibility of the central bank responding to the consolidation by using unconventional monetary tools, such as quantitative and credit easing. To the extent that such policies would be used to support output in response to the consolidation, the simulations reported here may overstate the impact of the zero interest rate floor.

The consolidation considered here is a reduction in the deficit equivalent to 1 percentage point of GDP, composed entirely of spending cuts. Three-quarters of the spending cuts fall on government transfers, with the rest falling on government consumption. All the simulations considered in this subsection assume that there are no cuts to productive public investment. If the spending cuts *do* include cuts to productive public investment, the long-term effects of fiscal consolidation can be negligible or even negative.

The results suggest the following:

- When the interest rate is well above zero and free to decline, the output cost is about 0.5 percent after two years (Figure 3.11). This output cost is broadly consistent with the estimated short-term effect reported in the previous section of this chapter. Two factors make the impact on GDP less than one-to-one for every 1 percent of GDP of fiscal consolidation. First, lower interest rates help offset the shock to domestic demand. Second, a significant depreciation in the exchange

rate, resulting from the persistence of the decline in the interest rate, boosts exports and raises the trade balance. Again, these simulation results are consistent with the empirical findings reported in the previous section.[36]

- However, when interest rates are stuck at zero, the output cost of fiscal consolidation doubles to about 1 percent after two years (see Figure 3.11). Here, the simulation assumes that the zero lower bound holds for two years.[37] During this time, the central bank is powerless to offset the slump in aggregate demand and inflation induced by the cut in government spending. The resulting fall in inflation raises the real interest rate, which in turn exacerbates the decline in aggregate demand, amplifying the short-term contractionary effect of fiscal consolidation.

Fiscal Consolidation in Many Countries at the Same Time

How do the effects of fiscal consolidation change when many countries consolidate at the same time? This question is relevant today, as a number of advanced economies set fiscal consolidation in motion.

To address this issue, the simulations compare a situation in which only Canada cuts its fiscal deficit to one in which all countries do so simultaneously (global fiscal consolidation). We again use Canada here to illustrate the case of an economy small enough to have small spillover effects on the rest of the world and open enough that fiscal contraction in the rest of the world has significant effects on its GDP.[38]

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[36] In an economy such as the United States, with less exposure to foreign trade, the domestic-demand channel would be more important. In this case, it would require a larger decline in the interest rate to offset the effects of the fiscal contraction on domestic demand.

[37] Why do the simulations assume that the zero interest rate floor holds for two years? In the model, the only way the central bank can stabilize output and inflation is by cutting nominal interest rates. When the option of cutting interest rates is removed for a long time—here, three or more years—the model generates unstable macroeconomic dynamics, which complicates the computation of simulation results. In addition, for most countries, it is unlikely that interest rates will stay at zero for more than two years.

[38] In 2009, Canada's GDP was 1.9 percent of global GDP on a purchasing-power-parity basis, and the sum of exports and imports represented 71 percent of GDP.

Figure 3.11. Impact of a 1 Percent of GDP Fiscal Consolidation: GIMF Simulations[1]
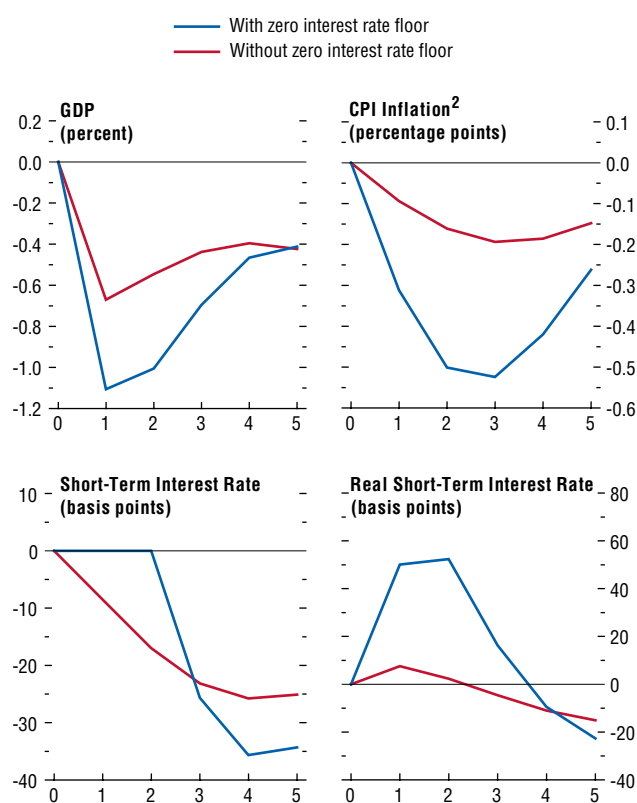
Source: IMF staff calculations.

Note: $t = 1$ denotes the year of consolidation. Simulations are based on the GIMF calibrated for Canada and the rest of the world. The zero interest rate floor is assumed to hold for two years for reasons explained in the text.

[1] GIMF = Global Integrated Monetary and Fiscal Model.

[2] CPI = consumer price index.

As before, the adjustment involves reducing the deficit-to-GDP ratio by 1 percentage point, with the adjustment composed entirely of spending cuts. Three-quarters of the spending cuts fall on government transfers, with the rest falling on government consumption. Also, as before, the analysis considers two cases: the first assumes that the zero interest rate floor holds in all countries for two years, and the second assumes that the interest rate may change without constraint.

The following results emerge:

- In the simulations where the zero interest rate floor applies, the Canada-only consolidation implies an output loss of about 1 percent (Figure 3.12). But when the rest of the world conducts fiscal consolidation at the same time, the output cost to Canada more than doubles, to 2 percent. This simulation illustrates that, when interest rates are near zero, international spillovers are important.

- When central banks are able to cut interest rates, the difference between the Canada-only consolidation and the global consolidation is smaller. This reflects the interplay of two forces. On the one hand, the fiscal contraction in the rest of the world reduces demand for Canadian exports, and the exchange rate provides a smaller buffer—currencies cannot all depreciate at the same time. But on the other hand, the interest rate is now unconstrained by the zero bound, and the central bank can thus respond with more monetary stimulus. These larger interest rate cuts play a substantial cushioning role, and the additional output cost of global consolidation is therefore modest.

Overall, these results illustrate that changes in both the interest rate and the exchange rate are important to the adjustment process. When countries cannot rely on the exchange rate channel to stimulate net exports, as in the case of the global consolidation, and cannot ease monetary policy to stimulate domestic demand, due to the zero interest rate floor, the output costs of fiscal consolidation are much larger. Thus, in the presence of the zero interest rate floor, there could be large output costs associated with front-loaded fiscal retrenchment implemented across all the large economies at the same time.

Long-Term Effects of Reducing Government Debt

The discussion so far has focused on short-term effects. We now turn to the long term. Does fiscal consolidation generate long-term gains? And if so, how soon do the long-term gains arrive? This question is one that cannot be adequately addressed using the empirical framework used in the previous section, and so we again use model simulations.

To focus the discussion, we consider a fiscal consolidation that, over time, reduces the government-debt-to-GDP ratio by 10 percentage points in each of the G3 currency areas (euro area, Japan, United States). As in the simulations discussed above, the consolidation is based on permanent cuts to government consumption and transfers. As the debt-to-GDP ratio declines, the burden of interest payments falls, and the resulting savings may be used to finance either new tax cuts or spending increases. In the main simulation reported here, we assume that the savings are used to reduce labor income taxes. The tax cuts are designed to ensure that the debt-to-GDP ratio stabilizes at 10 percentage points below the initial level.

The simulations suggest that, over the long term, a reduction in the debt-to-GDP ratio is likely to raise output both in the G3 economies and in the rest of the world. Two main factors underlie this increase:

- *Lower real interest rates:* Reducing the fiscal deficit raises the overall G3 saving rate and improves the G3 current account balance.[39] Over time, the greater supply of savings lowers the real interest rate. In the simulation, the 10 percentage point fall in the debt-to-GDP ratio helps produce a fall in the G3 real interest rate of about 30 basis points (Table 3.1).[40] Since capital is assumed to be mobile across borders, the real interest rate falls by the same amount in the rest of the world. In turn, lower real interest rates "crowd in"

[39] The counterpart to this improvement in the G3 current account balance is a worsening in the current account balance of the rest of the world. The magnitude of this effect will depend on the degree to which government bonds are treated as net wealth and the sensitivity of aggregate consumption to changes in real interest rates.

[40] The magnitude of this interest rate–debt link is in line with empirical estimates in the literature, such as Engen and Hubbard (2004), Laubach (2009), and Baldacci and Kumar (2010).

Figure 3.12. Impact of a 1 Percent of GDP Fiscal Consolidation: GIMF Simulations[1]
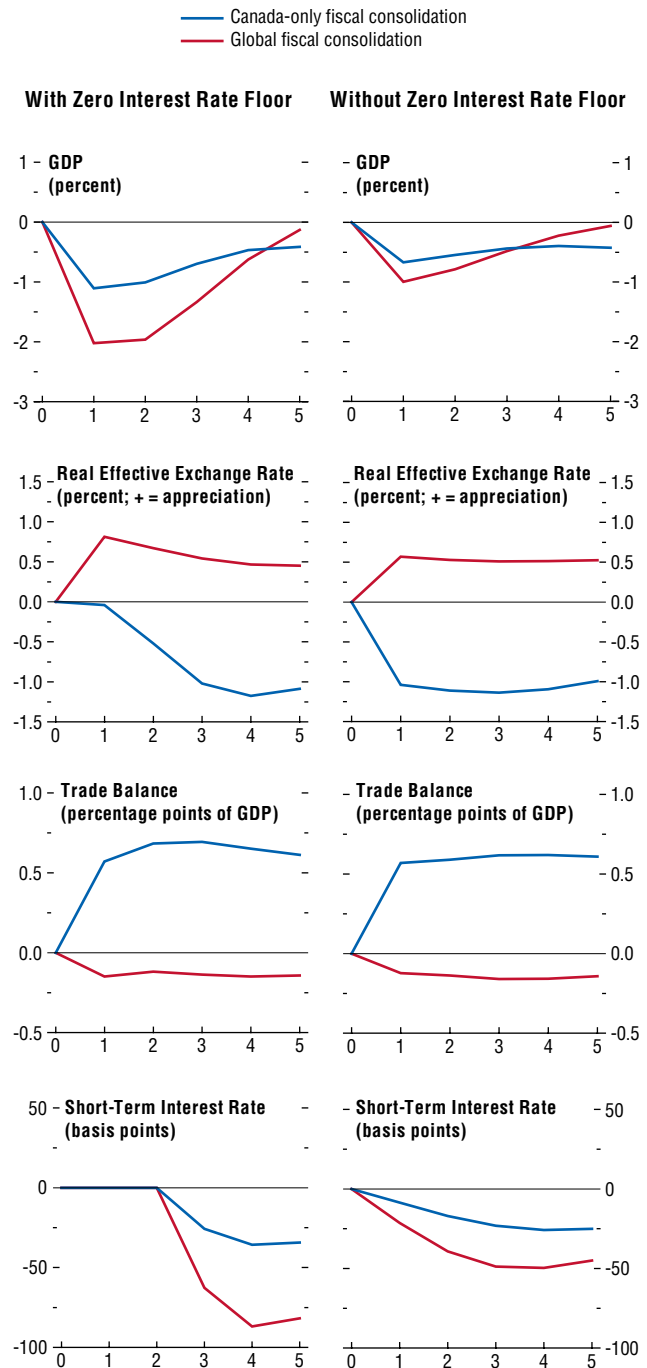
Source: IMF staff calculations.
Note: *t* = 1 denotes the year of consolidation. Simulations are based on the GIMF calibrated for Canada and the rest of the world. The zero interest rate floor is assumed to hold for two years for reasons explained in the text.
[1] GIMF = Global Integrated Monetary and Fiscal Model.

Table 3.1. Long-Term Effects of a Permanent 10 Percentage Point Decrease in the G3 Government-Debt-to-GDP Ratio: Global Integrated Monetary and Fiscal Model Simulations[1]

	G3	Rest of the World	Global
Lower Interest Burden Used to Reduce Labor Income Taxes			
Real GDP (percent)	1.36	0.78	1.02
Real Interest Rate (percentage points)	−0.34	−0.34	−0.34
Capital Stock (percent)	2.14	1.58	1.82
Current-Account-to-GDP Ratio (percentage points)	0.44	−0.28	. . .
Effects on GDP under Different Assumptions (percent)			
Lower Interest Burden Used to			
Reduce Labor Income Tax	1.36	0.78	1.02
Raise General Transfers	0.54	0.40	0.46
Reduce Capital Income Tax	1.50	0.82	1.10
Reduce Consumption Tax	0.70	0.46	0.56

Source: IMF staff calculations.

Note: This table reports long-term effects on the level of GDP, interest rate, capital stock, and current-account-to-GDP ratio.

[1]G3 = euro area, Japan, United States.

private investment, thereby raising the stock of physical capital and GDP over the long term.[41] In the baseline simulation, the stock of physical capital rises by 2.1 percent in the G3 and by 1.6 in the rest of the world. Meanwhile, the level of GDP rises by 1.4 percent in the G3 and by 0.8 percent in the rest of the world.

- *Lower income taxes:* The lower interest rates and lower stock of government debt generate savings in terms of lower interest payments that can be used to finance tax cuts. In the baseline simulation, we assume that the savings are used to lower taxes on labor income. Since labor income taxes discourage workers from supplying labor, reducing them raises labor supply and output. As the lower panel of Table 3.1 reports, using the savings to cut capital income taxes instead has an even more beneficial impact on GDP in the long term. This is a reflection of capital income taxes' strong negative effect on private sector investment. On the other hand, if the savings are used to finance

cuts to consumption taxes, or to finance higher spending on government transfer programs, the long-term output gains are smaller.[42] Finally, there are positive spillover effects from the G3 to the rest of the world arising through trade linkages. The more G3 incomes rise over the long term, the more goods the G3 economies import and the more income this generates for the rest of the world.[43]

How long does it take for the positive output effects to outweigh the negative short-term effects? GIMF simulations suggest that for a consolidation based on cuts to government consumption and transfers, GDP is lower than baseline for three years before rising above the baseline forever. The break-even point, at which the sum of the annual GDP losses in the early years is just offset by the sum of the gains later on, occurs five years from the start date.

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[41]This subsection has not taken into account the likelihood that reduced government debt would reduce risk premiums in market interest rates. A lower expected level of debt would alleviate concerns that the fiscal outcome might become unsustainable. That is, it would reduce the perceived risks of default and inflation. Reduced risk premiums in government and private sector borrowing rates would enhance and accelerate long-term positive effects on output.

[42]This ranking is consistent with the standard view of the relative distortionary supply-side aspects of the various fiscal instruments.

[43]Fiscal consolidation in the G3 generates a permanent improvement in the G3 current account balance, which implies a declining path for the G3 ratio of net foreign liabilities (NFL) to GDP. Over the long term, in the GIMF, an increase in imports relative to exports ensures that the NFL-to-GDP ratio stabilizes at a lower level instead of perpetually falling.

Lessons for Countries Considering Fiscal Consolidation

This section summarizes the principal findings of the chapter and outlines key lessons for countries considering fiscal consolidation in today's environment. Virtually all advanced economies are likely to conduct fiscal consolidation at some point in the future to put their fiscal positions back on a sustainable footing. The evidence based on historical analysis for advanced economies and model simulations in this chapter provides several lessons.

The idea that fiscal austerity triggers faster growth in the short term finds little support in the data. Fiscal retrenchment typically has contractionary short-term effects on economic activity, with lower output and higher unemployment. A budget cut equal to 1 percent of GDP typically reduces domestic demand by about 1 percent and raises the unemployment rate by 0.3 percentage point. At the same time, an expansion in net exports usually occurs, and this limits the impact on GDP to a decline of 0.5 percent.

Central banks usually offset some of the contractionary pressure by reducing policy rates, and longer-term interest rates typically decline, cushioning the impact on domestic demand. Undertaking fiscal consolidation is likely to have more negative short-term effects if—as is currently the case in a number of countries—interest rates are near zero and central banks are constrained in their ability to provide monetary stimulus.

A decline in the real value of the domestic currency typically plays an important cushioning role by spurring net exports and is usually the result of nominal depreciation or currency devaluation. Therefore, because not all countries can have real depreciations and increase their net exports at the same time, simultaneous fiscal consolidation by many countries is likely to be particularly costly. Fiscal retrenchment is also likely to be more costly for members of a monetary union where scope for a fall in the value of their currency is reduced. At the same time, in the current global environment, heightened market sensitivity to fiscal deficits and government debt may imply that no adjustment could have a negative impact on growth.

The findings also suggest that spending-based deficit cuts, particularly those that rely on cuts to transfers, have smaller contractionary effects than tax-based adjustments. A key reason for this difference is that central banks typically provide less monetary stimulus during tax-based adjustments, particularly when they involve hikes in indirect taxes that put upward pressure on inflation. This finding again highlights that the fiscal adjustment process is likely to be more painful without the supportive role of interest rate cuts.

Fiscal retrenchment in countries that face a higher perceived sovereign default risk tends to be less contractionary. But *expansionary* effects of consolidation are unusual even for this group. This result implies that short-term negative effects are likely to be smaller in economies currently facing greater market pressure.

In addition, fiscal consolidation is likely to be beneficial over the long term. In particular, lower debt is likely to reduce real interest rates and the burden of interest payments, allowing for future cuts to distortionary taxes. These effects will likely crowd in investment and increase output in the long term.

Finally, as discussed in Chapter 1, a number of policy actions could enhance the credibility of fiscal adjustment programs, thereby mitigating the adverse effects of fiscal consolidation in the short term. Such actions could include strengthening fiscal institutions and reforming pension entitlements and public health care systems. To the extent that such measures improve household and business confidence and raise expectations about future income, they could help support activity during the process of fiscal adjustment.

Appendix 3.1. Data Sources

The sources of the data used for the analysis are listed in Table 3.2. The episodes of fiscal consolidation identified based on the action-based approach are reported in Tables 3.3 and 3.4. The episodes of fiscal consolidation identified based on the standard approach are reported on Table 3.5.

Table 3.2. Data Sources

Variable	Source
Real GDP	World Bank World Development Indicators (WDI) Database, World Economic Outlook (WEO) Database
Real Consumption	WDI Database, WEO Database
Real Investment	WDI Database, WEO Database
Real Exports	WDI Database, WEO Database
Real Imports	WDI Database, WEO Database
Unemployment Rate	WDI Database, WEO Database
Nominal Effective Exchange Rate	International Financial Statistics (IFS) Database
Real Effective Exchange Rate	IFS Database
Policy Interest Rates and 10-Year Bond Yields	Bloomberg Financial Markets, National Authorities, Thomson Datastream
Institutional Investor Rating	*Institutional Investor*
Cyclically Adjusted Primary Budget Surplus in Percent of GDP	Alesina and Ardagna (2010), Organization for Economic Cooperation and Development

Table 3.3. Action-Based Approach: Episodes of Small Fiscal Contraction
(Smaller than 1.5 percent of GDP)

Economy	Fiscal Consolidation												
Australia	1980	1985	1994	1995	1996	1997	1998	1999					
Belgium	1984	1990	1992	1994	1995	1996	1997	1998					
Canada	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992
	1993	1994	1995	1996	1997	1998	1999						
Denmark	1995												
Finland	1984	1988	1999	2000	2006	2007							
France	1984	1986	1987	1988	1989	1991	1995	1996	1997	1998	2000	2006	2007
Germany	1982	1983	1984	1985	1986	1987	1988	1989	1992	1993	1994	1995	1996
	1998	1999	2000	2003	2004	2005	2006	2007					
Ireland	1984	1985	1986										
Italy	1994	1996	1998	2004	2005	2006	2007						
Japan	1981	1982	1983	1986	2003	2004	2005	2006	2007				
Portugal	2000	2003	2005	2006	2007								
Spain	1983	1984	1985	1986	1987	1988	1989	1992	1993	1994	1995	1996	1997
	1998												
Sweden	1984	1986	1992	1994	1998	2007							
United Kingdom	1982	1994	1995	1996	1998	1999							
United States	1980	1981	1985	1986	1988	1990	1993	1994	2000				

Source: IMF staff calculations.

Table 3.4. Action-Based Approach: Episodes of Large Fiscal Contraction
(Greater than or equal to 1.5 percent of GDP)

Economy	Fiscal Consolidation					
Australia	1986	1987				
Belgium	1982	1983	1987	1993		
Canada						
Denmark	1983	1984	1985	1986		
Finland	1992	1993	1994	1996	1997	1998
France						
Germany	1997					
Ireland	1982	1983	1987	1988	2009	
Italy	1992	1993	1995	1997		
Japan	1997					
Portugal	1983	2002				
Spain						
Sweden	1983	1993	1995	1996	1997	
United Kingdom	1981	1997				
United States	1991					

Source: IMF staff calculations.

Table 3.5. Large Fiscal Contraction Episodes Identified by Alesina and Ardagna (2010)

Economy	Fiscal Consolidation								
Australia	1987	1988							
Belgium	1982	1984	1987	2006					
Canada	1981	1986	1987	1995	1996	1997			
Denmark	1983	1984	1985	1986	2005				
Finland	1981	1984	1988	1994	1996	1998	2000		
France	1996								
Germany	1996	2000							
Ireland	1984	1987	1988	1989	2000				
Italy	1980	1982	1990	1991	1992	1997	2007		
Japan	1984	1999	2001	2006					
Portugal	1982	1983	1986	1988	1992	1995	2002	2006	
Spain	1986	1987	1994	1996					
Sweden	1981	1983	1984	1986	1987	1994	1996	1997	2004
United Kingdom	1982	1988	1996	1997	1998	2000			
United States									

Source: Alesina and Ardagna (2010).

Appendix 3.2. Estimation Approach

The analysis in the text accounts for the current and lagged impact of fiscal consolidation. More specifically, the estimated equation is as follows:

$$g_{it} = \alpha + \sum_{j=1}^{2} \beta_j g_{i,t-j} + \sum_{s=0}^{2} \beta_s ABFC_{i,t-s} + u_{it}, \quad (3.1)$$

where the subscript i denotes the ith country (i=1, …,15) and the subscript t denotes the tth year (t=1980, …, 2009); g is the percent change in real GDP; and $ABFC$ is the estimated size of the action-based fiscal consolidation measures as a percent of GDP. The disturbance term, u_{it}, is specified as a two-way error component model:

$$u_{it} = \mu_i + \lambda_t + \nu_{it}, \quad (3.2)$$

where μ_i denotes a country-fixed effect, and λ_t denotes a time-fixed effect. The time effects capture

Figure 3.13. Robustness: Impact on GDP of a 1 Percent of GDP Fiscal Consolidation

(With and without controlling for lagged GDP growth)

Excluding lags of growth from our estimated equation has little effect on the estimated effect of fiscal consolidation on output.
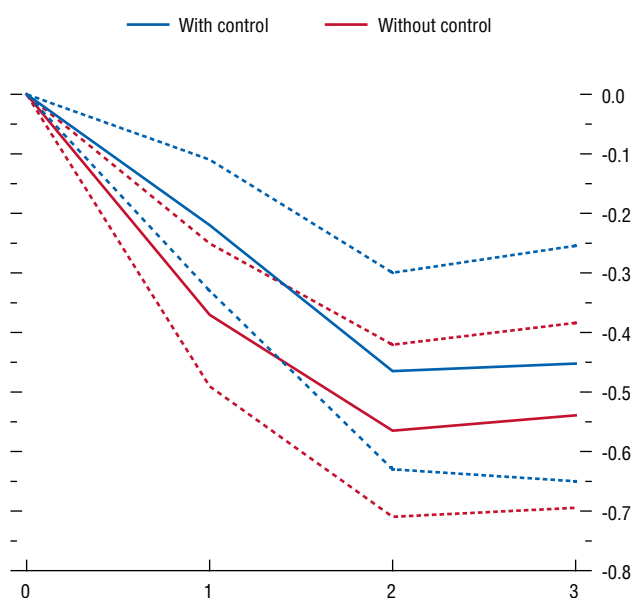
Source: IMF staff calculations.
Note: $t = 1$ denotes the year of consolidation. Dotted lines equal one standard error bands.

shifts in global variables, such as the global business cycle. The country-fixed effect captures differences in countries' steady-state growth rates. *F*-tests reject the absence of country- and time-fixed effects. The impulse response function for the effect of the fiscal actions on the *level* of output, along with one-standard-error bands, is obtained via the delta method.

Several robustness checks were conducted:

- Excluding lags of growth had little effect on the results (Figure 3.13). If consolidation is less likely in a weak economy, there should be a correlation between lagged output growth and consolidation, and controlling for lagged output would have an appreciable impact on the estimates. The finding that it does not is therefore reassuring, as it suggests that this source of bias is small in our sample.[44]

- Using an alternative estimation approach—the Arellano-Bond (1991) procedure—had little effect on the results (Figure 3.14). As discussed above, this result suggests that the bias due to fixed effects being correlated with the lagged dependent variables is small in this sample.

- Splitting the sample of fiscal consolidation according to size of government (tax-to-GDP ratio in the three years preceding fiscal consolidation) yielded an interesting result. Economies that initially have a larger size of government (above the median tax-to-GDP ratio of 42 percent) have smaller output costs than those with a smaller initial size of government.[45] However, larger governments are also more likely to engage in spending-based consolidation than smaller governments. Keeping composition constant, the differences due to government size are less apparent. In particular, tax-based consolidation is equally costly in terms of lost output for large and small governments. Therefore, it seems that the type of consolidation (tax- versus spending-based) is more important than the size of government in determining the output cost of fiscal consolidation.

[44] In addition, using different lag lengths (up to four) yielded similar results.

[45] Similar results were obtained using the government-spending-to-GDP ratio as a proxy for government size.

- The results were more contractionary when the sample of fiscal adjustments was limited to episodes occurring in economies with a fixed exchange rate regime. This result held up under both the IMF's de facto and de jure classification of exchange rate regimes. The result is consistent with standard Mundell-Fleming theory and a number of recent studies, such as Ilzetzki, Mendoza, and Végh (2009), who find that fiscal multipliers are larger in economies with fixed exchange rate regimes.
- Splitting the sample of fiscal consolidation episodes according to openness to trade (ratio of exports plus imports to GDP) did not materially change the results.

Appendix 3.3. Identifying Periods of Fiscal Consolidation: The Standard Approach versus the Action-Based Approach

Figure 3.15 provides a scatter plot of increases in the cyclically adjusted primary budget balance (CAPB)—the standard measure of fiscal consolidation—on the vertical axis versus the size of fiscal consolidation based on the policy record on the horizontal axis. The figure reports years for which either the CAPB-to-GDP ratio increased or the policy record indicated fiscal consolidation.[46] The CAPB-to-GDP data are from Alesina and Ardagna (2010).[47] The top-right corner of the scatter plot shows cases in which the two measures agree that there was a large fiscal consolidation (greater than 1.5 percent of GDP). It includes cases such as Denmark (1983) and Ireland (1987)—the two cases highlighted by Giavazzi and Pagano (1990) in their work on expansionary fiscal contraction. However, Figure 3.15 also reports numerous cases in which the standard approach and our approach come to different conclusions regarding the presence and size of fiscal consolidation.

[46] Cases in which there was no evidence of fiscal consolidation in the historical record correspond to the observations along the zero line on the horizontal axis, with positive values on the vertical axis.

[47] The cases of increases in the CAPB-to-GDP ratio greater than 1.5 percentage points in Figure 3.15 are also those reported as large fiscal adjustments in Table A1 in Alesina and Ardagna (2010).

Figure 3.14. Robustness: Impact on GDP of a 1 Percent of GDP Fiscal Consolidation
(Baseline estimator versus Arellano-Bond estimator)

Using the Arellano-Bond procedure had little effect on the results, suggesting that the bias due to correlation of the fixed effects with the lagged dependent variables is small in this sample.
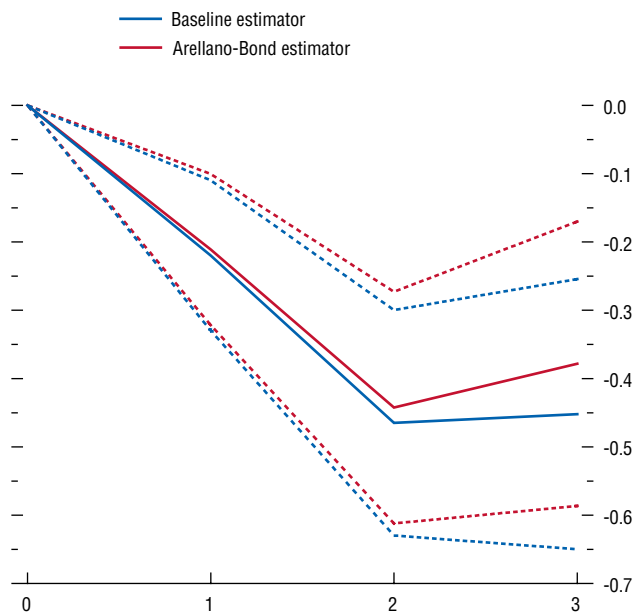
Source: IMF staff calculations.
Note: *t* = 1 denotes the year of consolidation. Dotted lines equal one standard error bands.

Figure 3.15. Size of Fiscal Consolidation: Action-Based Approach versus Standard Approach[1]

(Percent of GDP)

There are numerous cases in which the standard approach and our action-based approach differ regarding the presence and size of fiscal consolidation. After analyzing in detail the 10 largest discrepancies between the two approaches, we conclude that our action-based approach more accurately identifies the size of fiscal consolidation.

Standard approach
(change in cyclically adjusted primary balance)

DEU 1996
JPN 1999   JPN 2006
BEL 1984
FIN 2000
FIN 1993
IRL 1982   ITA 1993
FIN 1992
IRL 2009

Action-based approach
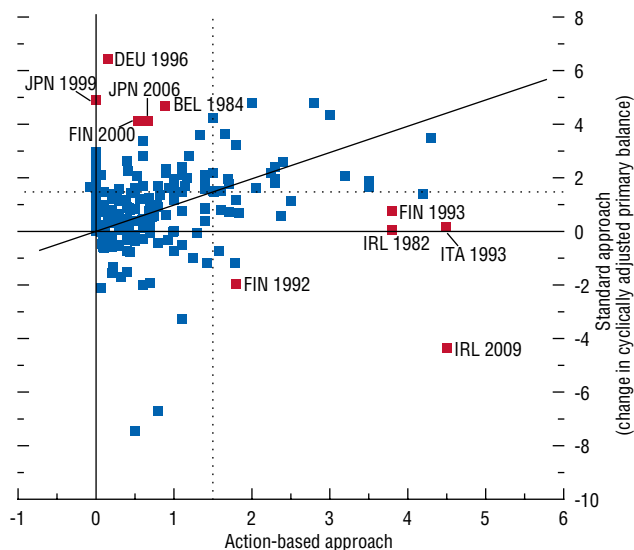
Sources: Alesina and Ardagna (2010); and IMF staff calculations.
Note: The diagonal line reports the 45-degree line, where the action-based approach and standard approach agree. Dotted lines indicate episodes of consolidation equal to 1.5 percent of GDP. Highlighted observations indicate years for which the two approaches differ by more than 3 percent of GDP.
[1]BEL: Belgium; DEU: Germany; FIN: Finland; IRL: Ireland; ITA: Italy; JPN: Japan.

Which approach typically more accurately identifies fiscal consolidation? To address this question, we focus on the largest discrepancies between the two approaches: the 10 cases for which the discrepancy between the two approaches exceeded 3 percent of GDP. In each of these cases, fiscal consolidation was assessed as large (greater than 1.5 percentage points of GDP) by at least one of the two approaches. These 10 cases are highlighted in Figure 3.15.

We start with the cases in the top-left corner of Figure 3.15, which contains five periods identified as large consolidations based on the standard approach, but for which the policy record shows either only a small consolidation or no consolidation at all.

- Germany (1996): The CAPB-to-GDP ratio increased by 6.4 percentage points, but the policy record indicates fiscal consolidation measures amounting to only 0.2 percent of GDP. The large increase in the CAPB-to-GDP ratio in 1996 reflected a large one-time capital transfer in 1995, which implied a change in the CAPB-to-GDP ratio of about –7 percentage points in 1995 and 6.4 percentage points in 1996. The sharp increase in the CAPB in 1996 thus had nothing to do with fiscal austerity measures. In particular, as reported in the 1996 *IMF Recent Economic Developments* report (p. 18), a one-time transfer of Treuhand (Trust Agency) and East German housing debt to the general government amounting to 6.8 percent of GDP occurred in 1995. This operation was recorded by the Organization for Economic Cooperation and Development (OECD) as a one-time increase in capital transfers that raised the general government deficit from 2.3 percent of GDP in 1994 to 9.7 percent of GDP in 1995. The deficit returned to a more normal level in 1996, at 3.3 percent of GDP. Therefore, the sharp increase in the CAPB in 1996 bears no relation to fiscal austerity measures, but instead reflects the end of a one-time capital transfer.
- Japan (1999): The CAPB-to-GDP ratio rose by about 4.9 percentage points, but the policy record shows no evidence of fiscal consolidation measures. Indeed, Japan's fiscal consolidation

program, initiated in 1997, was suspended in 1998 following the onset of a severe recession, and there is no evidence of measures designed to cut the budget deficit until 2002, when the authorities announced a new multiyear program of fiscal consolidation (2003 *OECD Economic Survey: Japan*, p. 15). Instead, as the 1998 *OECD Economic Survey: Japan* reports (p. 84), the government made a one-time capital transfer in 1998 to the Japan National Railway, amounting to about ¥24.3 trillion (4.8 percent of GDP). The one-time nature of this capital transfer implies a change in the (general government) CAPB of about 4.8 percentage points of GDP in the following year, 1999. This increase is similar to the 4.9 percentage point change in the CAPB-to-GDP ratio computed by Alesina and Ardagna (2010). Therefore, the sharp increase in the CAPB in 1999 bears no relation to fiscal austerity measures, but instead reflects the end of a one-time capital transfer.

- Finland (2000): The CAPB-to-GDP ratio increased by 4.1 percentage points, but the policy record shows fiscal consolidation measures amounting to only 0.9 percent of GDP.[48] This episode corresponds to an asset price boom: real stock prices in Finland rose by 70 percent in 1999 and by 86 percent in 2000 (Haver Analytics). Of the 4.1 percentage point increase in the CAPB-to-GDP ratio, 2 percentage points reflect a rise in revenue from one-time factors unrelated to policy actions.[49] These one-time factors included a rise in tax revenue associated with stock-option and capital gains and an increase in non-tax (property income) revenue partly due to an extraordinary dividend issued by the fully state-owned bank Leonia on the eve of its merger with the private insurance company Sampo. Regarding the remaining 1.2 percentage point discrepancy relative to the historical record (2.1 versus 0.9), the OECD Economic Outlook database indicates a fall in cyclically adjusted social security outlays of about 1 percentage point.

However, we can find no mention of social security cuts in the historical record, such as in the *OECD Economic Survey*.[50] Overall, therefore, we conclude that the increase in the CAPB-to-GDP ratio of 4.1 percentage points overstates the amount of consolidation in 2000 by at least 2 percentage points and probably closer to 3.

- Japan (2006): The CAPB-to-GDP ratio increased by 4.1 percentage points, but the policy record indicates fiscal consolidation measures amounting to only 0.67 percent of GDP, implying a discrepancy of about 3.4 percent of GDP. In terms of actual consolidation measures, the policy record indicates a cut in public investment of about 0.27 percent of GDP (2007 *IMF Staff Report*, pp. 32–33) and income tax hikes worth about ¥2 trillion (0.4 percent of GDP—Takahashi and Tokuoka, 2010). At the same time, the CAPB-to-GDP ratio reported in the 2008 *OECD Economic Surveys: Japan* rose by 3.2 percentage points in 2006 (Table 3.1, p. 65, line 4). Thus, some (0.9 percentage point) of the discrepancy is due to differences between the *OECD Economic Survey* and Alesina and Ardagna (2010) in the method used to compute the CAPB. In addition, the *OECD Economic Survey* indicates that a large part of the CAPB increase resulted from one-time asset operations that improved the fiscal balance in 2006 but were unrelated to tax hikes or spending cuts.[51] Without these one-time asset operations, the 2008 *OECD Economic Survey: Japan* estimates that the CAPB-to-GDP ratio increased by only 0.4 percentage point in 2006 (OECD Table 3.1, p. 65, line 8). Therefore, once the change in the CAPB-to-GDP ratio is adjusted to remove the influence of asset operations unrelated to tax hikes and spending cuts, the increase

[48]The fiscal measures reflected mainly central government spending restraint (*OECD Economic Surveys 1999–2000,* p. 36).

[49]The 2001–02 issue of *OECD Economic Surveys: Finland* reports the 2000 budget outcome as "a very high surplus mainly due to one-off factors" (p. 37).

[50]Note that cuts to social security spending, which is not recorded as central government spending, are not part of the measures amounting to 0.9 percent of GDP that we identify in the policy record.

[51]The 2008 *OECD Economic Survey: Japan* reports that the one-time factors include receipts of funds by the government from corporate pension funds, receipts associated with the privatization of highway corporations, and receipts from the "transfer of the reserve fund from the Fiscal Loan Fund Special Account to the central government" (p. 65).

in the CAPB-to-GDP ratio is close to our estimate of policy measures of 0.67 percent of GDP.

- Belgium (1984): The CAPB-to-GDP ratio increased by 4.7 percentage points, but the policy record indicates fiscal consolidation measures amounting to 0.88 percent of GDP, implying a discrepancy of about 3.8 percent of GDP.[52] At the same time, the CAPB-to-GDP ratio reported in the OECD Economic Outlook database rises by 4.1 percentage points in 1984. Thus, some of the discrepancy (0.6 percentage point) is due to differences in the method used to compute the CAPB. Of the remaining discrepancy (3.2 percentage points), most is explained by the end of a one-time capital transfer made in 1983. In particular, the OECD Economic Outlook database indicates a one-time increase in capital transfers in 1983 that reduced the CAPB-to-GDP ratio by 2.1 percentage points in 1983. When this one-time transfer came to an end in 1984, it caused the CAPB-to-GDP ratio to rise by 2.1 percentage points (OECD Economic Outlook database). Therefore, excluding the influence of this one-time capital transfer, the discrepancy between the standard approach and our action-based approach shrinks from 3.2 percent of GDP to 1.1 percent of GDP (3.2 minus 2.1).[53]

Next we turn to the five cases in the bottom-right corner of Figure 3.15—periods that are identified as large consolidations based on our action-based approach, but which feature either a *fall* or a small increase in the CAPB.

- Ireland (2009): Here, the CAPB-to-GDP ratio *fell* by about 4.4 percentage points, but the historical record reports that fiscal consolidation measures of about 4.5 percent of GDP were implemented in 2009. These measures included

both tax hikes and spending cuts.[54] The fall in the CAPB despite a substantial fiscal consolidation reflects the impact of the financial crisis during which stock and house prices fell sharply.[55] For reasons discussed above, such sharp contractions tend to have a negative impact on the CAPB, causing the CAPB-based approach to inaccurately identify the size of consolidation measures. Indeed, while the CAPB-to-GDP ratio computed by Alesina and Ardagna (2010) falls by 4.4 percentage points, the CAPB-to-GDP ratio computed by the OECD falls by only 1.1 percentage points. As expected, the fall in the CAPB-to-GDP ratio is driven by a sharp decline in cyclically adjusted tax revenue, which falls by 2.6 percentage points in 2009 according to the OECD's calculations. Government tax revenue directly related to asset prices—capital gains taxes and stamp duties—fell by 1 percent of GDP in 2009.[56] Another 0.8 percentage point decline in the CAPB-to-GDP ratio is driven by an increase in cyclically adjusted social security benefit payments that have no counterpart in the policy record. Excluding these cyclically adjusted items, the CAPB-to-GDP ratio rises by 2.3 percentage points ($-1.1 + 2.6 + 0.8$), which represents a large fiscal consolidation and is substantially closer to our estimated size of fiscal consolidation than the Alesina and Ardagna (2010) estimate of -4.4 percentage points.

- Italy (1993): The CAPB-to-GDP ratio increased by only 0.2 percentage point in 1993, but the policy record reports a large consolidation of 4.3 percent of GDP. A plausible reason for this large discrepancy is that there was a sharp economic contraction

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[52] According to the policy record, fiscal consolidation consisted of a "levy of 2 percent a year for three years on earned incomes," which was expected to increase revenue by 0.75 percentage point of GDP in 1984 (1984/1985 *OECD Economic Surveys: Belgium,* p. 11), and spending cuts of 0.13 percent of GDP consisting of cuts to the public sector wage bill, public sector operating costs, and social security savings (IMF, *Belgium: Recent Economic Developments,* 1984, p. 47).

[53] The policy record suggests that the increase in capital transfers in 1983 reflected "direct aid to industry" (1985/1986 *OECD Economic Survey: Belgium,* pp. 25–26).

[54] The 2009 *OECD Economic Survey: Ireland* (p. 50) and EC (2008, p. D15) report spending cuts in 2009 of €1 billion (0.6 percent of GDP) announced in July 2008, and the 2009 *OECD Economic Survey: Ireland* (pp. 50–51) reports additional spending cuts and tax hikes amounting to 3.9 percent of GDP, implying a total consolidation of 4.5 percent of GDP.

[55] Real stock and house prices fell by 44 percent and 20 percent in 2009, respectively (Haver Analytics database).

[56] Revenue from capital gains taxes and stamp duties fell by 73 and 45 percent in 2009 (Ministry of Finance white paper on receipts and expenditures 2009 and 2010). There was also a sharp fall in the cyclically adjusted indirect-tax-to-GDP ratio, which fell by 1.4 percentage points (OECD Economic Outlook database).

in 1993 associated with the European exchange rate mechanism crisis, which, for the reasons explained above, causes the CAPB-based approach to be inaccurate. Indeed, while the CAPB-to-GDP ratio computed by Alesina and Ardagna (2010) increases by 0.2 percentage point, the CAPB-to-GDP ratio computed by the OECD increases by 1.9 percentage points (OECD Economic Outlook database). The OECD's calculation of the change in the CAPB-to-GDP ratio is therefore consistent with a large fiscal consolidation in 1993 (greater than 1.5 percent of GDP). However, even this estimate of fiscal consolidation is substantially smaller than what is in the policy record. In particular, according to the *OECD Economic Surveys* and the *IMF Recent Economic Developments* reports, fiscal consolidation measures in 1993 amounted to more than 4 percent of GDP. The source of the remaining discrepancy vis-à-vis the change in the CAPB-to-GDP ratio could plausibly reflect the fact that, during sharp recessions, cyclical-adjustment techniques tend to allocate part of the fiscal worsening due to automatic stabilizers to a fall in the CAPB. This problem causes the increase in the CAPB to understate the size of fiscal consolidation measures.

- Finland (1992) and (1993): The CAPB-to-GDP ratio *fell* by 2.0 percentage points in 1992 and *rose* by 0.8 percentage point in 1993, but the policy record indicates consolidation measures amounting to 1.8 and 3.8 percent of GDP in 1992 and 1993, respectively. The fall in the CAPB in 1992 despite evidence of fiscal austerity measures during those years was probably due to the depth of the recession after the outbreak of the Finnish banking crisis at the end of 1991.[57] For reasons explained above, these developments probably depressed tax revenue and increased social security transfers beyond what could have been predicted based on standard cyclical-adjustment techniques. In line with this notion, the *cyclically adjusted* tax-revenue-to-GDP ratio fell in 1992 by 1.2 percentage points, and the cyclically adjusted social-security-spending-to-GDP ratio rose by 2.3 percentage

[57] Real GDP fell by 6.4 percent in 1991 and 3.8 percent in 1992, and the unemployment rate increased by 5.1 percentage points in 1992. In 1993, real GDP fell by another 0.9 percent and the unemployment rate increased by 4.6 percentage points.

points (OECD Economic Outlook database). Excluding these two cyclically adjusted items, the CAPB-to-GDP ratio rose by 1.5 percentage points in 1992, close to the size of consolidation based on the policy record (1.8 percent of GDP). Similarly, in 1993, as the sharp recession continued, the cyclically adjusted tax-revenue-to-GDP ratio fell by 1.1 percentage points, and the cyclically adjusted social-security-spending-to-GDP ratio rose by 1.9 percentage points. Excluding these two cyclically adjusted items, the CAPB-to-GDP ratio rose by 3.8 percentage points in 1992, in line with the size of consolidation based on the policy record (3.8 percent of GDP).

- Ireland (1982): The CAPB-to-GDP ratio increased by 0.05 percentage point, but the narrative record indicates fiscal consolidation measures totaling 3.8 percent of GDP. The small increase in the CAPB reflects the problems of cyclical-adjustment techniques during episodes in which consolidation consists of consumption tax hikes and in which there is a large decline in private consumption. In particular, Ireland's 1982 fiscal consolidation package included substantial increases in value-added tax (VAT) rates (from 10 to 18 percent in the lower rate, and from 25 to 30 percent in the standard rate) and in excise duties. At the same time, real private consumption fell by 7.1 percent, although real GDP grew by 2.3 percent, supported by external demand. This is the only year since 1970 in which private consumption fell while GDP grew. The result was a small increase in VAT receipts for a given level of GDP. The change in tax rates is not taken into account by the CAPB-based approach, as fiscal variables are cyclically adjusted with respect to overall GDP and the elasticity is assumed to be constant over time. Therefore, the CAPB-to-GDP ratio fails to pick up the large tax hikes that occurred that year. The OECD's CAPB-to-GDP ratio increases by more than that of Alesina and Ardagna (2010)—0.8 percentage point—leaving a discrepancy of 3 percent of GDP relative to our action-based fiscal consolidation measure. The following simple calculation illustrates how more than half of this remaining discrepancy could be due to the unusual behavior of consumption

during this episode. If the consumption-to-GDP ratio in 1982 had remained at the 1981 level of 65 percent, instead of falling to 59 percent, the VAT hike would have added 1.6 percentage points to the cyclically adjusted tax-to-GDP ratio.[58] This increase in cyclically adjusted tax revenue would have raised the CAPB-to-GDP ratio from the OECD's 0.8 percentage point to 2.4 percentage points, far closer to our action-based measure of fiscal consolidation (3.8 percent of GDP). Overall, this is a case in which the standard approach seems to miss a large part of the fiscal austerity measures.

This examination of the 10 largest disagreements between the two approaches provides strong evidence that our action-based approach more accurately identifies the size of fiscal consolidation. We find seven cases where we are able to identify specific economic or budgetary developments that cause the CAPB-based measures used by Alesina and Ardagna (2010) to inaccurately identify the size of the consolidation and that largely explain the gap between the two measures. In the remaining three cases (Italy in 1993 and Finland in 1992 and 1993), there were crises or large economic contractions that could plausibly have caused the CAPB-based approach to be highly inaccurate. We find no cases where there is evidence that our action-based measure was substantially inaccurate.

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[58] In particular, the indirect-tax-to-GDP ratio in 1982 was 15.3 percent, implying—given the consumption-to-GDP ratio of 59 percent—an average indirect tax rate of about 26 percent. Therefore, keeping the consumption-to-GDP ratio at the 1981 level of 65 percent could have yielded an indirect-tax-to-GDP ratio of 16.9 percent (26 percent × 65 percent)—that is, 1.6 percentage points higher than the actual 15.3 percent.

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DO FINANCIAL CRISES HAVE LASTING EFFECTS ON TRADE?

This chapter looks at trade dynamics following banking and debt crises, to help us understand how trade might evolve for economies recently affected by such crises. Imports of the crisis economy tend to fall substantially in the short term—beyond what would be expected from the decline in output—and they stay depressed through the medium term. In contrast, exports of the crisis economy are not as badly affected. These findings suggest that the recovery of import demand in the United States and much of western Europe may be even more anemic than suggested by their relatively weak projected output recoveries. Thus, the narrowing of the large current account deficits of some crisis countries such as the United States that occurred in 2009 may prove to be quite durable. For economies that experience a crisis, the chapter underscores the importance of embracing structural reforms to help support the recovery of output and trade. For economies that rely heavily on external demand for their growth, the chapter's findings highlight the urgency of reorienting growth by strengthening domestic demand.

One of the most notable features of the Great Recession was the "sudden, severe, and synchronized" collapse in trade in late 2008 and early 2009 (Baldwin, 2009). In the half-year encompassing the last quarter of 2008 and the first quarter of 2009, the annualized drop in world imports was more than 30 percent, with roughly equal declines experienced by advanced and emerging economies (Figure 4.1). The fall in trade spared no one—all economies experienced a drop in both exports and imports during this period. Likewise, growth in trade in virtually all product categories went from positive in the second quarter of 2008 to negative by the first quarter of 2009.

The rapid recovery in trade that began in the second half of 2009 has been remarkable as well.

World imports grew at an annualized rate of more than 20 percent in the last two quarters of 2009 and the first quarter of 2010. However, as this chapter shows, trade remains below its precrisis trend, and for some economies—particularly those hit by a banking crisis—it remains below precrisis levels. Because the recent crises occurred in large, advanced economies that account for a substantial portion of global demand, the speed and extent of their trade recovery will affect the growth prospects not only of the crisis economies but also of their trading partners.

This chapter looks at trade dynamics following banking and debt crises, to help us understand how trade might evolve for economies that are affected by such crises. It continues the research agenda pursued in recent issues of the *World Economic Outlook* to analyze the medium-term macroeconomic consequences of crises. This chapter addresses the following questions:

- To what extent has trade recovered from the recent global recession? Have the speed and extent of the recovery differed among economies, particularly between those that suffered a banking crisis and those that did not? Has the recovery varied across different product groups?
- How has trade behaved in the wake of previous banking and debt crises? Do such crises have lasting effects on trade?
- What factors apart from the level of output are associated with sharp declines in trade following a crisis? And what role can postcrisis policies and conditions play in enhancing the recovery of trade?
- What are the implications for the recovery of trade from the recent crisis? And what lessons can be drawn for the future?

Much of the recent literature on trade and crises has focused on the recent global downturn and specifically on explaining the "Great Trade Collapse"—that is, on why world trade fell by much more than

Figure 4.1. The Great Trade Collapse

The collapse in world trade in late 2008 and early 2009 was sudden, severe, and synchronized.

Legend:
- World
- Latin America
- Other emerging economies
- Advanced economies
- Emerging Asia

Growth Rate of World Real Imports
(percent, quarter-over-quarter seasonally adjusted annual rate)
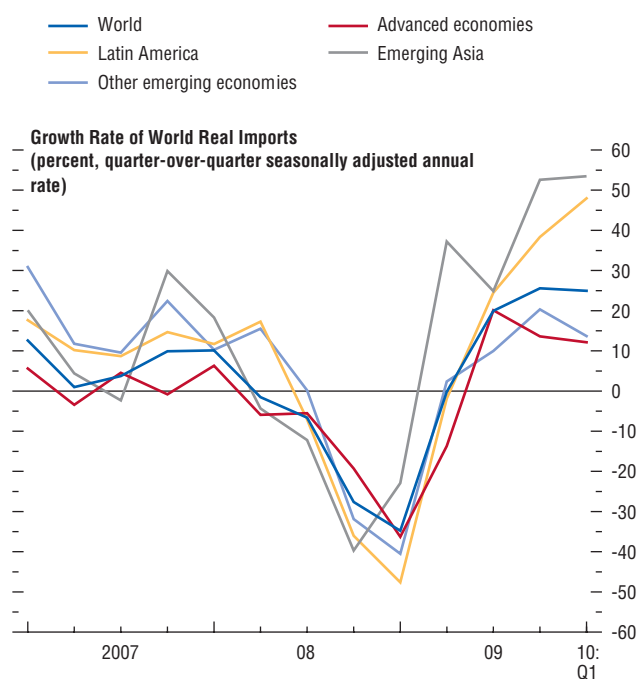
Sources: CPB Netherlands Bureau of Economic Policy Analysis; and IMF staff calculations.

GDP.[1] Only a few papers have looked at the full dynamics of trade—both declines and recoveries—following earlier crises. Among these, Freund (2009) describes the evolution of world trade following four previous global downturns. She finds that the size of the decline in world trade during these episodes is almost five times the corresponding decline in world GDP. She also finds that, while world trade growth resumes quickly following a global downturn, it takes more than three years for trade to reach predownturn levels. This chapter does not focus on trade dynamics following global downturns but instead on what happens to the trade of individual economies that experience a banking or debt crisis; it should thus be seen as a complement to Freund's work.[2]

This chapter uses a methodology derived from the "gravity model," the standard workhorse for modeling trade flows. The gravity model is widely used to explain the level of bilateral trade flows on the basis of individual characteristics of each partner (size and level of economic development) as well as the characteristics of the country pair (distance between them and whether they share a common border, language, or currency). However, the standard gravity model best describes patterns of trade between economies rather than over time and therefore may not provide an accurate picture of what happens to aggregate trade for a particular economy in the aftermath of a crisis. This chapter therefore uses a "collapsed" version of the gravity model, estimated in differences, that analyzes changes in aggregate trade flows.[3] We examine episodes of banking and debt crises over the past 40 years and track the changes in imports and exports both to estimate the overall trade declines and to measure the association of various factors

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[1]See Baldwin (2009) and papers therein for a comprehensive analysis of the recent collapse in global trade.

[2]Similar in spirit and methodology to this chapter is the analysis by Berman and Martin (2010) of the vulnerability of sub-Saharan African economies to financial crises in advanced economies. They find that a financial crisis has a moderate but long-lasting effect on trading partners' exports but that the effect is larger for African exporters.

[3]Estimating the "full" bilateral gravity model in differences gives similar results, as described in Appendix 4.2, which outlines the robustness tests performed as part of this analysis.

such as output and exchange rate dynamics with the postcrisis behavior of trade.

The main findings of the chapter are as follows:

- There is a sharp decline in an economy's imports following a crisis—16 percent, on average—and this decline is persistent, with imports remaining below normal (that is, below their predicted level in the absence of a crisis) even over the medium term. Depressed output does not explain the entire decline in postcrisis imports.

- Exports of the crisis economy are not as adversely affected. There is a small and gradual decline in exports, so that, in the medium term, exports are on average about 8 percent below their predicted level in the absence of a crisis. And unlike for imports, all of the export decline can be explained by adverse output dynamics; after controlling for output declines, export performance is no different from normal.

- Weak output remains the most important factor in the decline of imports in both the short and the medium term, but other factors also play a role. In particular, impaired credit conditions are associated with a weaker recovery in imports (above and beyond the impact of weak credit on output), especially in the medium term. In the short term, increased exchange rate volatility and currency depreciation are associated with import losses. There is no evidence that tariffs and antidumping measures rise, on average, during crisis periods. There is also evidence to suggest that "the composition effect" can account for at least a portion of postcrisis import losses: during crises, demand falls primarily in products that comprise a larger share of trade than of output, such as durables.

- Pre- and postcrisis conditions and policies affect the behavior of trade following a crisis. Import losses tend to be greater for economies entering a crisis with a relatively weak current account position—suggesting that external imbalances tend to diminish following a crisis. Imports also fare worse when the crisis is accompanied by greater currency depreciation and exchange rate volatility, relatively weaker credit conditions, and larger increases in protectionism.

These findings suggest that the full recovery of import demand in countries that recently suffered a banking crisis—including the United States and the United Kingdom—may be even more protracted than suggested by their relatively slow projected output recovery. Thus, the narrowing of the large current account deficits in some crisis countries such as the United States that occurred in 2009 may prove to be quite durable. For economies that experience a crisis, the chapter underscores the importance of embracing structural reforms to help support the recovery of output and trade. For economies that rely heavily on demand from those countries for their growth, the chapter's findings highlight the urgency of rebalancing growth by strengthening domestic demand.

It is important to emphasize from the outset that this chapter seeks to identify patterns and correlations rather than to establish causality between various policies and initial conditions on one hand and postcrisis trade dynamics on the other. Many of the variables we explore, including credit and the exchange rate, are likely to be simultaneously determined with trade. For example, do adverse credit conditions in the aftermath of a crisis hinder trade finance and reduce trade flows? Or are weak credit and anemic trade both manifestations of depressed postcrisis economic conditions? Sorting out these possibilities is beyond the scope of this chapter.

The remainder of the chapter is structured as follows. The first section describes the behavior of trade following the recent global downturn, documenting both the collapse in trade and the recovery to date, and exploring differences across economies and product categories. The second section uses a regression framework to analyze earlier crisis episodes, providing estimates of the size of import and export losses in both the short and medium term. The third section examines the extent to which postcrisis import dynamics are associated with various factors such as credit, protection, and exchange rate dynamics. The fourth section discusses implications for the global economic outlook.

Has Trade Recovered?

As noted above, the collapse in trade between late 2008 and early 2009 was quite severe. The annual-

Figure 4.2. The Recovery in Trade

Growth in world trade is now above precrisis rates. But trade has not fully recovered, with substantial differences between economies that had a financial crisis and those that did not.
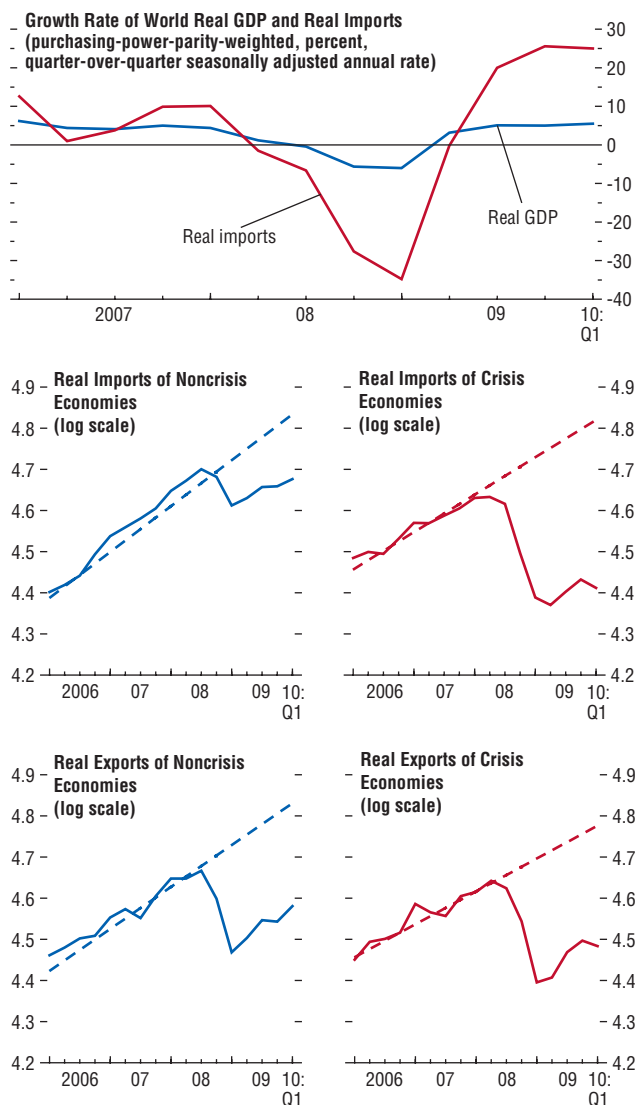
Sources: CPB Netherlands Bureau of Economic Policy Analysis; Haver Analytics; IMF, *Direction of Trade Statistics;* and IMF staff calculations.
Note: The precrisis linear trend, denoted by the dashed line, is based on data between January 2001 and December 2007.

ized quarter-over-quarter drop in global real GDP in the last quarter of 2008 and the first quarter of 2009 averaged just under 6 percent, but the drop in global real imports was five times as large, averaging over 30 percent (Figure 4.2, top panel). The emerging consensus is that much of the outsize decline in trade can be explained by the "composition effect." That is, the increased uncertainty following the bankruptcy of Lehman Brothers in September 2008 and the subsequent freezing of credit markets led to a collapse in demand for "postponable" items such as capital goods and consumer durables. And because those items account for a much larger share of trade than of GDP, the former fell by much more than the latter.[4] Box 4.1 discusses the role of the composition effect and vertical linkages—the use of imported intermediate goods to produce exports—in the recent trade collapse.

The recovery in world trade began in the second half of 2009 and appears quite strong: the annualized growth in world real imports in the last two quarters of 2009 and the first quarter of 2010 was over 20 percent. So has trade fully recovered? Unfortunately, it has not, and the extent of the recovery differs substantially across economies and across products. An important distinction across economies seems to be whether an economy recently went through a banking crisis.[5] In economies that avoided a crisis, imports are just slightly below the precrisis peak reached in the second quarter of 2008, although this still leaves them almost 15 percent below a simple extrapolation of the 2001–07 precrisis trend (Figure 4.2, middle panels).[6] In contrast, imports in the crisis economies remain more than 20 percent below their precrisis levels and almost 40 percent below their precrisis trend. Because the crisis economies include the United States and much of western Europe,

[4]A related but distinct explanation is that firms chose to run down inventories in response to increased uncertainty; see Alessandria, Kaboski, and Midrigan (forthcoming) for evidence from the United States.

[5]As discussed below, our banking crisis episodes are taken from Laeven and Valencia (2010).

[6]Of course, the precrisis trend may reflect unsustainable growth dynamics that ultimately led to a crisis and hence may not be considered "normal." The methodology used in this chapter does not rely on deviations from precrisis trends, but estimates normal trade flows given countries' fundamentals.

Box 4.1. The Role of the Composition Effect and Intermediate Goods in the Great Trade Collapse

The Great Recession was accompanied by a collapse in global trade. This box documents the role of two sets of forces in the trade collapse.[1] The first is the "composition effect" and its contribution to the outsize decline in global trade relative to GDP. The second is the extent to which trade in intermediate goods made global trade more or less resilient to the global recession.

The focus on these two forces is motivated by two key facts:

- The contraction in final demand during the recent crisis was asymmetric across sectors, with demand for durables falling by considerably more than demand for nondurables or services. For example, demand for durables in the United States and the European Union fell by more than 30 percent and 20 percent, respectively, whereas demand for nondurables and services fell by only 1 to 3 percent (first figure, top panel).[2] Because durable goods have a larger weight in trade flows than in final demand (bottom panel), the asymmetrical changes in demand across sectors caused global trade to fall by more than aggregate demand.

- Two-thirds of global trade comprises intermediate inputs to production rather than final goods, and these two categories respond differently to a contraction in final demand. Intermediate goods are linked only indirectly to final demand, whereas final goods are linked directly. In addition, durables, nondurables, and services have different weights in overall trade flows for final and intermediate goods.

We use a multicountry, three-sector (durables, nondurables, services) framework to compute the relative contributions of these two factors to the collapse in global trade during 2008–09. Our framework combines information from national input-output matrices with detailed data on

The authors of this box are Rudolfs Bems, Robert C. Johnson, and Kei-Mu Yi.
[1]The discussion is based on Bems, Johnson, and Yi (forthcoming).
[2]The United States and European Union together account for more than half of global demand and are representative of the observed sectoral demand contraction in the rest of the world.

Ingredients of the Composition Effect

Durables   Nondurables   Services

Contraction in Sectoral Final Demand, 2009:Q1/2008:Q1 (percent)
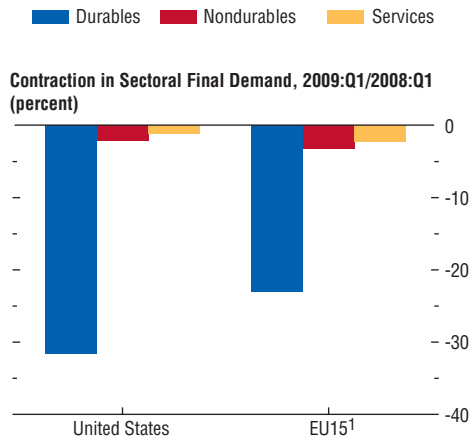
Sectoral Weights in Global Final Demand and Gross Trade[2]
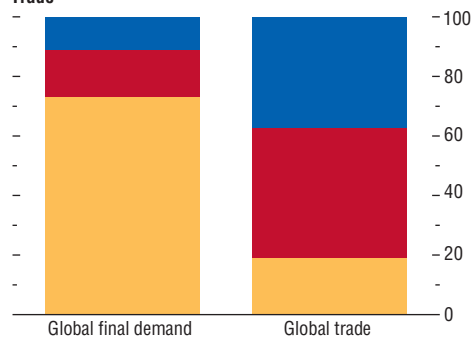
Source: Bems, Johnson, and Yi (forthcoming).
[1]EU15: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, Netherlands, Portugal, Spain, Sweden, United Kingdom.
[2]Data based on the most recent national input-output tables, which for most economies cover the post-2000 period.

bilateral trade flows for both intermediate and final goods to establish various interrelationships—for example, the extent to which durable goods imported from Mexico into the United States are used to produce services that are subsequently exported to Canada.[3]

[3]See Johnson and Noguera (2010) for details. The framework is parameterized by combining national input-output tables with bilateral trade data, both obtained from the Global Trade Analysis Project.

Box 4.1 *(continued)*

In this framework, changes in final demand shape trade flows through two channels: (1) Imports of final goods change proportionally to domestic final demand within each sector. (2) Imports of intermediate goods change proportionally to gross production within each sector, which itself responds to changes in final demand at home and abroad. If final demand changes symmetrically across sectors, then trade flows are proportional to aggregate production and GDP. However, with asymmetrical demand changes, this proportionality does not hold.

How Important Was the Composition Effect?

To estimate the size of the composition effect, we calculate how much output and trade would fall under our framework given the observed sector-specific final demand changes in the United States, the European Union, and the rest of the world. We then compare the simulated response of trade and output to what actually happened during the Great Recession. Our framework estimates a fall in global trade that exceeds the fall in global GDP by a factor of 2.8, explaining more than 70 percent of the observed trade elasticity in the data (second figure). For comparison, a more restrictive, two-sector framework with the same size demand changes for durables and nondurables accounts for 60 percent of the collapse; and a one-sector framework, which eliminates all composition effects, generates a fall in trade that is roughly proportional to GDP.

These results are consistent with other recent efforts to quantify composition effects. Eaton and others (2010) find that asymmetrical demand changes account for 80 percent of the global decline in the trade-to-GDP ratio during the crisis in a three-sector Ricardian trade framework. Levchenko, Lewis, and Tesar (forthcom-

Elasticity of Global Trade to GDP[1]
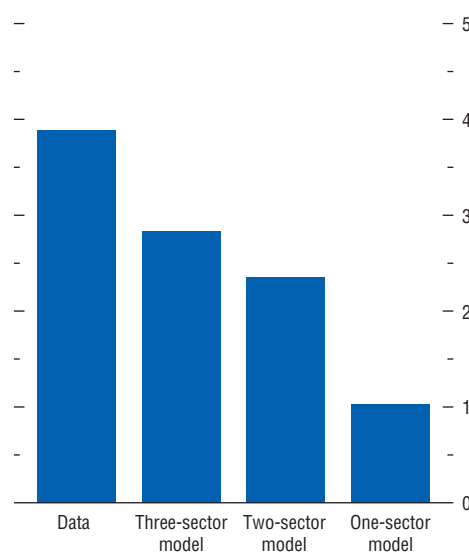
Source: Bems, Johnson, and Yi (forthcoming).
[1]Data refer to 2009:Q1/2008:Q1. One-sector and two-sector models use the same change in final demand as the three-sector model but impose restrictions on its distribution across sectors. The two-sector model restricts the demand change to be equal for durables and nondurables. The one-sector model restricts the change to be equal for durables, nondurables, and services.

ing) report that, for the U.S. economy, sectors with larger reductions in domestic output had larger drops in trade.

How Important Was Trade in Intermediate Goods?

To gauge the role of intermediate goods trade in the crisis, we compare the responses of trade in intermediate and final goods to crisis-induced changes in final demand. As noted, both intermediate and final goods trade would respond propor-

which account for a sizable portion of global import demand, exports remain substantially below trend for crisis and noncrisis economies alike (Figure 4.2, bottom panels). In both sets of economies, exports remain about 25 to 30 percent below precrisis trends.

The extent of the recovery has also differed across various product categories. Among the four catego-

ries shown in Figure 4.3, consumer nondurables declined the least during the collapse, and the subsequent recovery has brought trade in these products almost completely back to its precrisis trend. Primary goods (a category that includes commodities and that went through a boom just prior to the crisis) and intermediate goods both experienced sharp declines,

tionally to demand changes that were symmetric across sectors. With asymmetrical demand changes and given the assumptions of our framework, the response of trade in final goods depends on the size of sectoral *demand* asymmetries and sectoral trade weights, whereas the response of trade in intermediate goods depends on the size of sectoral *supply* asymmetries and sectoral trade weights. All the necessary ingredients for the estimation are obtained from the framework.

Simulations show that trade in intermediate goods was more resilient to the decline in final demand during the recent global downturn. The relative resilience of trade in intermediates to observed changes in final demand can be explained by two factors:

- The sectoral asymmetries for changes in gross production (derived from our framework) are smaller than the observed sectoral asymmetries in final demand (third figure, top panel).[4]
- Durables have a smaller weight in intermediate goods trade relative to their weight in final goods trade (bottom panel).

The differences in the responses of trade in intermediate and final goods are quantitatively large. The elasticity of global trade in final goods to GDP is estimated at 4.3, whereas the same elasticity for trade in intermediates is 2.0. These results are broadly consistent with the chapter's finding that, in crisis episodes, trading partners with greater production sharing show smaller declines in exports to the crisis economy.

[4]This result follows from the observation that services constitute a relatively large input in the production of durables and, as a result, a contraction in final demand for durables can significantly decrease the gross production of services.

The Composition Effect for Trade in Final Goods and Intermediates
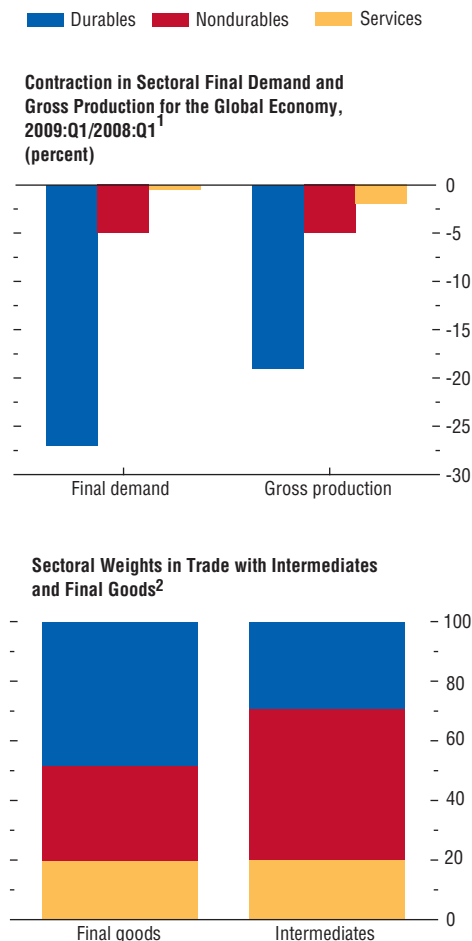
Source: Bems, Johnson, and Yi (forthcoming).
[1]Sectoral demand contraction based on data. Sectoral contraction in gross production are model-based estimates.
[2]Data based on the most recent national input-output tables, which for most economies cover the post-2000 period.

but both are less than 10 percent below their precrisis trend. In contrast, and as mentioned earlier, the largest collapse was in capital and consumer durables, and while there has been some recovery, trade in that product category still remains almost 20 percent below its precrisis trend.

In sum, while the global trade collapse spared no one, import dynamics were particularly adverse for economies that went through a banking crisis. And while the recovery in trade has commenced, it is highly uneven, with imports of crisis economies still substantially below precrisis trends or even precrisis levels. Finally, among product groups, capital and

consumer durables remain farthest from closing the gap. Are these just transitory deviations from normal, or might these gaps persist? Where might trade be headed from here? The following section examines the historical record for some clues.

Trade Dynamics following Previous Crises

The global reach and scale of the recent financial crisis have few precedents, but history is replete with individual economies experiencing either a banking or a debt crisis. Laeven and Valencia (2008, 2010), whose crisis dates are used in this chapter, identify 129 episodes of systemic banking crises since 1970—defined as situations in which the financial sector experiences a large number of defaults, nonperforming loans increase sharply, and all or most of the aggregate banking system capital is used up. They also identify 63 episodes of sovereign debt crises over the same period—defined as an episode of sovereign debt default and/or restructuring.[7] We focus here on banking and sovereign debt crises because the most recent crises in the large advanced economies have been systemic banking crises and because the prospect of a sovereign debt crisis in a number of economies has been increasing. The chapter does not focus on currency crises, because trade dynamics following such crises are fundamentally different—the most important characteristic of currency crises is, by definition, a large exchange rate decline, which greatly influences the postcrisis dynamics of both imports and exports. In addition, large and abrupt depreciations did not characterize the most recent financial crises in advanced economies. Nevertheless, in this analysis we investigate the role of the exchange rate—changes in both its level and its volatility—in influencing the behavior of trade following banking and debt crises.

Our methodology for analyzing postcrisis trade is derived from the gravity model, the standard work-

Figure 4.3. Trade Dynamics in Different Product Groups
(Trade volume index, 2008:Q1 = 100)

The recent collapse and recovery in trade has been uneven across products. Consumer nondurables were least affected, and trade in these products is now close to its precrisis trend. In contrast, trade in capital and consumer durables suffered the largest decline and remains substantially below trend.

Sources: Global Trade Atlas; and IMF staff calculations.
Note: The precrisis linear trend is based on data between January 2001 and December 2007. Data only cover imports of the following: Argentina, Australia, Brazil, Canada, China, Japan, Korea, Russia, South Africa, Turkey, and United States.

[7]Among the banking and debt crises in the Laeven-Valencia data set are 10 cases in which the two coincide. An analysis of these "twin banking and debt crises" suggests that trade dynamics following these episodes were qualitatively similar to those with only one type of crisis, although the effects were slightly more accentuated. We do not highlight these in the chapter, however, given the limited number of observations.

horse in the empirical trade literature.[8] The gravity model relates the level of bilateral trade flows—or alternatively, import and export flows separately—to characteristics of the importing and exporting economies (most notably size and level of development) as well as to country-pair characteristics such as distance between them and whether they share a common border or language. These and other time-invariant country-pair characteristics can also be controlled for by the inclusion of country-pair dummy variables. The gravity model has been in use since the 1960s, and its popularity has derived in large part from its ability to empirically fit the trade data, that is, to describe what normal bilateral trade flows should be, given economies' fundamentals. The literature has used this framework to investigate a number of questions, including the impact of trade agreements (Frankel, Stein, and Wei, 1996), currency unions (Rose, 2000), exchange rate volatility (Thursby and Thursby, 1987), and war (Glick and Taylor, 2010; and Martin, Mayer, and Thoenig, 2008). The use of the gravity model has also been supported by recent attempts to strengthen its theoretical microfoundations (see Anderson and Van Wincoop, 2003, among others).

The approach taken in this paper is a collapsed version of the gravity model that uses aggregate imports or exports of a given economy rather than bilateral trade flows. This is done because our primary concern is in describing the evolution of aggregate trade, not bilateral trade. And the model is estimated in growth rates rather than in levels to better model the dynamics of trade over time. The results are robust to estimating the standard bilateral gravity model in changes as well as to other changes in specification. (Appendix 4.2 outlines the econometric specifications used and the robustness of the main results to alternative econometric specifications.)

Our sample consists of 154 advanced as well as emerging and developing economies covering the period 1970–2009. Bilateral and aggregate import and export flows for each economy are obtained

from the IMF's Direction of Trade Statistics (DOTS) database. We also extend the NBER-UN World Trade Flows database (Feenstra and others, 2005) to analyze trade patterns by product category. (Data sources are outlined in Appendix 4.1.) Growth in aggregate imports and exports is then modeled as a function of contemporaneous and lagged values of a crisis dummy variable, changes in economic fundamentals (primarily economic size, as proxied by GDP), and changes in the (import- or export-weighted) characteristics of its trading partners.[9] To control for economies' characteristics that do not change over time, country dummies are also included. Finally, all our specifications include time dummies to control for factors that affect all economies' trade simultaneously, such as global downturns or increases in global uncertainty or risk aversion.

What Happens to Imports and Exports after a Crisis?

We first estimate the *unconditional* behavior of an economy's imports and exports—that is, without controlling for output—to gauge the extent to which trade is affected in the aftermath of a crisis. On average, imports fall by about 8 percent in the crisis year (Figure 4.4, top-left panel; Table 4.1). An additional drop of about 8 percent occurs the following year. There is little sign of recovery in subsequent years, so that by the fifth year after the crisis, imports remain about 19 percent below their level predicted in the absence of a crisis. That pattern—a sharp short-term drop in imports followed by little or no recovery in the medium term—is also evident when looking at debt crises and banking crises separately, although medium-term effects are more adverse for the former (Figure 4.4, middle-left and bottom-left panels). The differences in import dynamics between the two types of crisis are not statistically significant, however.

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[8]See Baldwin and Taglioni (2006) for a survey of the use of gravity models in the literature, as well as the pitfalls faced in estimating them.

[9]Most gravity models in the literature are typically estimated in levels and also include GDP per capita. When estimating the model in changes, however, there is a very high correlation between the growth rates of GDP and GDP per capita, and so we exclude the latter in our baseline specification. The results reported below are very similar if one includes own and trading partners' growth in GDP per capita.

Figure 4.4. Import and Export Losses, Not Controlling for Output

(Percent deviation from normal; years on x-axis; crisis begins at t = 0)

There is a sharp and significant decline in imports in the first two years after a crisis and no recovery in subsequent years. Exports exhibit a smaller and more gradual decline, which is marginally significant in the medium term. Trade dynamics are similar following debt and banking crises, although the adverse dynamics of imports and exports are slightly (but not significantly) more severe following debt crises.
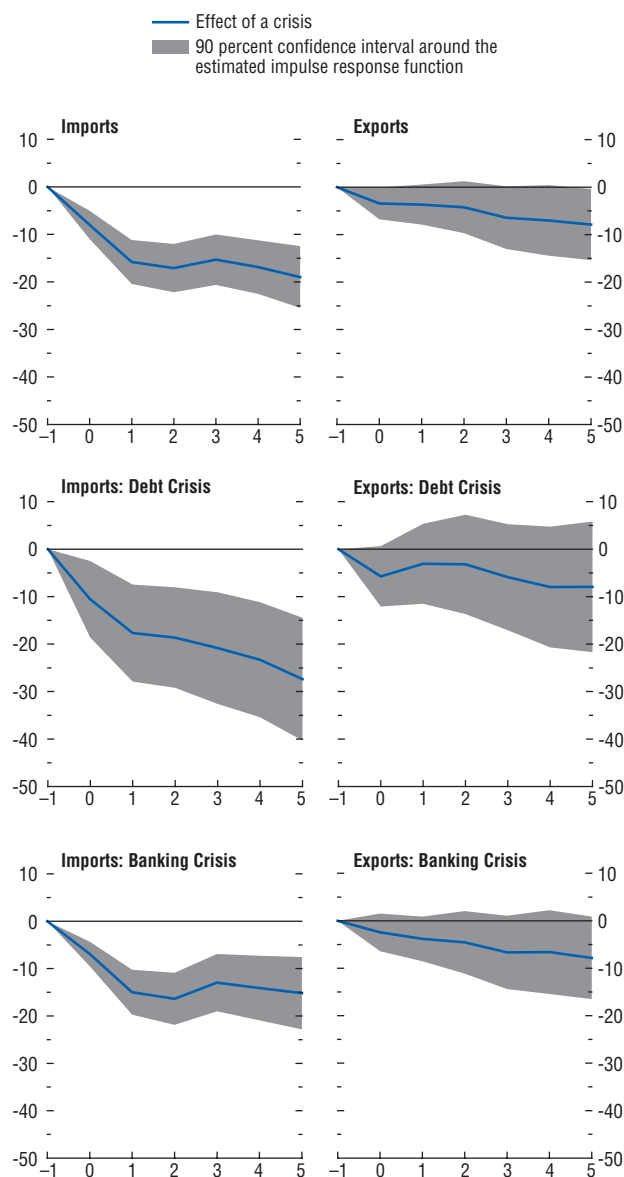
— Effect of a crisis

▆ 90 percent confidence interval around the estimated impulse response function

Source: IMF staff calculations.
Note: Blue lines indicate the impulse response function – the effect of a crisis on imports and exports relative to what would be predicted in the absence of a crisis. Predictions are based on contemporaneous and lagged crises, and country and time dummies.

The effect on exports is smaller and more gradual (Figure 4.4, top-right panel). There is no sharp drop in exports in the short term; exports drop by only 3 percent on average at the onset of a crisis. There is, however, a gradual deterioration in exports, so that by the fifth year after a crisis, exports are on average about 8 percent lower than normal, and the difference is marginally significant. The smaller decline in exports relative to imports implies that, on average, the external trade balance tends to improve after a crisis. Similar patterns of gradual export decline are observed for debt and banking crises separately, although the variation in export losses is larger following debt crises (Figure 4.4, middle-right and bottom-right panels). As was the case for imports, the differences in export dynamics between the two types of crisis are not statistically significant, and in the subsequent analysis we simply look at banking and debt crises together.[10]

These results are robust to the use of a number of alternative methodologies for estimating losses. The first and simplest methodology for calculating losses, adopted from Chapter 4 of the October 2009 *World Economic Outlook*, looks at deviations of imports and exports from a precrisis trend. A second robustness test is to include autoregressive terms in the estimation to more closely parallel the specification used in studies such as Romer and Romer (2010) and Cerra and Saxena (2008). Third, the full bilateral gravity model in changes is estimated, using both the full sample and the top 20 partners of each country. Finally, to address the concern that our findings may be driven by large depreciations accompanying banking and debt crises, we isolate episodes that did not coincide with currency crises. All methodologies produce qualitatively similar results. Further details on these robustness tests are reported in Appendix 4.2.

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[10] The larger and more persistent losses in imports relative to exports may reflect the consequences of weak balance sheets (or other financial difficulties) for domestic demand. Although lower domestic demand directly reduces import volumes, it may also reduce residents' consumption of exportable goods, freeing up room for more exports.

Table 4.1. Baseline Regressions and Implied Changes in the Levels of Imports and Exports

	Imports				Exports			
	Unconditional		Conditional		Unconditional		Conditional	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Coefficient	IRF[1]	Coefficient	IRF[1]	Coefficient	IRF[1]	Coefficient	IRF[1]
Crisis at t	−0.080***	−0.080***	−0.040**	−0.040***	−0.034	−0.034	−0.007	−0.007
	(0.018)	(0.018)	(0.017)	(0.017)	(0.020)	(0.020)	(0.020)	(0.020)
Crisis at $t-1$	−0.078***	−0.158***	−0.034**	−0.073***	−0.002	−0.037	0.019	0.012
	(0.018)	(0.029)	(0.016)	(0.026)	(0.017)	(0.026)	(0.017)	(0.027)
Crisis at $t-2$	−0.013	−0.171***	−0.003	−0.077***	−0.006	−0.042	0.003	0.015
	(0.016)	(0.031)	(0.015)	(0.030)	(0.019)	(0.033)	(0.019)	(0.034)
Crisis at $t-3$	0.018	−0.153***	0.014	−0.063*	−0.022	−0.064	−0.018	−0.003
	(0.014)	(0.032)	(0.013)	(0.034)	(0.020)	(0.040)	(0.021)	(0.041)
Crisis at $t-4$	−0.016	−0.169***	−0.014	−0.077**	−0.006	−0.070*	0	−0.003
	(0.013)	(0.034)	(0.012)	(0.035)	(0.015)	(0.045)	(0.015)	(0.046)
Crisis at $t-5$	−0.021	−0.190***	−0.012	−0.089**	−0.009	−0.079*	−0.001	−0.004
	(0.015)	(0.040)	(0.014)	(0.039)	(0.014)	(0.046)	(0.013)	(0.047)
R^2	0.12		0.21		0.11		0.18	
N	4,754		4,754		4,753		4,753	

Source: IMF staff calculations.

Note: The table presents the results of regressing the growth in imports/exports on an indicator for crisis and its five lags, country, and year fixed effects. Robust standard errors clustered by country are reported in parentheses. ***, **, and * indicate significance at the 1, 5, and 10 percent level, respectively. Columns (3) and (7) control for own and partner growth in GDP, and for measures of trade-weighted crises in partner countries and their lags. The implied changes in the levels of imports/exports in columns (2), (4), (6), and (8) are calculated as the cumulative sum of the estimated coefficients on the crisis indicator and its lags from the regressions shown in columns (1), (3), (5), and (7), respectively.

[1]Impulse response function.

Does Output Fully Explain the Behavior of Imports and Exports?

Previous studies, including Chapter 4 of the October 2009 *World Economic Outlook* and Cerra and Saxena (2008), find that output declines significantly following financial crises and stays depressed over the medium term. Is the behavior of trade described above simply a reflection of these postcrisis output dynamics? To address this issue, we control for output by adding GDP of both the home economy and trading partners. Whereas standard gravity models assume that the elasticity of trade to output is uniform across economies and over time, we relax this assumption in our analysis because these elasticities are crucial for assessing whether trade behavior is fully explained by output.[11] The top panel of Figure 4.5 and Table 4.1 suggest that

while depressed output contributes significantly to the adverse evolution of imports, it does not explain all of it. Controlling for output reduces the estimated import losses substantially—by about 10 percentage points in both the short and the medium term (Table 4.1). However, the import losses remain significantly different from zero.

The finding that output does not explain all of the adverse behavior of imports is robust to several tests. One possibility is that the estimated elasticity of imports to output picks up the sensitivity of imports to long-term or trend movements in output; if the elasticity of imports to cyclical fluctuations or during crisis periods is larger, then imposing a fixed elasticity would result in large unexplained declines in imports during cyclical downturns or crises, even after controlling for output. To test for this, we allow the coefficient on output to vary during crisis and noncrisis

[11]Specifically, we allow the elasticity to vary across regions as defined in the World Economic Outlook database (defined in Appendix 4.1) and also to vary between the pre-1990 and

post-1990 periods. Assuming a uniform elasticity results in larger estimated import losses, as reported in Appendix 4.2.

Figure 4.5. Import and Export Losses, Controlling for Output

(Percent deviation from normal; years on x-axis; crisis begins at t *= 0)*

Imports remain depressed even after controlling for output and other standard gravity controls. In contrast, exports are no longer significantly different from zero when these controls are added.
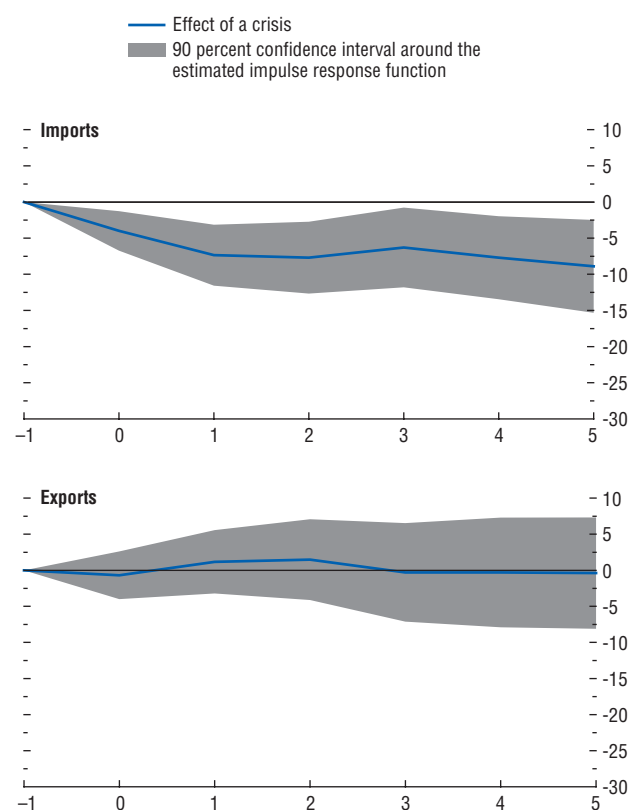
Source: IMF staff calculations.
Note: Blue lines indicate the impulse response function – the effect of a crisis on imports and exports relative to what would be predicted in the absence of a crisis. Predictions are based on a collapsed gravity model in changes, with contemporaneous and lagged crises, home and trade-weighted partner output, a trade-weighted partner crisis dummy, and country and time dummies.

periods; we also allow it to vary across the trend and cyclical components of output, where the trend and cycle were separated using a Hodrick-Prescott filter. In both cases, the elasticity of imports to higher-frequency movements in output was indeed found to be significantly higher. Finally, we include lags of GDP growth in the specification. Nevertheless, the adverse behavior of imports remained, even after controlling for output. It is also robust to the use of alternative methodologies described in Appendix 4.2.

In contrast to import behavior, much of the behavior of exports following a crisis seems to be associated with adverse output dynamics (Figure 4.5, bottom panel). After controlling for output, exports are close to normal, and the estimated deviation is not statistically different from zero either in the short or the medium term. Because of this, the remainder of the chapter focuses on imports, which seem to bear the primary impact of crises.

Do Dynamics Differ across Products, Trading Partners, and Crises?

The previous section noted significant differences in the behavior of trade in various product categories during the most recent global downturn. Is this pattern also borne out in earlier crises? Figure 4.6 shows some similarities between the most recent global downturn and earlier crises, but it also shows some differences.[12] In the past, as in the more recent global downturn, capital and consumer durables experienced the largest short-term decline, with an average drop of almost 15 percent in the second year after the crisis, even after controlling for changes in output. There was little sign of recovery in imports for this product category over the medium term. The other three product categories also experienced significant drops in the short term but of less than 10 percent. However, these product categories exhibited further deterioration over

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[12]It should be noted that the behavior of imports illustrated in Figure 4.3 covers only 13 economies and includes both crisis and noncrisis economies, whereas Figure 4.6 shows the behavior of imports in these product groups for crisis economies only. In addition, Figure 4.3 presents unconditional import losses, whereas Figure 4.6 shows losses after controlling for output and other variables.

the medium term, which is somewhat puzzling, especially because the analyses that find these losses already control for output.[13]

It is also possible that different trading partners' exports to the crisis economy are affected in different ways. Are some trading partners' exports more resilient than others? One factor that does seem to matter is the strength of international production linkages—the use of intermediate imported goods in the production of exports.[14] Greater production sharing tends to make trade more resilient: the more vertically integrated a crisis economy is with a trading partner, the smaller the decline in imports from that trading partner (Figure 4.7). The finding is consistent with the idea of a "beachhead effect," with firms that have incurred the sunk costs of entering a relationship unwilling to leave simply because conditions turn bad.[15]

Finally, we evaluate whether trade dynamics differ if a crisis coincides with a global downturn, where the latter is defined as in Freund (2009).[16] About one-fifth of earlier crisis episodes occurred during years of global downturns. Economies that

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[13]If past crises typically occurred in lower-income countries with weak social safety nets, it is possible that crises and the resulting (uncushioned) rise in unemployment would lead to declines even in consumer nondurables. See, for example, Friedman and Levinsohn (2003) for an analysis of the impact of the 1997 Asian crisis on Indonesian households. The effects would remain even in the regressions that control for output if the measured GDP decline failed to adequately capture the adverse impact on poorer households.

[14]We measure the intensity of production linkages between two countries by the ratio of value-added to exports (VAX) of Johnson and Noguera (2010). The VAX ratio, constructed from input-output tables and bilateral trade across a large sample of countries, captures the extent to which the exports from country A to country B are used as intermediate goods in the production of country B's exports.

[15]See Baldwin (1988), who proposed beachhead effects as one potential explanation for hysteresis in international trade. Our findings are also consistent with other studies, such as that by Altomonte and Ottaviano (2009), who note the resilience of trade between western and central Europe during the recent crisis, and Bernard and others (2009), who document the resilience of intra-Asian "supply chain" trade following the Asian crisis.

[16]Specifically, Freund (2009) defines global downturns as years when world real GDP growth is (1) below 2 percent, (2) more than 1.5 percentage points below the previous five-year average, and (3) at its minimum relative to the previous two years and the following two years. The procedure identifies the following global downturns: 1975, 1982, 1991, 2001, and 2008.

Figure 4.6. Import Losses in Different Product Groups, Controlling for Output
(Percent deviation from normal; years on x-axis; crisis begins at t = 0)

Imports of capital and consumer durables fall most sharply in the short term, as in the recent crisis. Imports in other product groups fall more gradually but steadily over time.
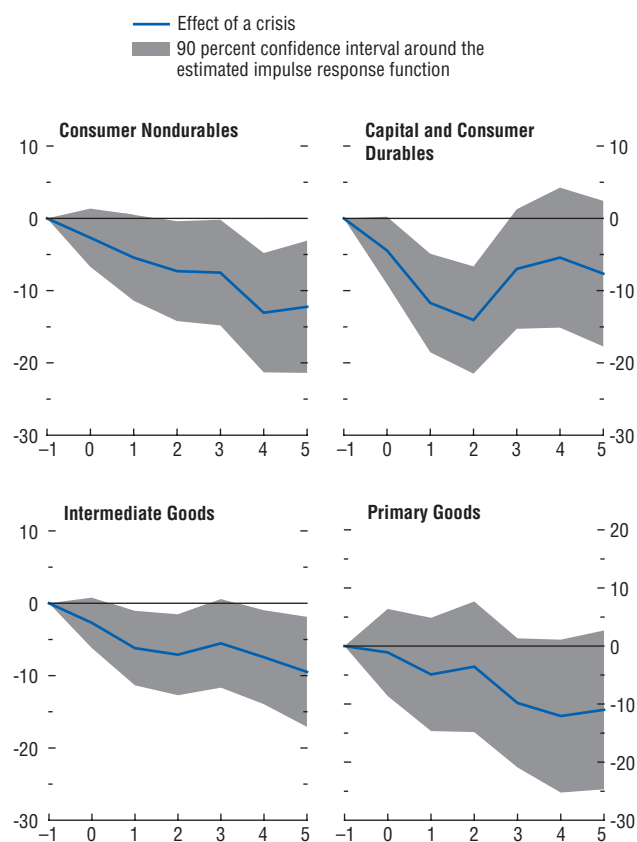
Source: IMF staff calculations.
Note: Blue lines indicate the impulse response function – the effect of a crisis on imports relative to what would be predicted in the absence of a crisis. Predictions are based on a collapsed gravity model in changes, with contemporaneous and lagged crises, home and trade-weighted partner output, a trade-weighted partner crisis dummy, and country and time dummies.

Figure 4.7. Import Losses and Production Linkages, Controlling for Output
(Percent deviation from normal; years on x-axis; crisis begins at t *= 0)*

Stronger production linkages between economies tend to make trade more resilient. The more vertically integrated a crisis economy is with a trading partner, the smaller the decline in imports from that trading partner.
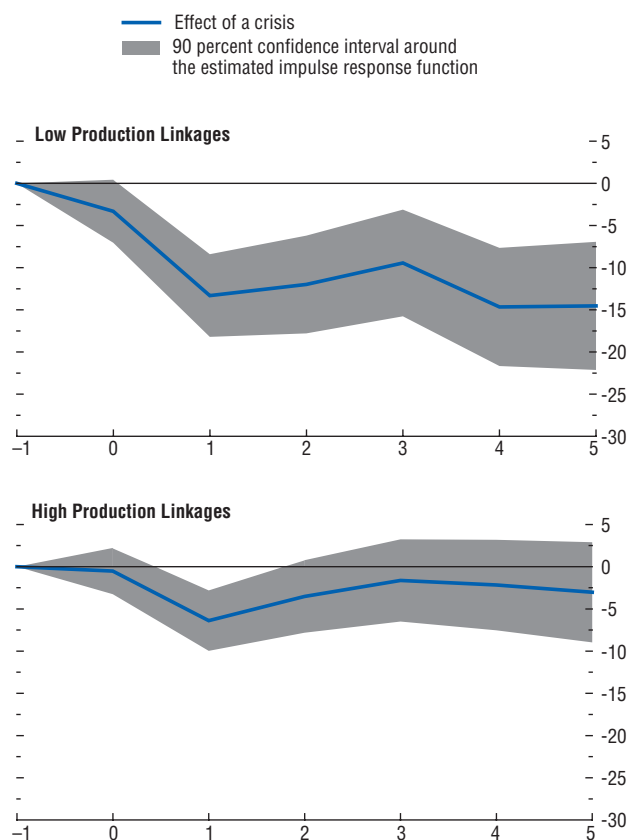
Sources: Johnson and Noguera (2010); and IMF staff calculations.
Note: Blue lines indicate the impulse response function – the effect of a crisis on imports relative to what would be predicted in the absence of a crisis. Predictions are based on a gravity model in changes, with contemporaneous and lagged crises, home and partner output and output per capita, partner crisis dummies, and importer-exporter and time dummies. Importer-exporter pairs are split into those with above-median value-added-to-exports ratios as of 2006 (low production linkages) and those below the median (high production linkages). The value-added-to-exports ratios are from Johnson and Noguera (2010).

experienced a crisis during a global downturn had deeper import and export losses, both unconditionally and after conditioning on output (Figure 4.8). The unconditional import losses remain larger than the export losses, and so, even in these cases, net exports of the crisis economies still tend to improve. This suggests that such financial crises may result in deeper trade losses than historical episodes that did not coincide with a global downturn.

Do Precrisis Conditions Matter?

The import dynamics in Figures 4.4 and 4.5 present only the average behavior across all historical crisis episodes. But might import dynamics differ depending on precrisis conditions? For example, an economy that entered the crisis with a relatively deteriorated current account balance may see more of an adjustment in relative prices, so that imports may fare relatively worse than in an economy that entered a crisis with a more favorable current account position. The top panels of Figure 4.9 suggest that this is the case. For the subsample of crisis episodes with above-median precrisis current account balances, there was no deterioration in imports after controlling for output; for the subsample with below-median precrisis current account balances, the import loss after controlling for output was much larger and more persistent.

Similarly, economies with a higher degree of financial or trade openness entering the crisis seemed to experience a smaller import loss (Figure 4.9, middle and bottom panels). While the exact nature of the association between precrisis openness and postcrisis trade dynamics is unclear, we have two conjectures. First, greater financial openness could mean less dependence on the domestic banking sector, especially for trade finance. If this is the case, then a banking crisis that damages the domestic financial sector could have less of an impact in more financially open economies. Second, the association between trade openness and postcrisis dynamics could be related to the greater trade resilience of more vertically integrated economies, because economies with the strongest production linkages also tend to have relatively high measured levels of trade integration.

What Factors Are Associated with Postcrisis Import Dynamics?

If output does not explain all the behavior of imports following a crisis, then what does? Potential additional explanations, which have been discussed in the context of the recent crisis, include the following:

- *Impaired credit:* Banking crises in particular are associated with a tightening of credit conditions—Abiad, Dell'Ariccia, and Li (forthcoming) find that when a downturn is associated with a banking crisis, a "creditless recovery" (one in which real credit growth is negative) becomes twice as likely. If the downturn is also preceded by a credit boom, the likelihood of a creditless recovery quadruples and becomes a near certainty. Difficulty in obtaining credit may have deleterious effects on imports, above and beyond any effects weak credit might have on aggregate demand.[17]

- *Increased protectionism:* In the aftermath of a crisis, interest groups that favor protecting domestic production may be strengthened.[18] Increased protection need not come in the form of increased tariffs; it may also be manifest in increased use of antidumping measures and other forms of "murky protectionism," such as clauses in stimulus packages that restrict spending to domestic producers. Box 4.2 discusses the use of protectionist measures and their effect on trade in the wake of the recent crisis.

- *Exchange rate dynamics:* Imports may be adversely affected by changes in both the level and the volatility of exchange rates. Kaminsky and Reinhart (1999) note that many banking crises are also associated with sharp depreciations of the currency; in such cases the swing in relative prices would hurt imports but boost exports. In addition, exchange rate variability may increase during crisis periods, and increased variability has

[17]See Amiti and Weinstein (2009), Iacovone and Zavacka (2009), and Chor and Manova (2010) for the importance of trade finance and credit in explaining export performance during crises.

[18]For example, the Great Depression was followed by a "wholesale rise in protectionism," which not only slowed the process of economic recovery but created lasting protectionist legacies in a number of countries (see O'Rourke, 2009).

Figure 4.8. Trade Losses during Global Downturns
(Percent deviation from normal; years on x-axis; crisis begins at t = 0)

Import and export losses are higher after crises that occur during global downturns.
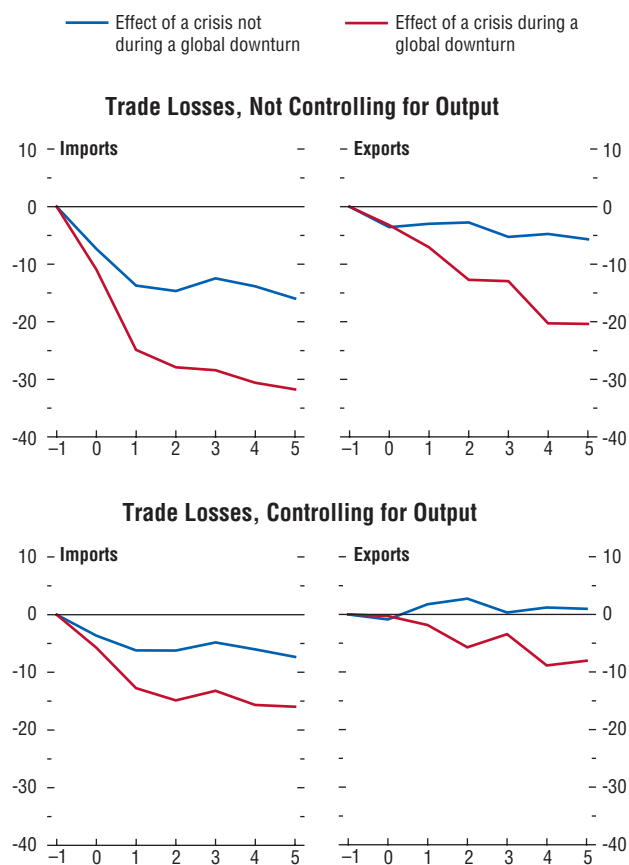
Source: IMF staff calculations.
Note: Lines indicate the impulse response function—the effect of a crisis on imports and exports relative to what would be predicted in the absence of a crisis. Predictions of unconditional losses are based on contemporaneous and lagged crises, country and time dummies, and interactions of contemporaneous and lagged crises with years of global downturns. Predictions of conditional losses are based on a collapsed gravity model in changes, with contemporaneous and lagged crises, home and trade-weighted partner output, a trade-weighted partner crisis dummy, country and time dummies, and interactions of contemporaneous and lagged crises with years of global downturns. The definition of global downturns follows Freund (2009), and includes 1975, 1982, 1991, 2001, and 2008.

Figure 4.9. Precrisis Characteristics and Import Losses, Controlling for Output
(Percent deviation from normal; years on x-axis; crisis begins at t = 0)

Economies that entered a crisis with a low current account balance or a lesser degree of trade or financial openness experienced deeper import losses even after controlling for output and other standard gravity controls.

— Effect of a crisis
■ 90 percent confidence interval around the estimated impulse response function

Source: IMF staff calculations.
Note: Blue lines indicate the impulse response function – the effect of a crisis on imports relative to what would be predicted in the absence of a crisis. Predictions are based on a collapsed gravity model in changes, with contemporaneous and lagged crises, home and trade-weighted partner output, a trade-weighted partner crisis dummy, and country and time dummies. Crisis episodes are split into those for which the current account balance, degree of financial openness, and trade openness are, respectively, above or below the crisis sample median in year t –1.

been shown to adversely affect trade (Thursby and Thursby, 1987).

- *The composition effect:* Because certain product categories represent a greater share of trade than of output, a fall in demand for these products will result in a larger drop in trade than in output. Crises may lead to a greater fall in demand for goods than for services, for example, and most trade is in goods, whereas services account for the bulk of output. And within goods, durables form a larger share of trade than of output. As noted in Box 4.1, the composition effect seem to explain much of the outsize drop in trade during the recent crisis. Unfortunately, the lack of comprehensive historical data on the composition of demand precludes a detailed investigation of this particular mechanism, but below we present some evidence that suggests that composition effects played at least a partial role even in earlier crises.

For these mechanisms to be associated with the observed postcrisis import dynamics, not only should these factors have an adverse effect on imports, they should also tend to worsen during crisis periods. To investigate the role of each of these mechanisms, we follow a three-step approach. In the first step, we estimate impulse-response functions to gauge how credit, protection, and exchange rate dynamics evolve in the aftermath of a crisis. In the second step, we estimate the elasticity of imports with respect to these factors. The third step combines the first two steps to obtain an estimate of how much each mechanism can account for postcrisis import dynamics. Details are described in Appendix 4.2. It should be emphasized that none of this analysis attempts to identify causation, only association; we want to know how much of an import decline we would predict given the behavior of the various correlates.

The results of the first step of this three-step methodology are shown in Figure 4.10, which shows how the level and volatility of the real effective exchange rate (REER), credit, and tariffs evolve on average following a crisis. The REER depreciates in the short term by about 6 percent on average in the first two years of the crisis and stays depreciated in subsequent years, but the variation around this average is quite large. There is also a significant increase

in the volatility of the REER in the short term that declines over the medium term. Credit to the private sector, measured relative to GDP, steadily declines in the years following a crisis, with an average decline of more than 15 percentage points by the fifth year. Although the magnitude of this decline looks quite large, it should be noted that many banking crises were preceded by excessive credit growth. Finally and somewhat surprisingly, there is no evidence that protectionism, as measured by the average tariff level, increases following a crisis. There is a statistically insignificant change in average tariffs following a crisis in both the short and medium term.[19] This last finding, however, should not be interpreted to mean that overall protection does not rise, given that increased protectionism may manifest itself in "murky" forms (mentioned above), which are difficult to detect in the data.

The estimated elasticity of imports to mechanisms other than output is outlined in Table 4.2.[20] The estimated elasticity of imports to the REER, at about 0.09, is substantially smaller than estimates from other studies. This may be due to the fact that the model estimates only the contemporaneous association between the REER and imports.[21] The

Table 4.2. Estimated Elasticity of Imports

REER[1]	0.09*
Volatility of REER	−0.05***
Credit-to-GDP ratio	0.10***
Tariffs	−0.03

Source: IMF staff calculations.

Note: Elasticity is estimated by regressing the log of imports on the log of the variables of interest and economy- and year-fixed effects. ***, **, and * indicate significance at the 1, 5, and 10 percent level, respectively. Standard errors (not reported) are clustered by economy and corrected for heteroscedasticity.

[1]Real effective exchange rate.

[19]The number of antidumping measures imposed by a country also does not increase significantly following crises.

[20]As noted above, the estimated elasticity of imports with respect to output in the baseline specification varies across regions and over time. These elasticities are discussed in Appendix 4.2.

[21]Estimates of this elasticity in the literature vary by horizon (Senhadji, 1998, for example, finds an elasticity close to zero in the short term but higher than 1 in the long term), as well as across countries (Kwack and others, 2007, have elasticities that range from 0.4 to 1.2 across a wide range of countries). Using the higher estimates found in the literature will, of course, increase the fraction of import loss that can be accounted for by postcrisis declines in the REER.

Figure 4.10. The Postcrisis Evolution of Various Mechanisms
(Percent deviation from normal; years on x-axis; crisis begins at t = 0*)*

Crises are followed by persistent declines in credit as a share of GDP, as well as temporary rises in exchange rate volatility. There is a small and statistically insignificant real depreciation and no evidence of significant changes in import tariffs.
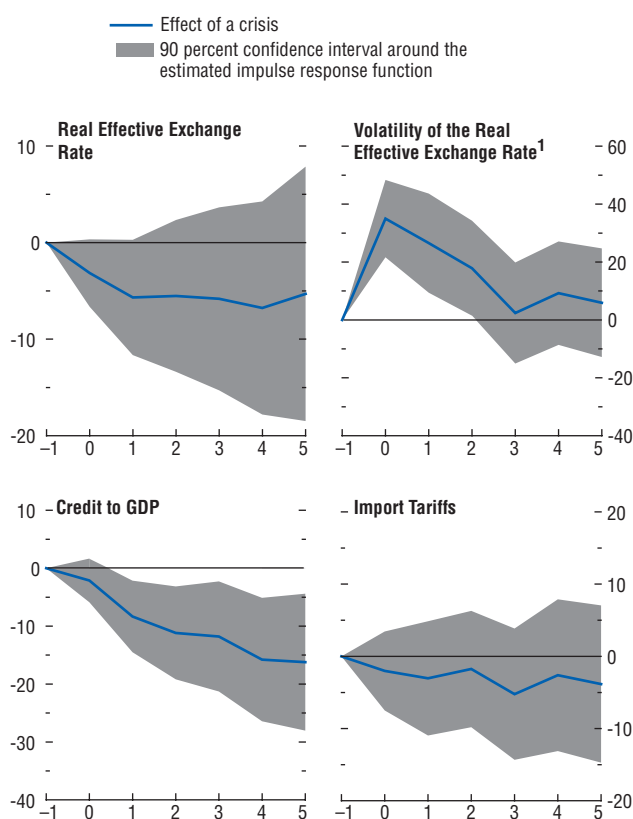
Source: IMF staff calculations.
Note: Blue lines indicate the impulse response function—the effect of a crisis relative to what would be predicted in the absence of a crisis. Predictions are based on contemporaneous and lagged crises and country and time dummies.
[1]Exchange rate volatility is measured as the annual standard deviation of monthly real effective exchange rate depreciation.

Figure 4.11. Decomposition of Import Losses
(Percent; years on x-axis; crisis begins at t *= 0)*

Output declines account for the biggest share of import losses in the aftermath of crises. However, the temporary rise in exchange rate volatility and persistent impairment of credit also contribute. Controlling for these potential explanations still leaves a portion of import losses unexplained, which may reflect composition effects.
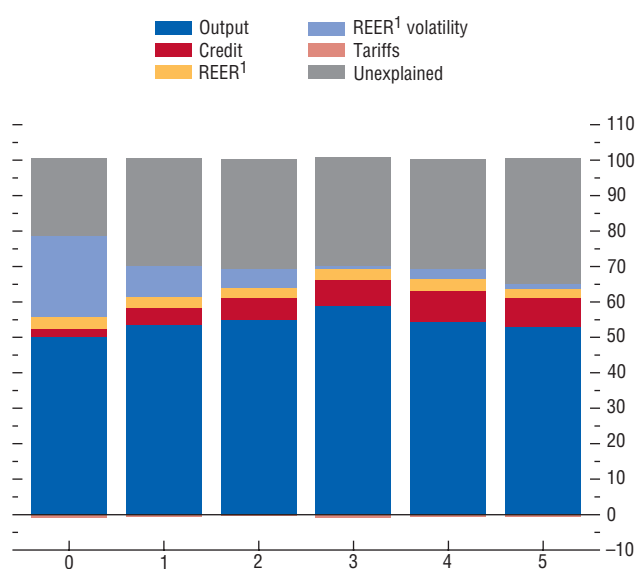
Source: IMF staff calculations.
Note: Unconditional import losses (see Figure 4.4) are decomposed into changes attributable to the fall in output and credit, a rise in exchange rate volatility, depreciation, and changes in tariffs. The contribution of output is computed as the difference between the unconditional and conditional import losses (see Table 4.1). The contribution of the remaining factors is calculated as the product of the elasticity of imports with respect to each factor and the change in the factor following crises (depicted in Figure 4.10), as a percent of the unconditional change in imports after crises.
[1]REER = real effective exchange rate.

estimated elasticity of imports to REER volatility and credit are both statistically significant and of the expected sign. The estimated elasticity of imports to tariffs, while negative as expected, is not statistically significant.

Combining these results allows us to estimate the average contribution of these various mechanisms (Figure 4.11). The estimated contribution of output is derived as the difference between the unconditional import loss reported in Figure 4.4 and the import loss controlling for output in Figure 4.5. At the onset of a crisis (year t), the decline in output accounts for about half of the overall loss in imports in that year; increased exchange rate volatility accounts for another one-fifth of the import loss. Real depreciation and weak credit together account for less than 10 percent of the loss in the crisis year, so that about 20 percent of the import loss in the year of the crisis remains unaccounted for. In subsequent years, output remains the most important contributor to depressed imports, accounting for anywhere between 50 and 60 percent of the total import loss. The role of exchange rate volatility diminishes over time, a reflection of the fact that the surge in volatility in the immediate aftermath of a crisis subsides over time. The role of credit, in contrast, increases over time because credit steadily worsens following a crisis; by the fifth year, weak credit conditions account for about 10 percent of the total import loss.

Although these mechanisms help account for a significant portion of the estimated postcrisis import loss, between 20 and 35 percent of the latter remains unexplained. To what extent might the composition effect account for the unexplained component? This chapter's focus on trade in goods, and the lack of detailed historical data on the demand share of durables and nondurables for a wide range of economies preclude inclusion of composition effects in our three-step methodology. But there is some evidence to suggest that such effects were important in earlier crises as well.[22] Imports fall much more than output if two conditions are

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[22]Box 4.1 uses a more sophisticated framework and more disaggregated data to obtain more precise estimates of the role of the composition effect in explaining the most recent trade collapse.

satisfied: demand for some goods must fall more than for others, and those goods must account for a larger share of trade than of output. Across a sample of 48 economies and 26 crisis episodes for which data are available, tradable investment goods (machinery and equipment) account for 18 percent of trade but only 8 percent of GDP (Figure 4.12). And the postcrisis decline in machinery and equipment is much larger—imports of these goods decline by more than one-third by the second year after a crisis, more than 10 times the postcrisis decline in the rest of GDP over the same period.[23] Calculations in Appendix 4.2 suggest that, even when focusing narrowly on these investment durables, the composition effect can explain at least a portion of the postcrisis fall in imports.

The three-step methodology provides only an estimate of the average contribution of the various mechanisms to import dynamics. For example, although the size of the average depreciation is small following a crisis, it is also clear from Figure 4.10 that there is substantial variation around this average. Is it possible that economies whose currencies depreciated more substantially had imports that evolved differently than those whose currencies did not depreciate as much? Figure 4.13 sheds some light on these possibilities; once again, all the reported import losses already control for output. Crisis episodes with a relatively large depreciation seem to be associated with more depressed imports than those with smaller depreciations (top panels). Crises during which the increase in exchange rate volatility was lower, or credit conditions were better, seem to be associated with less import deterioration (middle panels).[24] Finally, there is evidence that crises during which tariffs increased by relatively more were associated with worse import performance, particularly in the short term, consistent with the findings in Box 4.2 regarding the recent crisis.

[23]One possibility is that a decline in credit availability following a crisis affects demand for durables more than demand for other goods.

[24]These findings are robust to the use of alternative proxies that more closely track trade finance as opposed to the measure of general credit conditions that is used here. Specifically, it is robust to using the change in the outstanding stock of external short-term debt, which includes short-term credit for trade (Ronci, 2004).

Figure 4.12. Import Losses and Composition Effects
(Percent)

Durables comprise a much larger share of trade than of output. In addition, demand for durables declines substantially more than demand for nondurables following crises. These two facts suggest that composition effects may play an important role in postcrisis import losses.
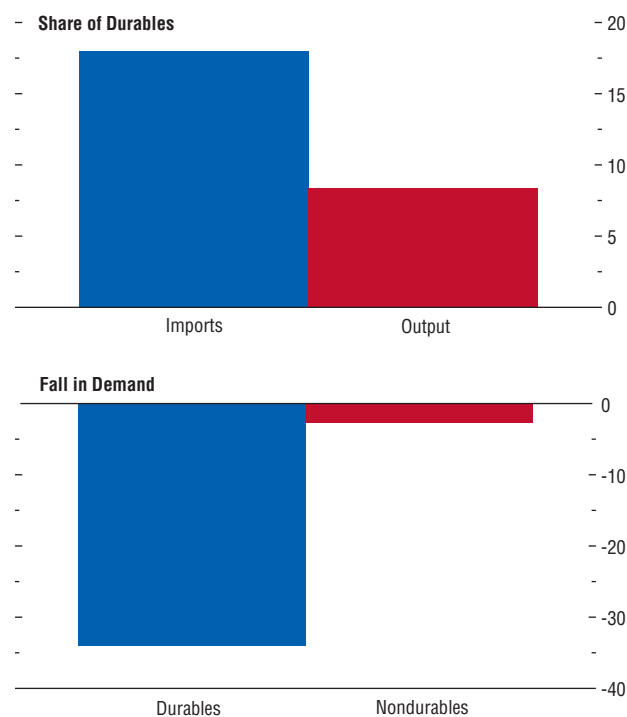
Source: IMF staff calculations.
Note: The average share of machinery and equipment in GDP and share of capital durables in imports in a sample of 48 countries is shown in the top panel. The estimated impulse response two years after a crisis is shown in the bottom panel. The estimated impulse response function is based on contemporaneous and lagged crises and country and time dummies.

Figure 4.13. Postcrisis Characteristics and Import Losses, Controlling for Output

(Percent deviation from normal; years on the x-axis; crisis begins at t = 0*)*

The evolution of imports following crises is associated with postcrisis economic conditions and policies. Imports fare worse when a crisis is accompanied by a larger depreciation, greater exchange rate volatility, a sharper decline in credit, or a greater increase in protectionism.
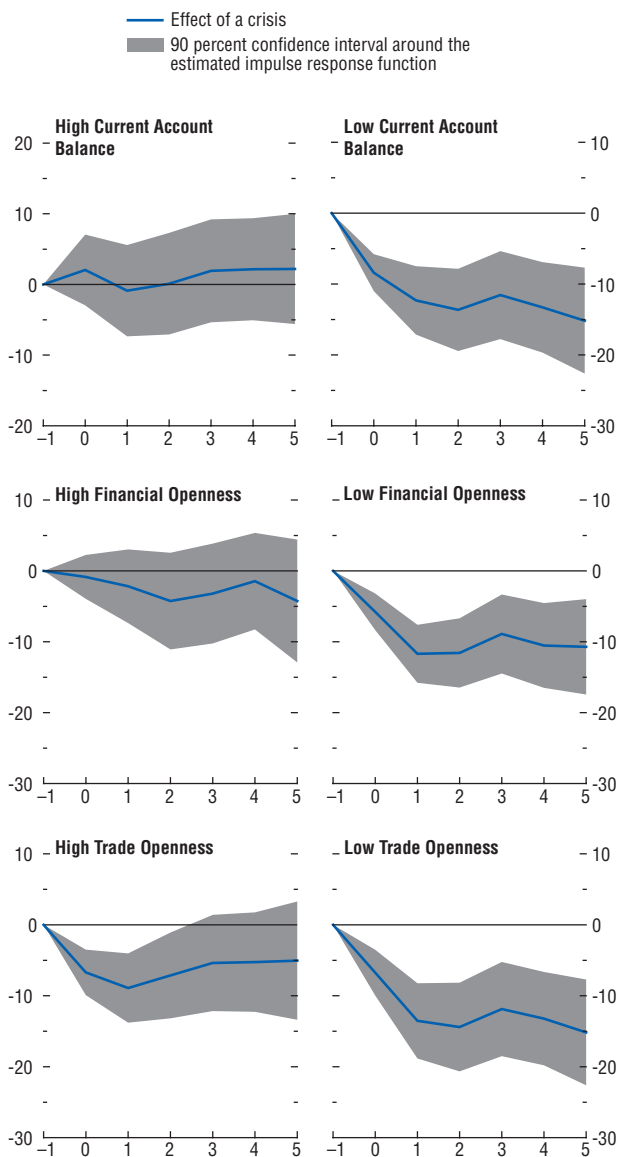

Source: IMF staff calculations.

Note: Blue lines indicate the impulse response function – the effect of a crisis on imports relative to what would be predicted in the absence of a crisis. Predictions are based on a collapsed gravity model in changes, with contemporaneous and lagged crises, home and trade-weighted partner output, a trade-weighted partner crisis dummy, and country and time dummies. Crisis episodes are split into those during which depreciation, the change in real effective exchange rate volatility, and the change in credit to GDP between *t* = 0 and *t* = 5 are, respectively, above or below the crisis sample median. In the case of tariffs, the figure reports conditional imports after crises with a change in the trade liberalization index above and below the 75th percentile.

Summary and Implications for the Outlook

This analysis finds that crises tend to depress imports substantially in the short term—above and beyond any import compression due to lower output—and that imports tend to stay depressed through the medium term. Imports tend to decline more if the economy entered the crisis with a relatively unfavorable current account balance and if the crisis resulted in a relatively large decline in the REER or poor credit conditions. Finally, exports exhibit a smaller and more gradual decline that can be fully accounted for by changes in output.

How do those results inform the outlook for trade? As the world economy emerges from the Great Trade Collapse of 2008–09, recent data make it just as easy to view the trade recovery glass as being half full as it is to view it as half empty. Optimists can point to strong growth in world trade since the second half of 2009, while pessimists can lament that imports and exports remain far below precrisis trends, or even below precrisis levels for some economies. Which perspective is justified? Although caution should be exercised when drawing implications for the recent, more global crisis from historical crisis episodes, we use the evidence in this chapter to try to shed light on where trade might be headed.

The recent financial crisis has been concentrated in many large, advanced economies (Table 4.3), and so this chapter's findings have implications not just for individual economies but also for the global recovery and for global trade patterns. The 13

Table 4.3. Systemic Banking Crises, 2007–09

Systemic Cases	Borderline Cases
Austria	France
Belgium	Greece
Denmark	Hungary
Germany	Kazakhstan
Iceland	Portugal
Ireland	Russia
Latvia	Slovenia
Luxembourg	Spain
Mongolia	Sweden
Netherlands	Switzerland
Ukraine	
United Kingdom	
United States	

Source: Laeven and Valencia (2010).

Note: Laeven and Valencia (2010) define systemic banking crises as cases in which at least three of their listed interventions took place, whereas borderline cases are those that "almost meet" their definition of a systemic crisis.

countries that recently had a systemic banking crisis account for about 40 percent of global demand, with the three largest countries—Germany, the United Kingdom, and the United States—accounting for more than one-third of global demand. Including 10 additional countries that Laeven and Valencia (2010) identify as having had a "borderline" systemic banking crisis, the recent crisis countries account for over half of world demand and output. This chapter's estimates of postcrisis trade dynamics are consistent with the sharp and substantial drop in import demand that has been evident in these countries. More important for the outlook, this analysis suggests that these countries' imports are likely to remain depressed for a number of years, even more than their tempered output projections would suggest. If, in addition, some economies fall into a sovereign debt crisis—which this analysis finds to be associated with more acute import losses—prospects for global import demand will dim even further. For economies that rely heavily on external demand for growth, the chapter's findings underscore the importance of rebalancing toward domestic sources of growth or, more generally, of developing "twin engines" of growth.

The analysis also suggests that import dynamics may differ across the crisis countries. For countries that entered the crisis with a relatively weak current account, such as the United Kingdom and the United States, import demand is likely to be even more anemic. Exports to the United Kingdom are also weighed down by the substantial depreciation of the pound sterling since 2008. Finally, real credit in these two economies is decelerating or even contracting, which the chapter suggests will also weaken imports beyond its effects on output.

The fact that these countries' exports are not expected to decline nearly as much as their imports implies a likely improvement in the external balances of the crisis countries and a deterioration in the balances of their partners. Because the United States accounted for a large part of the global imbalances that widened substantially in the early 2000s, a silver lining from the recent crisis is the narrowing of the U.S. external deficit, and this chapter suggests that this narrowing may be more durable than

Figure 4.13. (concluded)

Source: IMF staff calculations.
Note: Blue lines indicate the impulse response function—the effect of a crisis on imports relative to what would be predicted in the absence of a crisis. Predictions are based on a collapsed gravity model in changes, with contemporaneous and lagged crises, home and trade-weighted partner output, a trade-weighted partner crisis dummy, and country and time dummies. Crisis episodes are split into those during which depreciation, the change in real effective exchange rate volatility, and the change in credit to GDP between $t = 0$ and $t = 5$ are, respectively, above or below the crisis sample median. In the case of tariffs, the figure reports conditional imports after crises with a change in the average tariff above and below the 75th percentile.

Box 4.2. Protectionism in the Recent Crisis

The extent of trade protectionism before and during the recent crisis has been subject to significantly different interpretations. This box addresses the question by drawing on recent research by IMF staff (Gregory and others, 2010). New trade restrictions have so far been limited to a small share of global trade but have had a strong negative impact on trade flows. This box suggests ways for economies to avoid allowing rising trade protectionism to interfere with the recovery.

Trade became much freer during the second half of the 20th century. Among major western European and North American countries, average tariffs fell from 15 to 4 percent between the 1950s and mid-2000s. In many major developing economies, tariffs increased or remained very high until the 1980s but have since come down sharply. Nonetheless, the pace of trade reforms waned after the mid-2000s as protectionist sentiment began to increase, and so substantial trade restrictions were still in place when the crisis hit. Moreover, gaps in World Trade Organization (WTO) commitments leave a wide scope for legal backsliding on trade policy. Tariffs—the most transparent and easily monitored trade policy instrument—provide an illustrative example. Some economies can raise tariffs substantially without exceeding their WTO bindings (first figure).

Once the crisis took hold in mid-2008, political leaders' awareness of the risks of protectionism, backed by increased monitoring activities, helped limit the protectionist response. Mindful of both the disastrous results of protectionism during the 1930s and the contribution of trade to macroeconomic performance, the Group of 20 (G20) economies pledged in November 2008 to "refrain from raising new barriers to investment or to trade in goods and services, imposing new export restrictions, or implementing WTO inconsistent measures to stimulate exports." In April 2009 and again in June 2010, G20 leaders extended this pledge and asked the WTO and other institutions to monitor adherence.

Several other factors have worked to limit the protectionist response to the crisis:

The main author of this box is Robert Gregory.

Simple Average Tariff Rates: 2008
(Percent)
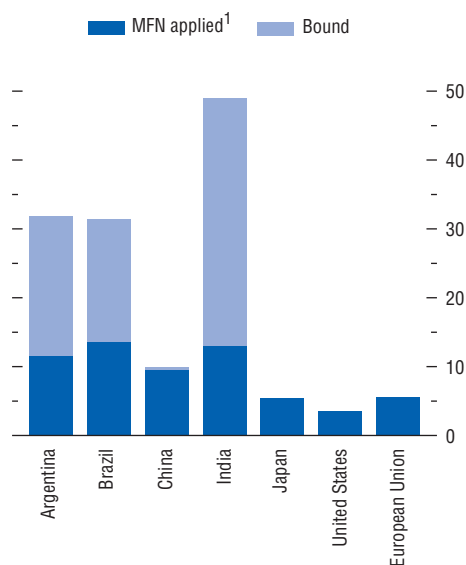
Source: World Trade Organization, *World Tariff Profiles 2009.*
[1]MFN = Most favored nation.

- Multilateral rules and institutions have clarified the types of policy actions considered responsible. The strong WTO-based trade system has been central.
- Trade declined much more rapidly than overall economic activity. The ratio of imports to GDP declined as well. Although job losses mounted, they were not, by and large, blamed on trade.
- Macroeconomic and financial sector policies were supportive of trade.

Even so, once the crisis took hold, a number of trade restrictions were introduced. The sharp rise in unemployment and its continued high levels may help explain the increased frequency of industry requests for trade remedies. In addition, there was increased use of unconventional measures, which are harder to quantify.

However, the extent of trade restrictions is unclear, and various monitoring efforts have come to quite different conclusions. None of the watchdogs suggest that we have seen, or are likely

Measures included in Gregory and Others (2010)
(Number of measures)

- ■ Tariffs, import bans, quotas
- ■ Trade defense measures
- ■ Nontariff barriers
- ■ Bailouts, subsidies
- ■ Local content, public procurement
- ■ Export measures

51
55
21
27
14
16
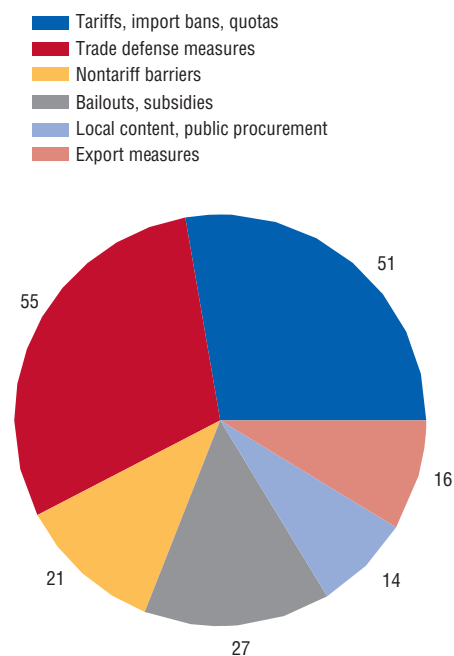
Source: Global Trade Alert Database.

to see, an extreme protectionist surge like that of the 1930s, but their assessments differ markedly. The June 2010 joint report of the WTO, Organization for Economic Cooperation and Development (OECD), and United Nations Conference on Trade and Development (UNCTAD) indicates that "protectionist policy responses have been limited, although there are still instances of restrictive measures taken… [T]here continues to be few instances of new import restrictions and a greater use of export restrictions, but some G20 governments have also taken steps to facilitate trade" (WTO, OECD, and UNCTAD, 2010). In contrast, the sixth report of Global Trade Alert (GTA), which is associated with the London-based Centre for Economic Policy Research and supported by the World Bank, also released in June 2010, concludes that "as far as open markets were concerned, 2009 was a terrible

year" and that "much of the discrimination put in place then has yet to be removed" (GTA, 2010).

Gregory and others (2010) explore the impact of both conventional and more unconventional "behind the border" measures highlighted in the GTA reports, such as technical barriers to trade, procurement, and regulatory measures. The analysis matches data from GTA monitoring of measures taken between mid-2008 and late 2009 with detailed product-level data on bilateral monthly trade flows.[1] The second figure illustrates the varied nature of these protectionist measures. There is strong evidence that, after an economy imposed import restrictions on a particular product, its imports fell in succeeding months relative to world trade in the same product (third figure). Allowing for various time-varying fixed effects, more sophisticated econometric analysis suggests that trade in the affected products dropped an average of 3 to 8

[1]Extending the data set through May 2010 does not substantially change the results of the analysis.

Bilateral Trade Flows subject to Measures Implemented in November 2008
(Index, October 2008 = 100)
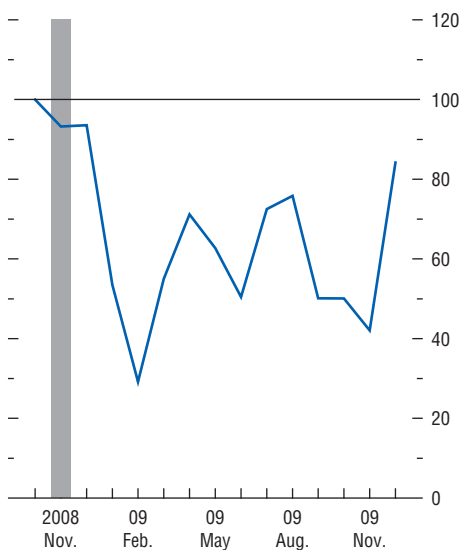
Source: IMF staff calculations.

Box 4.2 *(continued)*

percent after the imposition of restrictions. However, in the aggregate, restrictions implemented during the study period decreased trade by 0.25 percent, because these measures affected only a small share of global trade.

Looking ahead, sustained high unemployment, uneven growth, an unwinding of government stimulus measures, and growing economic imbalances may increase protectionist pressure. In some economies, such pressure may also emerge from high commodity prices or a surge in capital inflows, which may lead to rapid currency appreciation.

Gaps in WTO commitments leave ample scope for further trade restrictions, and a failure by all economies to vigorously resist protectionism could threaten the economic recovery and slow future growth. Maintaining and enhancing the monitoring of protectionist measures and sustaining high-level political awareness of the associated macroeconomic risks will help. But the surest way to avoid such a downside scenario is to tighten multilateral trade commitments by completing the WTO Doha Round. This can be viewed as a key part of the exit strategy from the global economic crisis.

in the absence of a financial crisis. On the other hand, the finding that imports decline mostly for investment-related goods suggests that the post-crisis outlook for innovation and potential growth could be diminished.

Domestic policymakers who might be concerned about the harmful effects of a financial crisis on exports may be reassured by the chapter's findings that declines in exports are, on average, small and gradual. Moreover, these effects can be accounted for by weaker output, suggesting that addressing the factors that depress output on the supply side will help exports recover as well.

Finally, although domestic policymakers may care more about the consequences for exports than for imports, the global nature of the recent crisis means that a coordinated and protracted slump in import demand across a wide swath of economies bodes ill for the global recovery. Not surprisingly, the chapter finds that boosting output will considerably help imports to recover. In that regard, productivity-enhancing structural reforms could help raise growth. The chapter's findings suggest that, beyond supporting domestic demand, taking steps to improve credit conditions, keeping protectionist tendencies at bay, and avoiding excessive exchange rate volatility may help support the recovery of trade. A conclusion of the Doha Round of global trade talks would also reinforce the revival of global trade.

Appendix 4.1. Data Sources

The primary data sources for the chapter are the IMF's Direction of Trade Statistics (DOTS), World Economic Outlook (WEO), and International Financial Statistics (IFS) databases; the NBER-UN World Trade Flows database (2005); and Laeven and Valencia (2008, 2010). Additional data sources are listed in Table 4.4, and the WEO analytical regions are in Table 4.5.

Crisis indicators are from Laeven and Valencia (2008, 2010). Laeven and Valencia (2010) present new and comprehensive data on the starting dates and characteristics of systemic banking crises over the period 1970–2009, building on earlier work by Caprio and others (2005), Laeven and Valencia (2008), and Reinhart and Rogoff (2009). They update the Laeven and Valencia (2008) database on systemic banking crises to include the recent episodes following the U.S. mortgage crisis of 2007 and identify 129 episodes since 1970.

Laeven and Valencia (2008) also identify debt crisis episodes based on sovereign debt default and restructuring by relying on information from Beim and Calomiris (2001), World Bank (2002), Sturzenegger and Zettelmeyer (2006), and IMF staff reports. The information compiled includes the year of sovereign default on private lending and the year of debt rescheduling. Using this approach, they identify 63 episodes of sovereign debt default and restructuring since 1970.

Table 4.4. Data Sources

Variable	Source
Annual Data	
Real Exports and Imports	Direction of Trade Statistics (DOTS) Database
Real GDP in U.S. Dollars	World Economic Outlook (WEO) Database
Real GDP per Capita in U.S. Dollars	WEO Database
World Import/Export Price Deflator	International Financial Statistics (IFS) Database
Real Effective Exchange Rate	IMF
Product-Level Imports and Exports	Feenstra and others (2005), COMTRADE, Pula and Peltonen (2009)
Current Account Balance	WEO Database
Financial Openness	Lane and Milesi-Ferretti (2007)
Trade Liberalization	IMF
Bank Credit	IFS Database
Production Sharing	Johnson and Noguera (2010)
Debt Crisis Indicators	Laeven and Valencia (2008)
Banking Crisis Indicators	Laeven and Valencia (2010)
Investment Durables (machinery and equipment)	Organization for Economic Cooperation and Development, Eurostat, Haver Analytics
High-Frequency Data	
Real Exports and Imports	CPB Netherlands Bureau of Economic Policy Analysis, DOTS Database, Global Trade Atlas, Haver Analytics
Antidumping Data	Bown (2010)
World Import/Export Price Deflator	IFS Database, CPB Netherlands Bureau of Economic Policy Analaysis

Data on bilateral and aggregate imports and exports from the DOTS database are reported in current U.S. dollars. These are deflated using the world import and export price deflators from the IFS database, to determine each economy's real imports and exports. The series on real GDP in U.S. dollars is from the WEO database. Import- and export-weighted partner GDP and GDP per capita are constructed using real GDP in U.S. dollars and import and export weights from the DOTS database. These weights vary each year according to the actual import and export flows between economies.

Data on imports and exports by product category are constructed from the NBER-UN World Trade Flows database (see Feenstra and others, 2005). The database is first extended using the UN COMTRADE database. The codes from the Standard International Trade Classification, Revision 2, that identify products in the NBER-UN trade data are matched to the UN Broad Economic Classification (BEC) codes. These are then classified into Capital Goods, Consumer Durables, Consumer Nondurables, Intermediate Goods, and Primary Goods, following Pula and Peltonen (2009).

The current account balance is taken from the WEO database. Trade openness is measured as the ratio of the sum of imports and exports to GDP. Financial openness is calculated as the sum of foreign assets and foreign liabilities divided by GDP, using the updated and extended External Wealth of Nations Mark II Database (see Lane and Milesi-Ferretti, 2007).

Bank credit to the private nonfinancial sector is taken from the IFS database. Breaks in these data are identified using the *IFS Country Notes* publication, and data are growth-spliced at these points. The real effective exchange rate (REER) data are from the IMF's Information Notice System. The volatility of the REER is calculated as the standard deviation of the monthly REER change in each year. The measure of trade liberalization is from the IMF Structural Reforms Database and is described in IMF (2008).

Bilateral data on production sharing are from Johnson and Noguera (2010).

Table 4.5. Country Groupings

Advanced Economies	Developing Asia	Africa	Commonwealth of Independent States, Georgia, Mongolia	South America
Australia	Afghanistan, Islamic Republic of	Angola	Armenia	Argentina
Austria	Bangladesh	Benin	Azerbaijan	Bolivia
Belgium	Bhutan	Botswana	Belarus	Brazil
Canada	Brunei Darussalam	Burkina Faso	Georgia	Chile
Cyprus	Cambodia	Burundi	Kazakhstan	Colombia
Czech Republic	China	Cameroon	Kyrgyz Republic	Ecuador
Denmark	Fiji	Cape Verde	Moldova	Paraguay
Finland	India	Central African Republic	Mongolia	Peru
France	Indonesia	Chad	Russian Federation	Uruguay
Germany	Kiribati	Comoros	Tajikistan	Venezuela
Greece	Lao People's Democratic Republic	Congo, Democratic Republic of	Turkmenistan	**Central America**
Hong Kong SAR	Malaysia	Congo, Republic of	Ukraine	Costa Rica
Iceland	Maldives	Côte d'Ivoire	Uzbekistan	El Salvador
Ireland	Myanmar	Djibouti	**Middle East**	Guatemala
Israel	Nepal	Equatorial Guinea	Bahrain	Honduras
Italy	Pakistan	Eritrea	Egypt	Mexico
Japan	Papua New Guinea	Ethiopia	Iran, Islamic Republic of	Nicaragua
Korea	Philippines	Gabon	Jordan	Panama
Luxembourg	Samoa	The Gambia	Kuwait	**Caribbean**
Malta	Solomon Islands	Ghana	Lebanon	Antigua and Barbuda
Netherlands	Sri Lanka	Guinea	Oman	The Bahamas
New Zealand	Thailand	Guinea-Bissau	Qatar	Barbados
Norway	Timor-Leste	Kenya	Saudi Arabia	Belize
Portugal	Tonga	Lesotho	Syrian Arab Republic	Dominica
Singapore	Tuvalu	Liberia	United Arab Emirates	Dominican Republic
Slovak Republic	Vanuatu	Madagascar	Yemen, Republic of	Grenada
Slovenia	Vietnam	Malawi	**Maghreb**	Guyana
Spain	**Central and Eastern Europe**	Mali	Algeria	Haiti
Sweden	Albania	Mauritius	Libya	Jamaica
Switzerland	Bosnia and Herzegovina	Mozambique	Mauritania	St. Kitts and Nevis
Taiwan Province of China	Bulgaria	Namibia	Morocco	St. Lucia
United Kingdom	Croatia	Niger	Tunisia	St. Vincent and the Grenadines
United States	Estonia	Nigeria		Suriname
	Hungary	Rwanda		Trinidad and Tobago
	Kosovo	São Tomé and Príncipe		
	Latvia	Senegal		
	Lithuania	Seychelles		
	Macedonia, Former Yugoslav Republic of	Sierra Leone		
	Montenegro	South Africa		
	Poland	Sudan		
	Romania	Swaziland		
	Serbia	Tanzania		
	Turkey	Togo		
		Uganda		
		Zambia		
		Zimbabwe		

The Global Trade Atlas data at the four-digit level of the Harmonized Commodity Description and Coding System (HS) are used to trace trade in types of products since 2001. These data cover the following: Argentina, Australia, Brazil, Canada, China, Japan, Korea, Russia, South Africa, Turkey, and the United States. The monthly data are converted to a quarterly frequency, deflated by specific commodity price deflators—from the WEO database for selected primary goods and from the CPB Nether-

lands Bureau of Economic Policy Analysis for the remaining products—and are seasonally adjusted. The HS four-digit codes are matched to the BEC and classified into Capital Goods, Consumer Durables, Consumer Nondurables, Intermediate Goods, and Primary Goods, following Pula and Peltonen (2009).

Appendix 4.2. Methodology and Robustness Tests

Estimating Unconditional Import Losses

The analysis[25] first estimates the unconditional dynamics of imports in the aftermath of crises using a "collapsed" gravity model of trade in changes. In the baseline regression specification in the text, the growth in an economy's aggregate imports, $\Delta \ln M_{it}$, is expressed as a function of a dummy variable indicating whether a crisis started in year t, five lags of this dummy variable, and country and time dummies:

$$\Delta \ln M_{it} = \alpha_i + \pi_t + \sum \alpha_k \, crisis_{i,t-k} + \varepsilon_{it}. \quad (4.1)$$

The robustness of the estimated unconditional import losses from the baseline specification is verified by using the following five alternative specifications:

- *Alternative 1: Deviation from precrisis trend—* This procedure measures import loss as a simple deviation of $\ln M_{it}$ from a precrisis trend, $\ln Tr_{it}$, where the latter is a linear trend based on a precrisis window from $(t-7)$ to $(t-1)$. The mean import loss k years after a crisis is just the average of this import loss, $(\ln M_{it} - \ln Tr_{it})$, across all crisis episodes. This is equivalent to estimating the following equation, either in levels or changes:

$$\ln M_{it} - \ln Tr_{it} = \sum \beta_k \, crisis_{i,t-k} + \varepsilon_{it}. \quad (4.2)$$

This procedure is similar to the procedure used in Chapter 4 of the October 2009 *World Economic Outlook* for estimating output losses

following a crisis.[26] In contrast to the baseline, this methodology allows for an episode-specific trend, as opposed to the country-specific trend that is captured by α_i in the baseline specification. However, it does not control for global conditions as is done in the baseline.

- *Alternative 2: Baseline specification with autoregressive terms—*The baseline specification is augmented by including four lags of the growth of imports on the right-hand side, paralleling the specifications used in Romer and Romer (2010) and Cerra and Saxena (2008):

$$\Delta \ln M_{it} = \alpha_i + \pi_t + \sum \rho_l \Delta \ln M_{i,t-1}$$
$$+ \sum \alpha_k \, crisis_{i,t-k} + \varepsilon_{it}. \quad (4.3)$$

- *Alternative 3: Bilateral gravity in changes—*A directional gravity model (that is, one with bilateral imports or exports as opposed to bilateral trade) is estimated in changes. The growth in bilateral imports of an economy from each trading partner, $\Delta \ln M_{imp,exp,t}$, is regressed on a crisis indicator and its lags, as well as on time and importer-exporter pair dummies:

$$\Delta \ln M_{imp,exp,t} = \alpha_{imp,exp} + \pi_t$$
$$+ \sum \alpha'_k \, crisis_{imp,t-k} + \varepsilon_{imp,exp,t}. \quad (4.4)$$

- *Alternative 4: Bilateral gravity in changes, using top 20 partners—*This specification is identical to the directional gravity model in changes as described in equation (4.4) but focuses only on the top 20 partners from which an economy imports. This is done because our primary concern is in describing the behavior of aggregate trade, rather than average bilateral trade. The standard gravity model weights all bilateral trade observations equally, regardless of the size of the bilateral trade

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[25]We focus on import dynamics here, since the chapter's results suggest that imports are where the impact of a crisis on trade is primarily manifested.

[26]The results from estimating equation (4.2) in levels or changes are identical because, as in Chapter 4 of the October 2009 *World Economic Outlook,* the import losses are normalized so that the loss in the year before the crisis $(t-1)$ is zero. The primary differences between the procedure used here and in Chapter 4 of the October 2009 *World Economic Outlook* are the following: (1) the definition of crisis (debt crises combined with banking crises versus banking crises only), (2) the precrisis window used to calculate the trend $[(t-7)$ to $(t-1)$ versus $(t-10)$ to $(t-3)]$, and (3) the choice of dependent variable (imports versus GDP per capita).

relationship. But trade is highly uneven—in the sample used in this chapter, the top 20 trading partners account for 89 percent of an economy's total imports, on average, even though the average economy imports from 175 economies. In other words, about 90 percent of the observations in a typical gravity model account for only 10 percent of total trade. The behavior of aggregate trade will more closely follow the dynamics of larger trading partners.

- *Alternative 5*: *Baseline specification, excluding banking and debt crises that were accompanied by a currency crisis*—This specification is identical to the baseline equation (4.1) but focuses only on "pure" banking and debt crises. More specifically, we exclude banking and debt crisis episodes that were accompanied or preceded by a currency crisis as defined in Laeven and Valencia (2008).

As Table 4.6 and Figure 4.14 illustrate, the estimated impulse response functions of imports using these different approaches are similar both qualitatively and quantitatively. This confirms the finding that there are large and statistically significant unconditional import losses after crises.

Import Losses Controlling for Output

The import losses controlling for output are also computed using the baseline model in changes, this time with a set of controls derived from the standard gravity model. Specifically, the growth of imports, $\Delta \ln M_{it}$, is modeled as a function of the growth in the economy's output, $\Delta \ln GDP_{it}$, its partners' import-weighted output,

$\Delta \ln PGDP_{it}$, contemporaneous and lagged values of a dummy variable indicating a crisis in the economy, $crisis_{i,t-k}$, an import-weighted indicator of incidence of crises in trading partners (plus five lags), $pcrisis_{i,t-k}$, and country and time dummies α_i and π_t:

$$\Delta \ln M_{it} = \alpha_i + \pi_t + \sum \alpha_k \, crisis_{i,t-k}$$
$$+ (\beta_{1r} + \beta_{2r} \times D_{t \geq 1990}) \Delta \ln GDP_{it}$$
$$+ \beta_3 \, \Delta \ln PGDP_{it}$$
$$+ \sum \delta_k \, pcrisis_{i,t-k} \, \varepsilon_{it}. \qquad (4.5)$$

As discussed in the text, the elasticity of imports to output is crucial for assessing whether the evolution of trade is fully explained by output. To be as general as possible, we allow the output elasticities of imports and exports in the baseline specification to vary across the 10 WEO analytical regions described in Table 4.5. We also allow each of these regional elasticities to vary between the pre- and post-1990 periods. The estimated elasticities, shown in Table 4.7, range from 0.8 to 4.5 and are in general higher for the post-1990 period.

The following tests were performed to check the robustness of the conditional import losses presented in the text:

- *Robustness Test 1: Distributed lag specification*— We augment the specification to include lagged output growth. The elasticity of imports to contemporaneous and lagged output is allowed to vary across regions and between the pre- and post-1990 periods.

Table 4.6. Unconditional Import Losses: Estimated Impulse Response Functions Using Alternative Methodologies

Time	Baseline	Deviation from Trend	Baseline Plus Autoregressive Terms	Bilateral Gravity in Changes	Bilateral Gravity in Changes, Top 20 Partners	Baseline, Pure Bank and Debt Crises
Crisis year, t	−0.080	−0.082	−0.078	−0.076	−0.080	−0.064
$t+1$	−0.158	−0.159	−0.167	−0.191	−0.156	−0.152
$t+2$	−0.171	−0.174	−0.181	−0.166	−0.162	−0.174
$t+3$	−0.153	−0.156	−0.161	−0.153	−0.135	−0.159
$t+4$	−0.169	−0.160	−0.173	−0.172	−0.159	−0.176
$t+5$	−0.190	−0.183	−0.191	−0.183	−0.184	−0.202

Source: IMF staff calculations.

- *Robustness Test 2: Uniform elasticity of imports to output*—We report the results from a specification that would most closely mirror a collapsed gravity specification in changes. Namely, as is standard in the literature, we impose the same elasticity of imports to output across economies and over time.

- *Robustness Test 3: Bilateral gravity (all controls) in changes*—Rather than focusing on the economy's aggregate imports, we estimate a unidirectional (bilateral) gravity model in changes. The specification is as in equation (4.4) but contains the standard gravity controls: the growth in the economy's and partners' output as well as a set of dummies for crises occurring in both home and partner economies, indicators for whether the country pair is in a currency union or free trade agreement, and time and importer-exporter pair dummies. The elasticity with respect to an economy's output is allowed to vary across regions and between the pre- and post-1990 periods.

- *Robustness Test 4: Allowing the elasticity of imports to vary across cyclical versus trend components of output*—Imports may be more responsive to cyclical than to trend movements in output; if so, the baseline approach would overestimate the fall in imports controlling for output. To test this, we allow the elasticity of imports to vary across the trend and cyclical components

Table 4.7. Estimated Elasticity of Imports to Output: Panel Regression with Country and Time Dummies

	Pre-1990	Post-1990
Advanced	1.99	1.94
Developing Asia	0.89	2.76
Africa	0.99	1.50
CIS,[1] Georgia, Mongolia	. . .	4.57
Central and Eastern Europe	1.46	1.38
Middle East	0.79	1.89
Maghreb	0.83	1.09
South America	2.26	2.88
Central America	2.03	1.58
Caribbean	1.87	1.77

Source: IMF staff calculations.

[1]Commonwealth of Independent States.

Figure 4.14. Import Losses, Not Controlling for Output: Alternative Methodologies
(Percent deviation from normal; years on x-axis; crisis begins at t *= 0)*
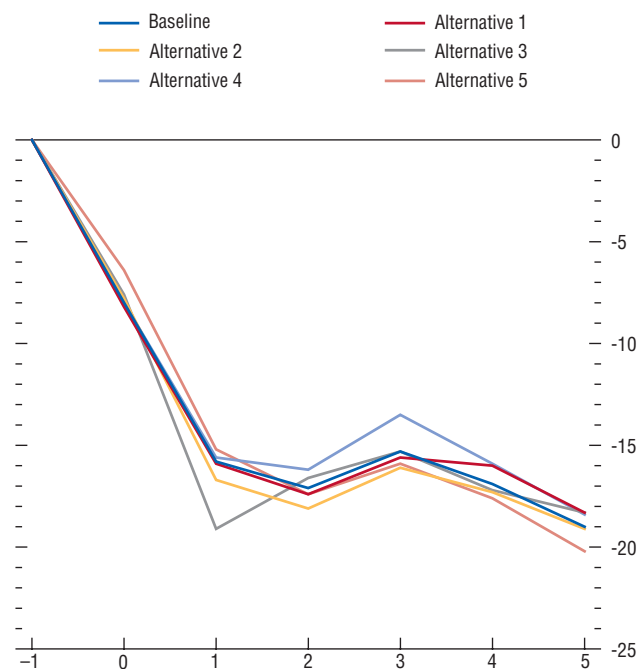
Source: IMF staff calculations.

of output, where the trend and cycle were separated using a Hodrick-Prescott filter. As in the baseline, the import elasticity with respect to both the cyclical and trend components of output are allowed to vary across WEO regions and between the pre- and post-1990 periods.

- *Robustness Test 5: Controlling for changes in the REER and relative prices*—Import dynamics may differ after crises due to changes in the REER and relative price levels. Equation (4.5) is augmented to control for changes in REER and the domestic price level, proxied by the change in the GDP deflator.
- *Robustness Test 6: Controlling for changes in domestic aggregate demand*—An economy's GDP may not be a good proxy for absorption in the importing economy, and to the extent that absorption declines more than GDP during crises, the estimated import losses after controlling for output may be overstated. We replace growth in output by growth in domestic absorption (consumption plus investment) on the right-hand side of equation (4.5).
- *Robustness Test 7: Allowing the elasticity of imports to output to differ across economies*—We further increase the flexibility of our specification by estimating separately the elasticity of imports to output for each of the 154 economies in the sample.
- *Robustness Test 8: Allowing the elasticity of imports to output to vary across crisis versus noncrisis peri-*

ods—Similar to Robustness Test 4, the sensitivity of imports to output may be particularly high in times of crisis. We thus allow the coefficient on output to vary during crisis and noncrisis periods.

The results of these robustness tests are presented in Table 4.8 and Figure 4.15. The finding that imports remain below their normal levels following a crisis, even after controlling for output, is confirmed across all these robustness checks. While the standard errors increase substantially once we allow the estimated elasticity of imports to output to vary across economies, the point estimates remain very similar to the baseline specification.

Decomposition of Unconditional Import Losses

We use a three-step approach to evaluate the importance of different mechanisms in explaining the unconditional import losses, as detailed below. It is important to keep in mind that this is simply an accounting exercise that attempts to decompose the unconditional import losses based on observed correlations. The true contributions of the various mechanisms might differ from these estimated correlations.

Step 1: We document whether crises are followed by persistent changes in tariffs, credit, the REER, and exchange rate volatility by estimating equation (4.1) with the mechanisms of interest as the dependent variable.

Table 4.8. Conditional Import Losses: Robustness of Estimated Impulse Response Functions

Time	Baseline	Baseline and Lagged Growth of Output	Same Elasticity across Regions and Time	Full Gravity in Changes	Elasticity: Cyclical vs. Trend	Control for Changes in REER and PPP[1]	Control for Changes in Consumption and Investment	Elasticity: Varies by Economy	Elasticity: Differs during Crisis Years
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Crisis year, t	−0.040***	−0.037**	−0.058***	−0.022*	−0.043***	−0.052***	−0.042***	−0.031*	−0.052***
$t+1$	−0.073***	−0.074***	−0.116***	−0.093***	−0.076***	−0.090***	−0.079***	−0.058**	−0.114***
$t+2$	−0.077***	−0.086***	−0.129***	−0.053***	−0.086***	−0.092***	−0.093***	−0.054*	−0.122***
$t+3$	−0.063*	−0.071**	−0.114***	−0.048**	−0.077**	−0.074***	−0.076***	−0.041	−0.099***
$t+4$	−0.077**	−0.081***	−0.133***	−0.074***	−0.090***	−0.091***	−0.087***	−0.057*	−0.101***
$t+5$	−0.089**	−0.092***	−0.152***	−0.068***	−0.099***	−0.105***	−0.095***	−0.071*	−0.115***

Source: IMF staff calculations.

Note: All columns include economy- and year-fixed effects. Columns (1), (2), and (4) – (7) allow the elasticity of imports to output (or its cyclical and trend component and consumption and investment) to vary by WEO regions and after 1990. In column (8), the elasticity of imports to output is allowed to vary by economy.

[1]REER = real effective exchange rate; PPP = purchasing power parity.

Step 2: We estimate the elasticity of imports with respect to the various mechanisms in the following regression framework:

$$\ln M_{it} = \alpha_i + \pi_t$$
$$+ (\beta_{GDP,r} + \beta_{GDP,r} \times D_{t \geq 1990}) \ln GDP_{it}$$
$$+ \beta_{Tariff} \ln Tariff_{it} + \beta_{cr} \ln Credit_{it}$$
$$+ \beta_{REER} \ln REER_{it} + \beta_{vol} \ln Volatility_{it}$$
$$+ \sum \alpha_k \, crisis_{i,t-k} + \beta_3 \ln PGDP_{it}$$
$$+ \sum \delta_k \, pcrisis_{i,t-k} + \varepsilon_{it} \qquad (4.6)$$

Step 3: We combine the estimates from steps 1 and 2 to quantify the contribution of various mechanisms. In particular, the estimated change in the mechanism following a crisis in step 1 is multiplied by the estimated elasticity of imports with respect to that mechanism in step 2. The contribution of each mechanism is then expressed as a fraction of the unconditional import losses. The contribution of output is computed as the difference between the unconditional import losses from equation (4.1) and import losses conditional on output from equation (4.5).

Composition Effects during Earlier Crises: A Back-of-the-Envelope Calculation

If GDP and imports had the same composition of goods and services, and if, within each sector, imports changed proportionally to domestic final demand, imports would be expected to fall by as much as GDP after a crisis. However, if there are differences in the composition of imports and GDP, *and* if goods and services that constitute a larger share of trade than of GDP experience a relatively larger decline in demand following a crisis, imports will fall more than GDP even in the absence of changes in other factors (such as credit, exchange rates, or degree of protectionism) described in the chapter. For example, part of the outsize decline in imports relative to GDP in the recent crisis has been attributed to the resilience in the demand for services relative to manufactured goods. Since demand for manufactured goods experienced a relatively larger decline and since manufactured

Figure 4.15. Import Losses, Controlling for Output: Robustness
(Percent deviation from normal; years on x-axis; crisis begins at t *= 0)*
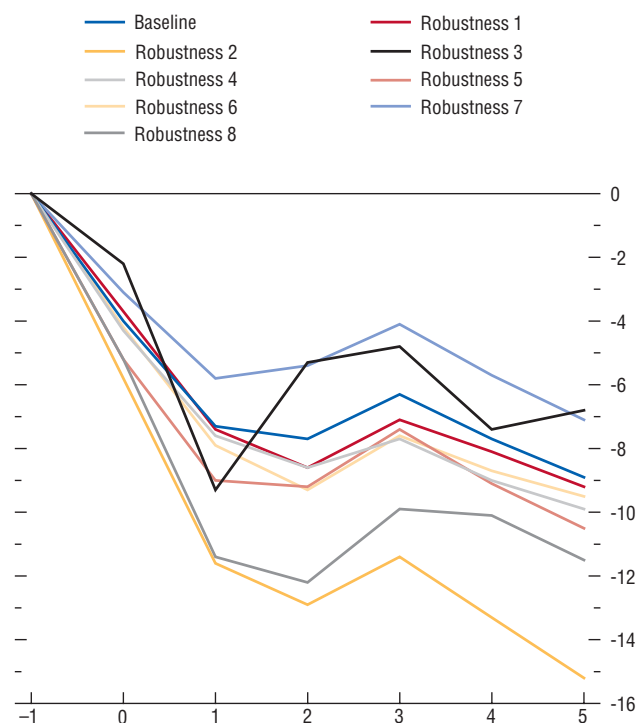
Source: IMF staff calculations.

Figure 4.16. The Postcrisis Evolution of Various Components of GDP
(Percent deviation from normal; years on x-axis; crisis begins at t *= 0)*

Crises are followed by roughly equal declines in services and industry. The postcrisis decline in investment in machinery and equipment, on the other hand, is much deeper than for the rest of output.
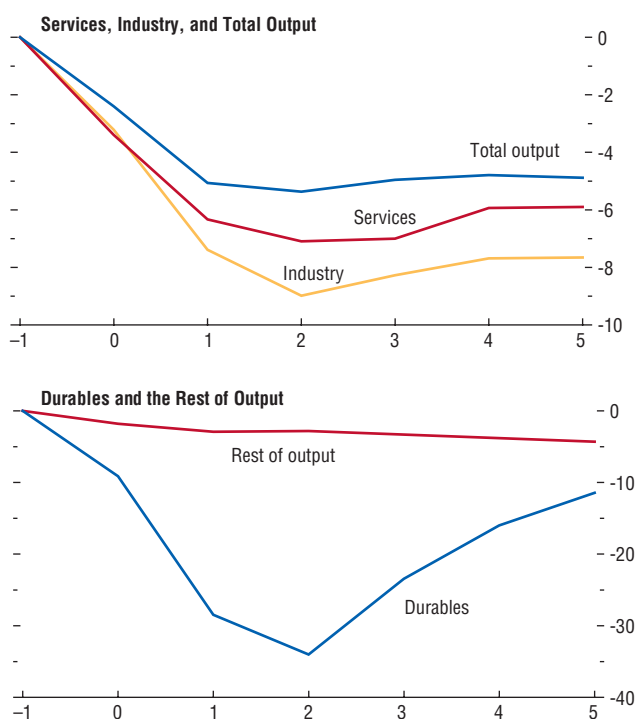
Source: IMF staff calculations.
Note: Lines indicate the impulse response function – the effect of a crisis on imports relative to what would be predicted in the absence of a crisis. Predictions are based on contemporaneous and lagged crises, and country and time dummies.

goods comprise a larger share of trade than of GDP, overall imports declined more than GDP (Borchert and Mattoo, 2009).

We first investigate whether historically there is a difference in the behavior of manufactured goods and services following crises. Since detailed data on the demand side are not available, we use sectoral value-added data to document whether there are differences in the behavior of services versus industry after crises. Somewhat surprisingly, this does not appear to be the case. The estimated drop in services is very similar to the decline in industry value added after crises (Figure 4.16, top panel).[27] Given this similarity in the dynamics of services and industry, the different shares of services in output and trade do not appear to be a likely explanation.

However, within the "manufactured goods" category, there are compositional differences between output and trade. Across a sample of 48 economies for which disaggregated data on gross fixed investment are available, (capital) durables, measured by tradable investment goods—namely, machinery and equipment—account for only 8 percent of GDP. For the same set of economies, the average share of (capital) durables in imports is 18 percent.[28] Although the data coverage is rather scant—only 26 of the identified crises can be included in the analysis— we provide some back-of-the-envelope calculations to estimate the contribution of these composition effects in explaining import losses following crises.

We begin with the following two identities:

$$GDP_{gth} = sh_{dur_{GDP}} \times DUR_{GDP_{gth}}$$
$$+ (1 - sh_{dur_{GDP}}) \times OTHER_{GDP_{gth}} \quad (4.7)$$

$$IMP_{gth} = sh_{dur_{IMP}} \times DUR_{IMP_{gth}}$$
$$+ (1 - sh_{dur_{IMP}}) \times OTHER_{IMP_{gth}}, \quad (4.8)$$

---

[27]The overall output loss is slightly lower than the loss of services and industry due to the resilience of agricultural production to crises.

[28]The definition of "durables" in the trade and output data is not identical because these series come from different, not always comparable, data sources. However, it is unlikely that differences in definitions account for the differences in the shares of these goods in imports and output.

where GDP_{gth} and IMP_{gth} are the growth rates in GDP and imports, respectively; $sh_{dur_{GDP}}$ and $sh_{dur_{IMP}}$ are the share of (capital) durables in GDP and imports, respectively; $DUR_{GDP_{gth}}$ and $DUR_{IMP_{gth}}$ are the growth rate in the (capital) durable component of GDP and imports, respectively; and $OTHER_{GDP_{gth}}$ and $OTHER_{IMP_{gth}}$ are the growth rate in other components of GDP and imports, respectively.

Assuming the elasticity of imports of different products to GDP is 1, equation (4.8) can be rewritten as

$$IMP_{gth} = sh_{dur_{IMP}} \times DUR_{GDP_{gth}}$$
$$+ (1 - sh_{dur_{IMP}}) \times OTHER_{GDP_{gth}}. \quad (4.9)$$

Subtracting (4.7) from (4.9) implies

$$IMP_{gth} - GDP_{gth} = (sh_{dur_{IMP}} - sh_{dur_{GDP}})$$
$$\times (DUR_{GDP_{gth}} - OTHER_{GDP_{gth}}). \quad (4.10)$$

Based on equation (4.10), we define the composition effect as the extent to which the difference between the growth rates of GDP and imports is explained by different compositions of GDP and imports. It is a product of two factors: (1) differences in the share of durables in imports and GDP and (2) differences in the growth of durables and other components following a crisis. If either of these differences is zero, composition cannot be an explanation for observing import losses controlling for output.

Table 4.9 and Figure 4.16 present the findings from this exercise. The impulse response functions of investment in machinery and equipment and the rest of GDP are shown in Figure 4.16 (bottom panel).[29] The postcrisis decline in investment, and in particular in machinery and equipment, is much larger than the postcrisis decline in the rest of GDP over the same period. As presented in column (6) of Table 4.9, for this selected sample of crises, the composition effect can explain 5 to 13 percent of the unconditional import loss. It is important to keep in mind that these composition effects are calculated only from the different shares and post-crisis behavior of machinery and equipment relative to the rest of output; other composition effects—most notably, from consumer durables—may also be present. In addition, composition effects may already be reflected in the higher elasticity of imports to output that is allowed for in our baseline specification. Thus, these estimates of the size of the composition effect could be thought of as a lower bound.

[29]Given the share of durables in GDP, as well as the decline in overall GDP, we can also calculate how much demand for other components of GDP falls after crises.

Table 4.9. Import Losses and Composition Effects

| | Implied Response Function | | | | | |
| | GDP | Investment in Durables | Other | Actual Import Loss | Estimated Composition Effect | Share of Import Loss Explained by Composition Effects |
Time	(1)	(2)	(3)	(4)	(5)	(6)
Crisis year, t	−0.024	−0.091	−0.018	−0.088	−0.007	8.0
$t + 1$	−0.051	−0.285	−0.029	−0.267	−0.025	9.2
$t + 2$	−0.054	−0.340	−0.028	−0.250	−0.030	12.1
$t + 3$	−0.050	−0.234	−0.033	−0.155	−0.019	12.6
$t + 4$	−0.048	−0.160	−0.038	−0.153	−0.012	7.7
$t + 5$	−0.049	−0.114	−0.043	−0.144	−0.007	4.8

Source: IMF staff calculations.

Note: All estimates in columns (1), (2), and (4) are significant at the 1 percent level. Standard errors (not reported) are clustered by economy and corrected for heteroscedasticity. The actual import loss is estimated for the subsample of economies and crises for which disaggregated investment data are available. The share of import loss explained by composition effects in column (6) is calculated as the estimated composition effect in column (5) divided by the actual import loss multiplied by 100.

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The following remarks by the Acting Chair were made at the conclusion of the Executive Board's discussion of the
World Economic Outlook *on September 20, 2010.*

Executive Directors observed that the global economic recovery is proceeding broadly as projected, despite disturbances in financial markets. The recovery is losing momentum temporarily during the second half of 2010 and will likely remain weak in the first half of 2011, as extraordinary policy stimulus is gradually withdrawn. Directors welcomed signs that financial conditions have begun to normalize, aided by policy coordination and announcements of a front-loading of fiscal adjustment in Europe. A more robust, self-sustaining global recovery will require progress in achieving both internal and global demand rebalancing, supported by healthy financial systems.

Directors noted that the observed asymmetry in growth performances will likely persist. In most advanced and a few emerging market economies, recoveries are proceeding at a sluggish pace, and large internal adjustments remain needed to achieve internal rebalancing from stimulus-led to private-sector-led growth. On the other hand, growth in many emerging market and developing economies continues to be vigorous, on the back of improved macroeconomic policy frameworks and a stronger financial footing. Downside risks to near-term global growth remain elevated and concentrated in advanced economies. These emanate from heightened uncertainty in financial markets, fragile real estate markets, continued household deleveraging, and persistently high unemployment. However, the probability of a sharp global slowdown, including stagnation or contraction in advanced economies, appears low.

Directors agreed that fiscal consolidation is a top priority in countries with relatively high public debt. They highlighted the urgency of adopting credible strategies for medium-term consolidation and debt stabilization, including through legislation where necessary. At the same time, policymakers should stand ready to act if global growth threatens to slow appreciably more than expected. In this regard, consideration could be given to postponing consolidation in countries with fiscal room and credibility to do so. In all but the most vulnerable countries, automatic stabilizers should be allowed to operate. Directors stressed that medium-term consolidation plans should be based on realistic growth projections and include reforms to limit rapidly escalating spending programs such as pension entitlements and public health care and tax incentives to boost the supply potential and discourage debt.

In light of subdued inflation pressures, Directors generally considered that monetary policy in most advanced economies should remain highly accommodative, including through unconventional measures if needed, and should be the first line of defense against any larger-than-projected weakening of activity as fiscal stimulus is being unwound. In emerging market economies with rising inflation or asset price pressures, monetary tightening has been broadly appropriate. For all economies, the implications of fiscal consolidation and developments in financial and asset markets for inflation would also need to be taken into account when setting monetary policy.

Directors underscored the urgent need for restoring financial sector health and making progress in regulatory reforms in a coordinated manner, especially among advanced economies. To enable an early exit from fiscal support as well as address legacy problems, priorities include restructuring and resolving weak financial institutions; implementing measures to shore up bank capital adequacy, liquidity, and stability of funding sources; and improving

coordination of supervision to avoid rapid cross-border amplification of shocks. Further advancement toward building a stronger financial regulatory framework is crucial to underpin market confidence and enhance global financial stability.

Directors emphasized that medium-term growth prospects depend on progress in implementing structural policies to give forceful impetus to global demand rebalancing. In this regard, many emerging market economies would need to further reorient toward domestic demand, not only because import recovery in advanced economies will likely trail behind precrisis trends, but also to achieve balanced growth that addresses their own consumption and investment needs. For economies with excessive external surpluses, this would entail allowing further exchange rate flexibility and appreciation in response to sustained capital inflows, while safeguarding financial stability with macroprudential or other targeted measures. These measures should be complemented by structural reforms aimed at enhancing social safety nets and shifting toward optimal saving-investment patterns. Similarly, measures to boost net exports would be crucial for economies with excessive current account deficits. Continued fiscal adjustment and financial sector reforms that discourage excessive spending are also key.

Directors noted that structural policies that strengthen growth over the medium term would help support the required normalization of macroeconomic policies in advanced economies. Labor market policies, coupled with complementary product and services market reforms, should aim to promote competition and enhance growth and job creation, and with sufficient support for the unemployed.

Directors underscored the critical importance of continued policy effort and coordination at both the regional and global levels—as demonstrated during the global crisis and more recently during the European sovereign debt market turmoil. While policy requirements now differ considerably across countries, it is essential that countries continue to work together toward the common goal of achieving strong, sustained, and balanced growth over the medium term. Directors also emphasized the need to avoid negative spillovers as well as trade and investment protectionism.

STATISTICAL APPENDIX

The Statistical Appendix presents historical data, as well as projections. It comprises five sections: Assumptions, What's New, Data and Conventions, Classification of Countries, and Statistical Tables.

The assumptions underlying the estimates and projections for 2010–11 and the medium-term scenario for 2012–15 are summarized in the first section. The second section presents a brief description of changes to the database and statistical tables. The third section provides a general description of the data and of the conventions used for calculating country group composites. The classification of countries in the various groups presented in the *World Economic Outlook* is summarized in the fourth section.

The last, and main, section comprises the statistical tables. Data in these tables have been compiled on the basis of information available through late September 2010. The figures for 2010 and beyond are shown with the same degree of precision as the historical figures solely for convenience; because they are projections, the same degree of accuracy is not to be inferred.

Assumptions

Real effective *exchange rates* for the advanced economies are assumed to remain constant at their average levels during the period August 4–September 1, 2010. For 2010 and 2011, these assumptions imply average U.S. dollar/SDR conversion rates of 1.516 and 1.520, U.S. dollar/euro conversion rates of 1.308 and 1.284, and yen/U.S. dollar conversion rates of 88.5 and 84.2, respectively.

It is assumed that the *price of oil* will average $76.20 a barrel in 2010 and $78.75 a barrel in 2011.

Established *policies* of national authorities are assumed to be maintained. The more specific policy assumptions underlying the projections for selected economies are described in Box A1.

With regard to *interest rates,* it is assumed that the London interbank offered rate (LIBOR) on six-month U.S. dollar deposits will average 0.6 percent in 2010 and 0.8 percent in 2011, that three-month euro deposits will average 0.8 percent in 2010 and 1.0 percent in 2011, and that six-month yen deposits will average 0.6 percent in 2010 and 0.4 percent in 2011.

With respect to *introduction of the euro,* on December 31, 1998, the Council of the European Union decided that, effective January 1, 1999, the irrevocably fixed conversion rates between the euro and currencies of the member states adopting the euro are as follows.

1 euro	=	13.7603	Austrian schillings
	=	40.3399	Belgian francs
	=	0.585274	Cyprus pound[1]
	=	1.95583	Deutsche mark
	=	5.94573	Finnish markkaa
	=	6.55957	French francs
	=	340.750	Greek drachma[2]
	=	0.787564	Irish pound
	=	1,936.27	Italian lire
	=	40.3399	Luxembourg francs
	=	0.42930	Maltese lira[3]
	=	2.20371	Netherlands guilders
	=	200.482	Portuguese escudos
	=	30.1260	Slovak koruna[4]
	=	239.640	Slovenian tolars[5]
	=	166.386	Spanish pesetas

[1]Established on January 1, 2008.
[2]Established on January 1, 2001.
[3]Established on January 1, 2008.
[4]Established on January 1, 2009.
[5]Established on January 1, 2007.

Box A1. Economic Policy Assumptions Underlying the Projections for Selected Economies

Fiscal Policy Assumptions

The short-term fiscal policy assumptions used in the *World Economic Outlook* (WEO) are based on officially announced budgets, adjusted for differences between the national authorities and the IMF staff regarding macroeconomic assumptions and projected fiscal outturns. The medium-term fiscal projections incorporate policy measures that are judged likely to be implemented. In cases where the IMF staff has insufficient information to assess the authorities' budget intentions and prospects for policy implementation, an unchanged structural primary balance is assumed, unless indicated otherwise. Specific assumptions used in some of the advanced economies follow (see also Tables B5, B6, B7, and B9 in the Statistical Appendix for data on fiscal net lending/borrowing and structural balances).[1]

Argentina: The 2010 forecasts are based on the 2009 outturn and IMF staff assumptions. For the outer years, the IMF staff assumes unchanged policies.

Australia: Fiscal projections are based on the 2010–11 budget, 2010 economic statement, 2010 pre-election economic and fiscal outlook, and IMF staff projections.

Austria: Fiscal projections for 2010 are based on the authorities' budget, adjusted for differences in the IMF staff's macro framework. For 2011 the IMF staff includes the central government's

[1]The output gap is actual minus potential output, as a percent of potential output. Structural balances are expressed as a percent of potential output. The structural budget balance is the budgetary position that would be observed if the level of actual output coincided with potential output. Changes in the structural budget balance consequently include effects of temporary fiscal measures, the impact of fluctuations in interest rates and debt-service costs, and other noncyclical fluctuations in the budget balance. The computations of structural budget balances are based on IMF staff estimates of potential GDP and revenue and expenditure elasticities (see the October 1993 *World Economic Outlook*, Annex I). Net debt is defined as gross debt minus financial assets of the general government, which include assets held by the social security insurance system. Estimates of the output gap and of the structural balance are subject to significant margins of uncertainty.

spending ceilings (approved by Parliament) and the health insurance package savings for all years (2011–15).

Belgium: Projections for 2010 are IMF staff estimates based on the 2010 budgets approved by the federal, regional, and community parliaments and further strengthened by the Intergovernmental Agreement 2009–10. Projections for the outer years are IMF staff estimates, assuming unchanged policies.

Brazil: The 2010 forecasts are based on the budget law and IMF staff assumptions. For the outer years, the IMF staff assumes unchanged policies, with a further increase in public investment in line with the authorities' intentions.

Canada: Projections use the baseline forecasts in the latest Budget 2010—Leading the Way on Jobs and Growth. The IMF staff makes some adjustments to this forecast for differences in macroeconomic projections. The IMF staff forecast also incorporates the most recent data releases from Finance Canada and Statistics Canada, including federal, provincial, and territorial budgetary outturns through the end of 2010:Q1.

China: For 2010–11, the government is assumed to continue and complete the stimulus program it announced in late 2008, although the lack of details published on this package complicates IMF staff analysis. Specifically, the IMF staff assumes the stimulus is not withdrawn in 2010, and so there is no significant fiscal impulse. Stimulus is withdrawn in 2011, resulting in a negative fiscal impulse of about 1 percent of GDP (reflecting both higher revenue and lower spending).

Denmark: Projections for 2010–11 are aligned with the latest official budget estimates and the underlying economic projections, adjusted where appropriate for the IMF staff's macroeconomic assumptions. For 2012–15, the projections incorporate key features of the medium-term fiscal plan as embodied in the authorities' 2009 Convergence Program submitted to the European Union.

France: Projections for 2010 are based on the 2010 budget and the latest Stability Program and are adjusted for differences in macroeconomic

assumptions. Projections for the outer years incorporate the IMF staff's assessment of current policies and implementation of announced adjustment measures.

Germany: Projections for 2010 are based on the 2010 budget, adjusted for the differences in the IMF staff's macro framework and estimates of the implementation of the fiscal stimulus measures. The IMF staff's projections for 2011 and beyond reflect the authorities' adopted core federal government budget plan, adjusted for the differences in the IMF staff's macro framework and assumptions on fiscal developments in state and local governments, the social insurance system, and special funds.

Greece: Macroeconomic and fiscal projections for 2010 and the medium term are consistent with the policies that the IMF has agreed to support in the context of the Stand-By Arrangement. Fiscal projections assume a strong front-loaded fiscal adjustment in 2010, followed by further measures in 2011–13. Growth is expected to bottom out in late 2010 and gradually rebound after that, coming into positive territory in 2012.

Hong Kong SAR: Projections are based on the authorities' medium-term fiscal projections.

Hungary: The 2010 forecast is based on the implementation of the budget and the macro framework discussed during the Sixth Review of the Stand-By Arrangement. The IMF staff assumes measures will be undertaken in addition to those outlined by the authorities for 2011–15: in 2011, 1¾ percent of GDP, to achieve a fiscal target of 2.8 percent of GDP and in the medium term to ensure fiscal sustainability.

India: Historical data are based on budgetary execution data. Projections are based on available information on the authorities' fiscal plans, with some adjustments for the IMF staff's assumptions. Projections are based on the budget itself as well as the semiannual budget review. Subnational data are incorporated with a lag of up to two years; general government data are thus finalized long after central government data. IMF presentation differs from Indian national accounts data, particularly regarding subsidies and certain loans.

Indonesia: The 2009 outturn for the overall fiscal deficit was 1.6 percent of estimated GDP. The outturn was lower than the revised budget deficit, largely as a result of lower interest payments and underspending on personnel, material goods, and other spending. About 85 percent of the announced 2009 stimulus measures were implemented (1.1 percent of GDP), with revenue measures comprising nearly three-quarters of the total package. The 2010 revised budget draft envisages a budget deficit higher than projected by the IMF staff. The IMF staff builds in a cushion for a track record of underexecution, the 2010 deficit is likely to be below the announced deficit target. The IMF staff's overall deficit projection is about 1.5 percent of GDP.

Ireland: Fiscal projections for 2010 are based on the 2010 budget, adjusted for financial sector support and differences in macroeconomic assumptions between the IMF staff and the authorities. So far during 2010, the government has injected about €22 billion in capital to banks. The Central Statistics Office of Ireland has determined that €8.3 billion of the €22 billion should be reported as expenditure in the budget. The statistical treatment of the remaining amount is to be determined at a later stage. On this basis, the IMF staff projections include the €8.3 billion in the 2010 deficit. For 2011–12, IMF staff projections incorporate most of the adjustment efforts announced by the authorities in their Stability Program Update, although two-thirds of these measures have not been specified or agreed to by the government. For the remainder of the projection period and in the absence of specifically identified measures, the projections do not incorporate further budgetary adjustments. The authorities have announced their intention to further lower the deficit below 3 percent of GDP by 2014 and have identified broad areas in which to target savings but have yet to specify and put in place measures to realize these savings.

Box A1 *(concluded)*

Italy: The fiscal projections incorporate the impact of the 2010 budget law and fiscal adjustment measures for 2010–13 as approved by the government in May 2010 and modified during parliamentary approval during June–July. The IMF staff projections are based on the authorities' estimates of the policy scenario, including the above medium-term fiscal consolidation package and adjusted mainly for differences in the macroeconomic assumptions and for less optimistic assumptions concerning the impact of revenue administration measures (to combat tax evasion). After 2013, a constant structural primary balance (net of one-time items) is assumed.

Japan: The 2010 projections assume that fiscal plans will be implemented as announced by the government. The medium-term projections typically assume that expenditure and revenue of the general government are adjusted in line with current underlying demographic and economic trends (excluding fiscal stimulus).

Korea: The fiscal projections assume that fiscal policies will be implemented in 2010 as announced by the government. The 2010 budget scales back stimulus measures relative to 2009, implying a negative fiscal impulse estimated at 2 percent of GDP. Expenditure numbers for 2010 correspond to the expenditure numbers presented in the government's budget proposal. Revenue projections reflect the IMF staff's macroeconomic assumptions, adjusted for the estimated costs of tax measures included in the multiyear stimulus package introduced last year and discretionary revenue-raising measures included in the 2010 budget. The medium-term projections assume that the government will continue with its consolidation plans and balance the budget (excluding social security funds) in 2014.

Mexico: Fiscal projections are based on (1) the IMF staff's macroeconomic projections; (2) the modified balanced budget rule under the Fiscal Responsibility Legislation, including the use of the exceptional clause; and (3) the authorities'

projections for spending, including for pensions and health care, and for wage restraint. For 2010–11, projections take into account departure from the balanced budget target under the exceptional clause of the fiscal framework, which allows for a small deficit reflecting cyclical deterioration in revenues.

Netherlands: Fiscal projections for the period 2009–11 are based on Bureau for Economic Policy Analysis budget projections, after adjusting for differences in macroeconomic assumptions. For the remainder of the projection period, the projection assumes unchanged policies.

New Zealand: Fiscal projections are based on the authorities' 2010 budget and IMF staff estimates. The New Zealand fiscal accounts switched to generally accepted accounting principles beginning in fiscal year 2006/07, with no comparable historical data.

Portugal: For 2010, fiscal projections are based on the 2010 budget, adjusted for differences between the government's and the IMF staff's macroeconomic assumptions. For 2011 and beyond, the IMF staff largely incorporates the specific fiscal measures in the medium-term fiscal plan, adjusted for the IMF staff's macroeconomic projections.

Russia: Projections for 2010 are based on the nominal expenditures in the 2010 budget, including the June supplementary budget, and the IMF staff's revenue projections. Projections for 2011–13 are based on the non-oil deficit in percent of GDP implied by the draft medium-term budget and on the IMF staff's revenue projections. The IMF staff assumes an unchanged non-oil federal government balance in percent of GDP during 2013–15.

Saudi Arabia: The authorities systematically underestimate revenues and expenditures in the budget relative to actual outturns. IMF staff projections of oil revenues are based on WEO baseline oil prices discounted by 5 percent, reflecting the higher sulfur content in Saudi crude oil.

Regarding non-oil revenues, customs receipts are assumed to grow in line with imports, investment income in line with the London interbank offered rate (LIBOR), and fees and charges as a function of non-oil GDP. On the expenditure side, wages are assumed to rise above the natural rate of increase, reflecting a salary increase of 15 percent distributed during 2008–10, and goods and services are projected to grow in line with inflation over the medium term. In 2010 and 2013, 13th-month pay is awarded based on the lunar calendar. Interest payments are projected to decline in line with the authorities' policy of repaying public debt. Capital spending in 2010 is projected to be higher than in the budget by about 32 percent and in line with the authorities' announcement of $400 billion in spending over the medium term. The pace of spending is projected to slow over the medium term, leading to a tightening of the fiscal stance.

Singapore: For fiscal year 2010/11, projections are based on budget numbers. For the remainder of the projection period, the IMF staff assumes unchanged policies.

South Africa: Fiscal projections are based on the authorities' 2010 intentions as stated in the budget review published February 17, 2010, and on discussions conducted during the June Article IV consultation.

Spain: For 2010, fiscal projections incorporate the impact of measures in the 2010 budget, the latest Stability Program, and a May fiscal package. For 2011 and beyond, fiscal projections are based on the authorities' medium-term plan, adjusted for the IMF staff's macroeconomic projections.

Sweden: Fiscal projections for 2010 are in line with the authorities' projections. The impact of cyclical developments on the fiscal accounts is calculated using the Organization for Economic Cooperation and Development's latest semi-elasticity.

Switzerland: Projections for 2009–15 are based on IMF staff calculations, which incorporate mea-sures to restore balance in the federal accounts and strengthen social security finances.

Turkey: Fiscal projections assume the authorities adhere to their budget target for 2010 and to their known policy intentions as stated in the Medium-Term Program unveiled in September 2009.

United Kingdom: Fiscal projections are based on the authorities' 2010 budget, announced in June 2010. These projections incorporate the announced medium-term consolidation plans from 2010 onward. The projections are adjusted for differences in forecasts of macroeconomic and financial variables.

United States: Fiscal projections are based on policies outlined in the Administration's Mid-Session Budget Review for fiscal year 2011. The authorities' federal projections are adjusted by the IMF staff for differences in the budget forecasts of key macroeconomic and financial variables and are converted to a general government basis. The estimates of fiscal deficit are adjusted for one-off items (the cost of financial sector support).

Monetary Policy Assumptions

Monetary policy assumptions are based on the established policy framework in each country. In most cases, this implies a nonaccommodative stance over the business cycle: official interest rates will increase when economic indicators suggest that inflation will rise above its acceptable rate or range, and they will decrease when indicators suggest that prospective inflation will not exceed the acceptable rate or range, that prospective output growth is below its potential rate, and that the margin of slack in the economy is significant. On this basis, the LIBOR on six-month U.S. dollar deposits is assumed to average 0.6 percent in 2010 and 0.8 percent in 2011 (see Table 1.1). The rate on three-month euro deposits is assumed to average 0.8 percent in 2010 and 1.0 percent in 2011. The interest rate on six-month Japanese yen deposits is assumed to average 0.6 percent in 2010 and 0.4 percent in 2011.

See Box 5.4 of the October 1998 *World Economic Outlook* for details on how the conversion rates were established.

What's New

- Starting with the October 2010 *World Economic Outlook*, the emerging and developing economies' Western Hemisphere region has been renamed Latin America and the Caribbean (LAC), the country group composites will be calculated only when 90 percent or more of the weighted data are represented, and data for Kosovo are included in the emerging and developing economies aggregates.
- Country weights calculated as nominal GDP valued at purchasing-power-parity (PPP) exchange rates as a share of total world GDP have been updated to reflect revisions to countries' historical GDP data and projections.

Data and Conventions

Data and projections for 183 economies form the statistical basis for the *World Economic Outlook* (the WEO database). The data are maintained jointly by the IMF's Research Department and regional departments, with the latter regularly updating country projections based on consistent global assumptions.

Although national statistical agencies are the ultimate providers of historical data and definitions, international organizations are also involved in statistical issues, with the objective of harmonizing methodologies for the compilation of national statistics, including analytical frameworks, concepts, definitions, classifications, and valuation procedures used in the production of economic statistics. The WEO database reflects information from both national source agencies and international organizations.

Most countries' macroeconomic data presented in the WEO conform broadly to the 1993 version of the *System of National Accounts* (SNA). The IMF's sector statistical standards—the *Balance of Payments Manual, Fifth Edition* (BPM5), the *Monetary and Financial Statistics Manual* (MFSM 2000), and the *Government Finance Statistics Manual 2001* (GFSM

2001)—have all been aligned with the 1993 SNA. These standards reflect the IMF's special interest in countries' external positions, financial sector stability, and public sector fiscal positions. The process of adapting country data to the new standards begins in earnest when the manuals are released. However, full concordance with the manuals is ultimately dependent on the provision by national statistical compilers of revised country data; hence, the *World Economic Outlook* estimates are only partially adapted to these manuals. Nonetheless, for many countries the impact of conversion to the updated standards will be small on major balances and aggregates. Many other countries have partially adopted the latest standards and will continue implementation over a period of years.

Consistent with the recommendations of the 1993 SNA, several countries have phased out their traditional *fixed-base-year* method of calculating real macroeconomic variable levels and growth by switching to a *chain-weighted* method of computing aggregate growth. The chain-weighted method frequently updates the weights of price and volume indicators. It allows countries to measure GDP growth more accurately by reducing or eliminating the downward biases in volume series built on index numbers that average volume components using weights from a year in the moderately distant past. Currently, macroeconomic price and volume data for the following economies are based on chain-weighted methodology: Albania, Algeria, Australia, Austria, Azerbaijan, Belarus, Belgium, Bulgaria, Canada, Colombia, Cyprus, the Czech Republic, Denmark, Estonia, the euro area, Finland, France, Georgia, Germany, Greece, Guatemala, Hong Kong SAR, Hungary, Iceland, Ireland, Israel, Italy, Japan, Kazakhstan, Korea, Lithuania, Luxembourg, Malta, Mauritania, the Netherlands, New Zealand, Norway, Poland, Portugal, Romania, Russia, Singapore, Slovenia, Spain, Sweden, Switzerland, Ukraine, the United Kingdom, and the United States.

Composite data for country groups in the *World Economic Outlook* are either sums or weighted averages of data for individual countries. Unless noted otherwise, multiyear averages of growth rates are expressed as compound annual rates of change.[1]

[1]Averages for real GDP and its components, employment, per capita GDP, inflation, factor productivity, trade, and commod-

Arithmetically weighted averages are used for all data for the emerging and developing economies group except inflation and money growth, for which geometric averages are used. The following conventions apply.

- Country group composites for exchange rates, interest rates, and growth rates of monetary aggregates are weighted by GDP converted to U.S. dollars at market exchange rates (averaged over the preceding three years) as a share of group GDP.
- Composites for other data relating to the domestic economy, whether growth rates or ratios, are weighted by GDP valued at PPP as a share of total world or group GDP.[2]
- Composites for data relating to the domestic economy for the euro area (16 member countries throughout the entire period unless noted otherwise) are aggregates of national source data using GDP weights. Annual data are not adjusted for calendar-day effects. For data prior to 1999, data aggregations apply 1995 European currency unit exchange rates.
- Composite unemployment rates and employment growth are weighted by labor force as a share of group labor force.
- Composites relating to the external economy are sums of individual country data after conversion to U.S. dollars at the average market exchange rates in the years indicated for balance of payments data and at end-of-year market exchange rates for debt denominated in currencies other than U.S. dollars. Composites of changes in foreign trade volumes and prices, however, are arithmetic averages of percent changes for individual countries weighted by the U.S. dollar value of exports or imports as a share of total world or group exports or imports (in the preceding year).

- Unless noted otherwise, group composites are computed if 90 percent or more of the share of group weights is represented.

Classification of Countries

Summary of the Country Classification

The country classification in the *World Economic Outlook* divides the world into two major groups: advanced economies, and emerging and developing economies.[3] This classification is not based on strict criteria, economic or otherwise, and it has evolved over time. The objective is to facilitate analysis by providing a reasonably meaningful method for organizing data. Table A provides an overview of the country classification, showing the number of countries in each group by region and summarizing some key indicators of their relative size (GDP valued by PPP, total exports of goods and services, and population).

Some countries remain outside the country classification and therefore are not included in the analysis. Cuba and the Democratic People's Republic of Korea are not IMF members, and their economies therefore are not monitored by the IMF. San Marino is omitted from the group of advanced economies for lack of a fully developed database. Likewise, the Marshall Islands, the Federated States of Micronesia, Palau, Somalia, and Tuvalu are omitted from the emerging and developing economies group composites because of data limitations.

General Features and Composition of Groups in the World Economic Outlook Classification

Advanced Economies

The 33 advanced economies are listed in Table B. The seven largest in terms of GDP—the United States, Japan, Germany, France, Italy, the United Kingdom, and Canada—constitute the subgroup of *major advanced economies,* often referred to as the Group of Seven (G7). The 16 members of the *euro*

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ity prices are calculated based on the compound annual rate of change, except for the unemployment rate, which is based on the simple arithmetic average.

[2] See Box A2 of the April 2004 *World Economic Outlook* for a summary of the revised PPP-based weights and Annex IV of the May 1993 *World Economic Outlook.* See also Anne-Marie Gulde and Marianne Schulze-Ghattas, "Purchasing Power Parity Based Weights for the *World Economic Outlook,*" in *Staff Studies for the World Economic Outlook* (International Monetary Fund, December 1993), pp. 106–23.

[3] As used here, the terms "country" and "economy" do not always refer to a territorial entity that is a state as understood by international law and practice. Some territorial entities included here are not states, although their statistical data are maintained on a separate and independent basis.

Table A. Classification by *World Economic Outlook* Groups and Their Shares in Aggregate GDP, Exports of Goods and Services, and Population, 2009[1]

(Percent of total for group or world)

	Number of Economies	GDP Advanced Economies	GDP World	Exports of Goods and Services Advanced Economies	Exports of Goods and Services World	Population Advanced Economies	Population World
Advanced Economies	**33**	**100.0**	**53.8**	**100.0**	**65.5**	**100.0**	**15.1**
United States		38.0	20.4	15.2	10.0	30.4	4.6
Euro Area	16	28.1	15.1	43.2	28.3	32.2	4.9
Germany		7.5	4.0	13.1	8.6	8.1	1.2
France		5.6	3.0	6.0	3.9	6.2	0.9
Italy		4.6	2.5	4.9	3.2	5.9	0.9
Spain		3.6	1.9	3.4	2.2	4.5	0.7
Japan		11.1	6.0	6.5	4.3	12.6	1.9
United Kingdom		5.7	3.1	5.9	3.8	6.1	0.9
Canada		3.4	1.8	3.7	2.4	3.3	0.5
Other Advanced Economies	13	13.8	7.4	25.5	16.7	15.4	2.3
Memorandum							
Major Advanced Economies	7	75.9	40.8	55.3	36.2	72.6	10.9
Newly Industrialized Asian Economies	4	7.0	3.8	13.9	9.1	8.3	1.2

	Number of Economies	Emerging and Developing Economies	World	Emerging and Developing Economies	World	Emerging and Developing Economies	World
Emerging and Developing Economies	**150**	**100.0**	**46.2**	**100.0**	**34.5**	**100.0**	**84.9**
Regional Groups							
Central and Eastern Europe	15	7.6	3.5	10.7	3.7	3.1	2.6
Commonwealth of Independent States[2]	13	9.2	4.3	9.7	3.4	4.9	4.2
Russia		6.5	3.0	6.4	2.2	2.5	2.1
Developing Asia	26	48.9	22.6	42.2	14.5	61.9	52.6
China		27.2	12.6	24.5	8.5	23.4	19.9
India		10.9	5.1	4.8	1.7	21.0	17.8
Excluding China and India	24	10.7	5.0	12.8	4.4	17.5	14.9
Latin America and the Caribbean	32	18.5	8.5	14.7	5.1	9.6	8.2
Brazil		6.2	2.9	3.3	1.1	3.4	2.8
Mexico		4.5	2.1	4.5	1.6	1.9	1.6
Middle East and North Africa	20	10.6	4.9	17.3	6.0	7.0	6.0
Sub-Saharan Africa	44	5.2	2.4	5.4	1.9	13.4	11.4
Excluding Nigeria and South Africa	42	2.6	1.2	2.8	1.0	9.9	8.4
Analytical Groups							
By Source of Export Earnings							
Fuel	27	18.5	8.6	26.5	9.1	11.4	9.7
Nonfuel	123	81.5	37.6	73.5	25.4	88.6	75.3
Of Which, Primary Products	20	2.3	1.1	2.5	0.9	4.6	3.9
By External Financing Source							
Net Debtor Economies	121	51.3	23.7	44.3	15.3	61.7	52.4
Of Which, Official Financing	35	3.1	1.4	2.0	0.7	11.2	9.5
Net Debtor Economies by Debt-Servicing Experience							
Countries with Arrears and/or Rescheduling during 2004–08	43	5.0	2.3	4.4	1.5	9.3	7.9
Other Net Debtor Economies	78	46.2	21.4	39.9	13.8	52.4	44.5
Other Groups							
Heavily Indebted Poor Countries	39	2.1	1.0	1.9	0.7	10.3	8.8

   [1]The GDP shares are based on the purchasing-power-parity valuation of countries' GDP. The number of countries comprising each group reflects those for which data are included in the group aggregates.

   [2]Georgia and Mongolia, which are not members of the Commonwealth of Independent States, are included in this group for reasons of geography and similarities in economic structure.

Table B. Advanced Economies by Subgroup

Major Currency Areas	Other Subgroups					
	Euro Area		Newly Industrialized Asian Economies	Major Advanced Economies	Other Advanced Economies	
United States	Austria	Italy	Hong Kong SAR[1]	Canada	Australia	New Zealand
Euro Area	Belgium	Luxembourg	Korea	France	Czech Republic	Norway
Japan	Cyprus	Malta	Singapore	Germany	Denmark	Singapore
	Finland	Netherlands	Taiwan Province of China	Italy	Hong Kong SAR[1]	Sweden
	France	Portugal		Japan	Iceland	Switzerland
	Germany	Slovak Republic		United Kingdom	Israel	Taiwan Province of China
	Greece	Slovenia		United States	Korea	
	Ireland	Spain				

[1]On July 1, 1997, Hong Kong was returned to the People's Republic of China and became a Special Administrative Region of China.

area and the four *newly industrialized Asian economies* are also distinguished as subgroups. Composite data shown in the tables for the euro area cover the current members for all years, even though the membership has increased over time.

Table C lists the member countries of the European Union, not all of which are classified as advanced economies in the *World Economic Outlook*.

Emerging and Developing Economies

The group of emerging and developing economies (150 countries) includes all those that are not classified as advanced economies.

The *regional breakdowns* of emerging and developing economies are *central and eastern Europe (CEE), Commonwealth of Independent States (CIS), developing Asia, Latin America and the Caribbean (LAC), Middle East and north Africa (MENA), and sub-Saharan Africa (SSA).*

Emerging and developing economies are also classified according to *analytical criteria.* The analytical criteria reflect the composition of countries' export earnings and other income from abroad; a distinction between net creditor and net debtor countries; and, for the net debtor countries, financial criteria based on external financing sources and experience with external debt servicing. The detailed composition of emerging and developing economies in the regional and analytical groups is shown in Tables D and E.

The analytical criterion, by *source of export earnings,* distinguishes between categories: *fuel* (Standard International Trade Classification—SITC 3) and *nonfuel* and then focuses on *nonfuel primary products* (SITCs 0, 1, 2, 4, and 68). Countries are categorized into one of these groups when their main source of export earnings exceeds 50 percent of total exports on average between 2004 and 2008.

The financial criteria focus on *net creditor countries, net debtor countries,* and *heavily indebted poor countries* (HIPCs). Countries are categorized as net debtors when their current account balance accumulations from 1972 (or earliest data available) to 2008 are negative. Net debtor countries are further

Table C. European Union

Austria	Finland	Latvia	Romania
Belgium	France	Lithuania	Slovak Republic
Bulgaria	Germany	Luxembourg	Slovenia
Cyprus	Greece	Malta	Spain
Czech Republic	Hungary	Netherlands	Sweden
Denmark	Ireland	Poland	United Kingdom
Estonia	Italy	Portugal	

Table D. Emerging and Developing Economies by Region and Main Source of Export Earnings

	Fuel	Nonfuel Primary Products
Commonwealth of Independent States	Azerbaijan	Mongolia
	Kazakhstan	Uzbekistan
	Russia	
	Turkmenistan	
Developing Asia	Brunei Darussalam	Papua New Guinea
	Timor-Leste	Solomon Islands
Latin America and the Caribbean	Ecuador	Chile
	Trinidad and Tobago	Guyana
	Venezuela	Peru
		Suriname
Middle East and North Africa	Algeria	Mauritania
	Bahrain	
	Iran, Islamic Republic of	
	Iraq	
	Kuwait	
	Libya	
	Oman	
	Qatar	
	Saudi Arabia	
	Sudan	
	United Arab Emirates	
	Yemen, Republic of	
Sub-Saharan Africa	Angola	Burkina Faso
	Chad	Burundi
	Congo, Republic of	Congo, Democratic Republic of
	Equatorial Guinea	Guinea
	Gabon	Guinea-Bissau
	Nigeria	Malawi
		Mali
		Mozambique
		Sierra Leone
		Zambia
		Zimbabwe

Note: Mongolia, which is not a member of the Commonwealth of Independent States, is included in this group for reasons of geography and similarities in economic structure.

differentiated on the basis of two additional financial criteria: *official external financing* and *experience with debt servicing*.[4] Countries are placed in the official external financing category when 65 percent or more of their total debt, on average between 2004 and 2008, is financed by official creditors.

The HIPC group comprises the countries that are or have been considered by the IMF and the

World Bank for participation in their debt initiative known as the HIPC Initiative, which aims to reduce the external debt burdens of all the eligible HIPCs to a "sustainable" level in a reasonably short period of time.[5] Many of these countries have already benefited from debt relief and graduated from the initiative.

[4] During 2004–08, 43 countries incurred external payments arrears or entered into official or commercial-bank debt-rescheduling agreements. This group of countries is referred to as *countries with arrears and/or rescheduling during 2004–08.*

[5] See David Andrews, Anthony R. Boote, Syed S. Rizavi, and Sukwinder Singh, *Debt Relief for Low-Income Countries: The Enhanced HIPC Initiative*, IMF Pamphlet Series, No. 51 (Washington: International Monetary Fund, November 1999).

Table E. Emerging and Developing Economies by Region, Net External Position, and Status as Heavily Indebted Poor Countries

	Net External Position		Heavily Indebted Poor Countries[2]		Net External Position		Heavily Indebted Poor Countries[2]
	Net Creditor	Net Debtor[1]			Net Creditor	Net Debtor[1]	
Central and Eastern Europe				Indonesia	*		
Albania		*		Kiribati	*		
Bosnia and Herzegovina		*		Lao People's Democratic Republic		*	
Bulgaria		*		Malaysia	*		
Croatia		*		Maldives		*	
Estonia		*		Myanmar		*	
Hungary		*		Nepal		•	
Kosovo		*		Pakistan		*	
Latvia		*		Papua New Guinea	*		
Lithuania		*		Philippines		*	
Macedonia, Former Yugoslav Republic of		*		Samoa		•	
Montenegro		*		Solomon Islands		•	
Poland		*		Sri Lanka		•	
Romania		*		Thailand		*	
Serbia		*		Timor-Leste	*		
Turkey		*		Tonga		•	
Commonwealth of Independent States[3]				Vanuatu		*	
Armenia		*		Vietnam		*	
Azerbaijan	*			**Latin America and the Caribbean**			
Belarus		*		Antigua and Barbuda		*	
Georgia		*		Argentina		*	
Kazakhstan		*		Bahamas, The		*	
Kyrgyz Republic		•	*	Barbados		*	
Moldova		*		Belize		*	
Mongolia		•		Bolivia	*		•
Russia	*			Brazil		*	
Tajikistan		*		Chile		*	
Turkmenistan	*			Colombia		*	
Ukraine		*		Costa Rica		*	
Uzbekistan	*			Dominica		*	
Developing Asia				Dominican Republic		*	
Afghanistan, Islamic Republic of		•	•	Ecuador		*	
Bangladesh		•		El Salvador		*	
Bhutan		•		Grenada		*	
Brunei Darussalam	*			Guatemala		*	
Cambodia		*		Guyana		•	•
China	*			Haiti		•	•
Fiji		*		Honduras		*	•
India		*		Jamaica		•	
				Mexico		*	

Table E (concluded)

	Net External Position		Heavily Indebted Poor Countries[2]		Net External Position		Heavily Indebted Poor Countries[2]
	Net Creditor	Net Debtor[1]			Net Creditor	Net Debtor[1]	
Nicaragua		*	•	Cameroon		*	•
Panama		*		Cape Verde		*	
Paraguay		*		Central African Republic		•	•
Peru		*		Chad		*	*
St. Kitts and Nevis		*		Comoros		•	*
St. Lucia		*		Congo, Democratic Republic of		•	•
St. Vincent and the Grenadines		•		Congo, Republic of		•	•
Suriname		•		Côte d'Ivoire		*	*
Trinidad and Tobago	*			Equatorial Guinea		*	
Uruguay		*		Eritrea		•	*
Venezuela	*			Ethiopia		•	•
Middle East and North Africa				Gabon	*		
Algeria	*			Gambia, The		•	•
Bahrain	*			Ghana		•	•
Djibouti		*		Guinea		*	*
Egypt		*		Guinea-Bissau		*	*
Iran, Islamic Republic of	*			Kenya		•	
Iraq	*			Lesotho		*	
Jordan		*		Liberia		*	•
Kuwait	*			Madagascar		*	•
Lebanon		*		Malawi		•	•
Libya	*			Mali		•	•
Mauritania		*	•	Mauritius		*	
Morocco		*		Mozambique		•	•
Oman	*			Namibia	*		
Qatar	*			Niger		*	•
Saudi Arabia	*			Nigeria	*		
Sudan		*	*	Rwanda		•	•
Syrian Arab Republic		•		São Tomé and Príncipe		*	•
Tunisia		*		Senegal		*	•
United Arab Emirates	*			Seychelles		*	
Yemen, Republic of		*		Sierra Leone		•	•
Sub-Saharan Africa				South Africa		*	
Angola	*			Swaziland		*	
Benin		*	•	Tanzania		•	•
Botswana	*			Togo		•	*
Burkina Faso		•	•	Uganda		*	•
Burundi		•	•	Zambia		*	•
				Zimbabwe		•	

[1]Dot instead of star indicates that the net debtor's main external finance source is official financing.

[2]Dot instead of star indicates that the country has reached the completion point.

[3]Georgia and Mongolia, which are not members of the Commonwealth of Independent States, are included in this group for reasons of geography and similarities in economic structure.

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Table A1. Summary of World Output[1]
(Annual percent change)

	Average 1992–2001	2002	2003	2004	2005	2006	2007	2008	2009	Projections 2010	2011	2015
World	**3.2**	**2.9**	**3.6**	**4.9**	**4.6**	**5.2**	**5.3**	**2.8**	**−0.6**	**4.8**	**4.2**	**4.6**
Advanced Economies	**2.8**	**1.7**	**1.9**	**3.2**	**2.7**	**3.0**	**2.7**	**0.2**	**−3.2**	**2.7**	**2.2**	2.4
United States	3.5	1.8	2.5	3.6	3.1	2.7	1.9	0.0	−2.6	2.6	2.3	2.6
Euro Area	2.1	0.9	0.8	2.2	1.7	3.0	2.9	0.5	−4.1	1.7	1.5	1.7
Japan	0.9	0.3	1.4	2.7	1.9	2.0	2.4	−1.2	−5.2	2.8	1.5	1.7
Other Advanced Economies[2]	3.7	3.3	2.6	4.0	3.5	3.9	4.0	1.0	−2.3	4.2	3.1	3.2
Emerging and Developing Economies	**3.8**	**4.8**	**6.2**	**7.5**	**7.3**	**8.2**	**8.7**	**6.0**	**2.5**	**7.1**	**6.4**	**6.7**
Regional Groups												
Central and Eastern Europe	2.8	4.4	4.8	7.3	5.9	6.5	5.5	3.0	−3.6	3.7	3.1	4.1
Commonwealth of Independent States[3]	−3.1	5.2	7.7	8.1	6.7	8.8	9.0	5.3	−6.5	4.3	4.6	4.3
Developing Asia	7.3	6.9	8.2	8.6	9.5	10.4	11.4	7.7	6.9	9.4	8.4	8.5
Latin America and the Caribbean	3.0	0.5	2.1	6.0	4.7	5.6	5.7	4.3	−1.7	5.7	4.0	3.9
Middle East and North Africa	3.4	3.8	6.9	5.8	5.3	5.8	6.0	5.0	2.0	4.1	5.1	4.9
Sub-Saharan Africa	2.8	7.4	5.0	7.2	6.3	6.4	7.0	5.5	2.6	5.0	5.5	5.4
Memorandum												
European Union	2.3	1.4	1.6	2.7	2.2	3.5	3.2	0.8	−4.1	1.7	1.7	2.2
Analytical Groups												
By Source of Export Earnings												
Fuel	0.3	4.8	7.0	7.9	6.7	7.4	7.6	5.1	−1.9	3.9	4.7	4.3
Nonfuel	4.8	4.8	6.1	7.5	7.4	8.4	9.0	6.2	3.5	7.8	6.8	7.1
Of Which, Primary Products	3.7	3.8	4.3	5.6	6.2	6.1	6.6	6.7	1.5	6.6	6.1	5.6
By External Financing Source												
Net Debtor Economies	3.3	3.2	4.6	6.6	5.9	6.7	6.7	4.6	0.6	6.4	5.2	5.6
Of Which, Official Financing	3.5	4.0	4.1	6.0	6.3	6.4	6.3	5.7	5.3	5.5	6.4	6.5
Net Debtor Economies by Debt-Servicing Experience												
Economies with Arrears and/or Rescheduling During 2004–08	2.9	−0.6	6.4	7.9	8.0	7.8	7.8	6.2	2.1	5.7	4.7	4.4
Memorandum												
Median Growth Rate												
Advanced Economies	3.2	1.9	2.0	3.9	3.2	3.6	3.7	0.9	−2.8	2.0	2.2	2.6
Emerging and developing economies	3.7	3.9	4.8	5.5	5.4	5.8	6.2	5.1	1.7	4.0	4.5	4.6
Output Per Capita												
Advanced Economies	2.1	1.1	1.3	2.5	1.9	2.3	2.0	−0.5	−3.8	2.1	1.5	1.8
Emerging and Developing Economies	2.4	3.6	5.0	6.3	6.1	7.1	7.6	4.9	1.4	6.1	5.4	5.7
World Growth Rate Based on Market Exchange	**2.9**	**2.0**	**2.7**	**4.0**	**3.5**	**4.0**	**3.9**	**1.6**	**−2.0**	**3.7**	**3.3**	**3.7**
Value of World Output in Billions of U.S. Dollars												
At Market Exchange Rates	29,150	33,244	37,376	42,071	45,515	49,295	55,615	61,187	57,843	61,963	65,417	81,963
At Purchasing Power Parities	35,358	46,087	48,741	52,591	56,667	61,505	66,622	69,947	70,041	74,004	78,092	99,336

[1]Real GDP.

[2]In this table, Other Advanced Economies means advanced economies excluding the United States, Euro Area countries, and Japan.

[3]Georgia and Mongolia, which are not members of the Commonwealth of Independent States, are included in this group for reasons of geography and similarities in economic structure.

Table A2. Advanced Economies: Real GDP and Total Domestic Demand[1]

(Annual percent change)

	Average 1992–2001	2002	2003	2004	2005	2006	2007	2008	2009	Projections 2010	Projections 2011	Projections 2015	Fourth Quarter[2] 2009:Q4	Fourth Quarter[2] Projections 2010:Q4	Fourth Quarter[2] Projections 2011:Q4
Real GDP															
Advanced Economies	**2.8**	**1.7**	**1.9**	**3.2**	**2.7**	**3.0**	**2.7**	**0.2**	**−3.2**	**2.7**	**2.2**	**2.4**	**−0.4**	**2.4**	**2.5**
United States	3.5	1.8	2.5	3.6	3.1	2.7	1.9	0.0	−2.6	2.6	2.3	2.6	0.2	2.2	2.7
Euro Area	2.1	0.9	0.8	2.2	1.7	3.0	2.9	0.5	−4.1	1.7	1.5	1.7	−2.0	1.9	1.4
Germany	1.7	0.0	−0.2	1.2	0.8	3.4	2.7	1.0	−4.7	3.3	2.0	1.3	−2.0	3.9	1.2
France	2.1	1.1	1.1	2.3	2.0	2.4	2.3	0.1	−2.5	1.6	1.6	2.1	−0.5	1.7	1.6
Italy	1.6	0.5	0.0	1.5	0.7	2.0	1.5	−1.3	−5.0	1.0	1.0	1.3	−2.8	1.3	1.1
Spain	3.0	2.7	3.1	3.3	3.6	4.0	3.6	0.9	−3.7	−0.3	0.7	2.0	−3.0	0.1	1.4
Netherlands	3.0	0.1	0.3	2.2	2.0	3.4	3.9	1.9	−3.9	1.8	1.7	1.9	−2.4	2.0	1.7
Belgium	2.3	1.4	0.8	3.1	2.0	2.7	2.8	0.8	−2.7	1.6	1.7	1.9	−0.1	1.0	2.8
Greece	2.5	3.4	5.9	4.6	2.2	4.5	4.5	2.0	−2.0	−4.0	−2.6	2.7	−2.5	−4.9	−0.2
Austria	2.2	1.6	0.8	2.5	2.5	3.6	3.7	2.2	−3.9	1.6	1.6	1.8	−2.1	1.8	1.6
Portugal	2.9	0.7	−0.9	1.6	0.8	1.4	2.4	0.0	−2.6	1.1	0.0	1.2	−1.0	0.3	0.9
Finland	2.9	1.8	2.0	4.1	2.9	4.4	5.3	0.9	−8.0	2.4	2.0	1.8	−5.2	3.1	1.3
Ireland	7.4	6.5	4.4	4.6	6.0	5.3	5.6	−3.5	−7.6	−0.3	2.3	3.5	−5.6	0.6	5.7
Slovak Republic	. . .	4.6	4.8	5.0	6.7	8.5	10.6	6.2	−4.7	4.1	4.3	4.2	−3.9	3.4	4.8
Slovenia	. . .	4.0	2.8	4.3	4.5	5.8	6.8	3.5	−7.8	0.8	2.4	2.5	−5.6	2.7	2.9
Luxembourg	4.4	4.1	1.5	4.4	5.4	5.6	6.5	0.0	−4.1	3.0	3.1	2.6	1.0	1.5	3.4
Cyprus	4.8	2.1	1.9	4.2	3.9	4.1	5.1	3.6	−1.7	0.4	1.8	3.0	−2.7	1.6	2.3
Malta	3.7	2.6	−0.3	0.9	4.0	3.6	3.7	2.6	−2.1	1.7	1.7	2.5	0.4	−0.6	1.8
Japan	0.9	0.3	1.4	2.7	1.9	2.0	2.4	−1.2	−5.2	2.8	1.5	1.7	−1.4	1.9	2.1
United Kingdom	2.9	2.1	2.8	3.0	2.2	2.8	2.7	−0.1	−4.9	1.7	2.0	2.6	−2.9	2.8	1.6
Canada	3.3	2.9	1.9	3.1	3.0	2.8	2.2	0.5	−2.5	3.1	2.7	2.0	−1.1	3.1	2.9
Korea	6.0	7.2	2.8	4.6	4.0	5.2	5.1	2.3	0.2	6.1	4.5	4.0	6.1	4.8	5.9
Australia	3.8	3.9	3.2	3.6	3.2	2.6	4.8	2.2	1.2	3.0	3.5	3.2	2.6	2.8	4.1
Taiwan Province of China	5.3	5.3	3.7	6.2	4.7	5.4	6.0	0.7	−1.9	9.3	4.4	5.0	8.4	4.1	6.6
Sweden	2.3	2.5	2.3	4.2	3.2	4.3	3.3	−0.4	−5.1	4.4	2.6	3.4	−1.5	5.3	1.2
Switzerland	1.3	0.4	−0.2	2.5	2.6	3.6	3.6	1.9	−1.9	2.9	1.7	2.0	−0.1	3.0	1.3
Hong Kong SAR	3.4	1.8	3.0	8.5	7.1	7.0	6.4	2.2	−2.8	6.0	4.7	4.3	2.5	3.7	8.5
Czech Republic	. . .	1.9	3.6	4.5	6.3	6.8	6.1	2.5	−4.1	2.0	2.2	3.5	−3.2	2.2	2.5
Norway	3.6	1.5	1.0	3.9	2.7	2.3	2.7	0.8	−1.4	0.6	1.8	2.0	−1.1	0.9	2.1
Singapore	6.4	4.2	4.6	9.2	7.4	8.6	8.5	1.8	−1.3	15.0	4.5	4.0	3.8	12.5	7.6
Denmark	2.5	0.5	0.4	2.3	2.4	3.4	1.7	−0.9	−4.7	2.0	2.3	1.9	−2.9	3.4	1.6
Israel	5.3	−0.6	1.5	5.1	4.9	5.7	5.3	4.2	0.8	4.2	3.8	3.7	1.6	4.9	2.8
New Zealand	3.3	4.9	4.1	4.4	3.2	1.0	2.8	−0.1	−1.6	3.0	3.2	2.6	0.4	3.6	3.3
Iceland	3.0	0.1	2.4	7.7	7.5	4.6	6.0	1.0	−6.8	−3.0	3.0	3.1	−8.8	0.3	2.2
Memorandum															
Major Advanced Economies	2.6	1.3	1.8	2.9	2.4	2.6	2.1	−0.1	−3.5	2.5	2.0	2.2	−0.8	2.3	2.2
Newly Industrialized Asian Economies	5.5	5.8	3.2	5.9	4.8	5.8	5.8	1.8	−0.9	7.8	4.5	4.3	6.1	5.2	6.6
Real Total Domestic Demand															
Advanced Economies	**2.9**	**1.8**	**2.2**	**3.2**	**2.7**	**2.8**	**2.3**	**−0.2**	**−3.5**	**2.6**	**1.9**	**2.4**	**−1.3**	**2.6**	**2.1**
United States	3.9	2.4	2.8	4.0	3.2	2.6	1.3	−1.1	−3.6	3.0	2.2	2.9	−0.9	3.1	2.5
Euro Area	. . .	0.4	1.4	1.9	1.9	2.9	2.6	0.4	−3.4	1.0	0.9	1.6	−2.6	2.1	1.0
Germany	1.5	−2.0	0.6	−0.1	0.0	2.4	1.3	1.2	−1.9	2.5	1.2	1.1	−2.2	4.1	0.9
France	1.9	1.1	1.8	3.1	2.8	2.7	3.3	0.4	−2.4	1.4	1.6	2.1	−0.8	1.6	1.3
Italy	1.3	1.3	0.8	1.3	0.9	2.0	1.3	−1.5	−3.8	0.6	1.1	1.2	−2.0	0.8	1.4
Spain	2.9	3.2	3.8	4.8	5.1	5.2	4.1	−0.6	−6.0	−1.1	0.0	2.0	−5.0	−0.8	1.7
Japan	0.9	−0.4	0.8	1.9	1.7	1.2	1.3	−1.3	−4.0	1.0	1.3	1.5	−3.4	1.0	1.9
United Kingdom	3.1	3.2	2.9	3.5	2.1	2.5	3.1	−0.7	−5.4	2.4	1.4	2.1	−2.7	2.9	1.3
Canada	2.6	3.0	4.5	4.1	5.0	4.4	3.9	2.5	−2.6	4.9	2.9	1.9	0.0	4.3	2.9
Other Advanced Economies	3.8	4.0	2.0	4.6	3.3	3.9	4.6	1.8	−2.5	5.3	3.8	3.6	2.0	4.1	3.7
Memorandum															
Major Advanced Economies	2.7	1.4	2.2	3.0	2.5	2.4	1.7	−0.6	−3.5	2.5	1.9	2.3	−1.6	2.7	2.0
Newly Industrialized Asian Economies	4.8	5.0	0.9	4.8	2.9	4.1	4.3	1.8	−3.0	7.0	4.2	4.2	4.3	4.2	4.1

[1]When economies are not listed alphabetically, they are ordered on the basis of economic size.
[2]From the fourth quarter of the preceding year.

Table A3. Advanced Economies: Components of Real GDP
(Annual percent change)

	Averages		2002	2003	2004	2005	2006	2007	2008	2009	Projections	
	1992–2001	2002–11									2010	2011
Private Consumer Expenditure												
Advanced Economies	**3.0**	**1.7**	**2.3**	**2.0**	**2.7**	**2.7**	**2.6**	**2.5**	**0.2**	**−1.0**	**1.6**	**1.7**
United States	3.9	1.9	2.7	2.8	3.5	3.4	2.9	2.4	−0.3	−1.2	1.5	2.0
Euro Area	. . .	1.0	0.9	1.2	1.6	1.8	2.1	1.7	0.4	−1.1	0.6	0.9
Germany	1.9	0.2	−0.8	0.1	0.1	0.3	1.4	−0.2	0.7	−0.2	0.0	0.9
France	1.9	1.8	2.3	2.1	2.4	2.5	2.6	2.5	0.5	0.6	1.3	1.1
Italy	1.5	0.5	0.2	1.0	0.7	1.1	1.2	1.1	−0.8	−1.8	0.7	1.2
Spain	2.7	1.8	2.8	2.9	4.2	4.2	3.8	3.7	−0.6	−4.2	0.8	0.9
Japan	1.3	0.8	1.1	0.4	1.6	1.3	1.5	1.6	−0.7	−1.0	1.6	0.6
United Kingdom	3.3	1.5	3.5	3.0	3.1	2.2	1.8	2.2	0.4	−3.3	0.9	1.5
Canada	2.8	3.2	3.6	3.0	3.3	3.7	4.2	4.6	2.9	0.4	3.4	3.0
Other Advanced Economies[1]	4.2	3.0	4.2	1.8	3.6	3.6	3.5	4.6	1.2	0.4	3.7	3.5
Memorandum												
Major Advanced Economies	2.9	1.5	2.0	2.0	2.6	2.5	2.4	2.0	0.0	−1.1	1.3	1.6
Newly Industrialized Asian Economies	5.7	3.2	5.9	0.6	3.0	3.9	3.8	4.7	1.0	0.5	4.3	4.1
Public Consumption												
Advanced Economies	**1.8**	**1.8**	**3.4**	**2.2**	**1.7**	**1.3**	**1.6**	**1.9**	**2.3**	**2.3**	**1.4**	**−0.5**
United States	1.3	1.6	4.5	2.2	1.4	0.6	1.0	1.3	2.5	1.9	1.5	−1.2
Euro Area	. . .	1.7	2.4	1.7	1.6	1.6	2.0	2.2	2.3	2.4	1.2	−0.2
Germany	1.7	1.3	1.5	0.4	−0.7	0.4	1.0	1.6	2.3	2.9	2.9	0.7
France	1.4	1.7	1.9	2.0	2.2	1.2	1.3	1.5	1.6	2.8	1.5	0.6
Italy	0.3	1.0	2.4	1.9	2.2	1.9	0.5	0.9	0.8	0.6	0.2	−1.4
Spain	3.0	3.9	4.5	4.8	6.3	5.5	4.6	5.5	5.8	3.2	−0.1	−1.0
Japan	3.0	1.3	2.4	2.3	1.9	1.6	0.4	1.5	0.3	1.5	1.4	−0.6
United Kingdom	1.3	1.8	3.5	3.4	3.0	2.0	1.4	1.3	1.6	1.2	2.0	−1.0
Canada	0.9	2.6	2.5	3.1	2.0	1.4	3.0	2.7	3.9	3.5	3.5	0.0
Other Advanced Economies	3.0	2.5	3.3	2.4	1.9	2.0	3.2	3.1	3.0	3.7	1.3	1.2
Memorandum												
Major Advanced Economies	1.6	1.5	3.3	2.1	1.5	1.0	1.0	1.4	2.0	1.9	1.7	−0.7
Newly Industrialized Asian Economies	4.0	2.8	3.8	2.2	2.4	2.4	3.9	4.0	3.4	4.6	0.2	1.3
Gross Fixed Capital Formation												
Advanced Economies	**3.7**	**0.6**	**−1.2**	**2.1**	**4.5**	**4.3**	**3.9**	**2.2**	**−2.4**	**−12.3**	**1.8**	**4.4**
United States	6.4	0.1	−2.7	3.1	6.2	5.3	2.5	−1.2	−4.5	−14.8	2.2	6.4
Euro Area	. . .	0.4	−1.5	1.3	2.3	3.2	5.4	4.6	−0.8	−11.3	−0.1	1.6
Germany	1.2	0.7	−6.1	−0.3	−0.3	0.9	8.0	4.7	2.5	−10.1	5.9	3.0
France	2.0	1.1	−1.7	2.2	3.3	4.4	4.5	6.0	0.5	−7.1	−1.9	1.7
Italy	1.4	−0.3	3.7	−1.2	2.3	0.8	2.9	1.7	−4.0	−12.1	2.2	2.2
Spain	3.6	0.1	3.4	5.9	5.1	7.0	7.2	4.5	−4.8	−16.0	−6.8	−1.6
Japan	−0.9	−1.5	−4.9	−0.5	1.4	3.1	0.5	−1.2	−2.6	−14.0	−0.4	4.4
United Kingdom	4.0	0.8	3.6	1.1	5.1	2.4	6.4	7.8	−5.0	−15.0	1.0	3.0
Canada	3.7	3.4	1.6	6.2	7.8	9.3	7.1	3.5	1.4	−11.7	5.7	4.9
Other Advanced Economies	4.0	3.5	3.9	2.7	6.2	4.7	5.7	6.7	0.0	−5.5	6.3	5.2
Memorandum												
Major Advanced Economies	3.7	0.2	−2.2	1.8	4.4	4.2	3.4	1.0	−2.9	−13.4	2.0	4.9
Newly Industrialized Asian Economies	4.4	2.9	2.6	2.0	6.2	2.2	3.9	4.5	−2.8	−3.7	9.1	5.4

Table A3 (concluded)

	Averages		2002	2003	2004	2005	2006	2007	2008	2009	Projections	
	1992–2001	2002–11									2010	2011
Final Domestic Demand												
Advanced Economies	**2.9**	**1.5**	**1.7**	**2.0**	**2.9**	**2.8**	**2.7**	**2.3**	**0.1**	**−2.7**	**1.6**	**1.8**
United States	4.0	1.6	1.9	2.8	3.6	3.3	2.5	1.5	−0.6	−3.1	1.6	2.1
Euro Area	. . .	1.0	0.7	1.3	1.8	2.1	2.8	2.4	0.5	−2.6	0.6	0.8
Germany	1.7	0.5	−1.5	0.1	−0.1	0.4	2.6	1.1	1.4	−1.8	1.8	1.3
France	1.8	1.6	1.4	2.1	2.5	2.6	2.7	3.0	0.7	−0.5	0.7	1.1
Italy	1.2	0.4	1.3	0.7	1.4	1.2	1.4	1.2	−1.2	−3.5	0.9	0.9
Spain	3.0	1.8	3.2	4.0	4.8	5.2	4.9	4.2	−0.7	−6.0	−1.2	−0.1
Japan	1.0	0.4	−0.2	0.5	1.6	1.9	1.1	1.0	−0.9	−3.6	1.2	1.1
United Kingdom	2.9	1.5	3.5	2.8	3.4	2.2	2.5	2.9	−0.3	−4.3	1.2	1.1
Canada	2.6	3.1	3.0	3.7	3.9	4.4	4.6	4.0	2.8	−1.8	3.9	2.8
Other Advanced Economies	3.9	3.0	3.9	2.1	3.9	3.5	3.9	4.9	1.3	−0.4	3.9	3.6
Memorandum												
Major Advanced Economies	2.7	1.3	1.3	2.0	2.7	2.6	2.3	1.7	−0.2	−2.9	1.5	1.7
Newly Industrialized Asian Economies	5.0	3.1	4.6	1.2	3.7	3.2	3.9	4.7	0.5	0.1	4.7	4.1
Stock Building [2]												
Advanced Economies	**0.0**	**0.0**	**0.1**	**0.1**	**0.3**	**−0.1**	**0.1**	**0.0**	**−0.3**	**−0.8**	**0.9**	**0.2**
United States	0.0	0.1	0.5	0.1	0.4	−0.1	0.1	−0.2	−0.5	−0.7	1.4	0.1
Euro Area	. . .	0.0	−0.3	0.1	0.2	−0.2	0.1	0.1	−0.1	−0.8	0.5	0.1
Germany	−0.2	0.0	−0.6	0.5	0.0	−0.4	−0.2	−0.1	−0.2	0.1	0.4	−0.1
France	0.1	−0.1	−0.3	−0.3	0.6	0.2	0.0	0.4	−0.3	−1.9	0.6	0.5
Italy	0.0	0.0	0.0	0.1	−0.1	−0.3	0.5	0.1	−0.3	−0.3	0.2	0.2
Spain	−0.1	0.0	0.0	−0.1	0.0	−0.1	0.3	−0.1	0.1	0.0	0.0	0.1
Japan	0.0	0.0	−0.3	0.2	0.3	−0.1	0.2	0.3	−0.4	−0.4	−0.1	0.1
United Kingdom	0.1	0.0	−0.3	0.2	0.1	0.0	0.0	0.1	−0.5	−1.1	1.3	0.3
Canada	0.1	0.1	0.2	0.7	0.1	0.5	−0.2	−0.1	−0.2	−0.9	0.7	0.1
Other Advanced Economies	0.0	0.0	0.1	−0.1	0.6	−0.1	0.0	−0.2	0.3	−1.9	1.3	0.3
Memorandum												
Major Advanced Economies	0.0	0.0	0.1	0.1	0.3	−0.1	0.1	0.0	−0.4	−0.7	0.9	0.2
Newly Industrialized Asian Economies	−0.2	0.1	0.4	−0.2	0.8	−0.2	0.2	−0.3	1.0	−2.9	1.9	0.1
Foreign Balance [2]												
Advanced Economies	**−0.1**	**0.1**	**−0.1**	**−0.3**	**−0.1**	**−0.1**	**0.2**	**0.4**	**0.5**	**0.4**	**0.2**	**0.3**
United States	−0.5	0.0	−0.7	−0.5	−0.7	−0.3	−0.1	0.6	1.2	1.3	−0.5	0.0
Euro Area	. . .	0.1	0.6	−0.6	0.3	−0.2	0.2	0.3	0.1	−0.7	0.7	0.7
Germany	0.2	0.5	2.0	−0.8	1.3	0.7	1.1	1.6	−0.1	−3.2	1.1	0.9
France	0.2	−0.4	0.0	−0.7	−0.8	−0.8	−0.3	−1.0	−0.3	−0.2	0.2	0.0
Italy	0.3	−0.2	−0.8	−0.8	0.2	−0.3	0.0	0.2	0.1	−1.3	0.2	0.2
Spain	−0.1	−0.1	−0.6	−0.8	−1.7	−1.7	−1.4	−0.8	1.5	2.7	0.8	0.7
Japan	0.0	0.6	0.7	0.7	0.8	0.3	0.8	1.1	0.1	−1.3	2.2	0.4
United Kingdom	−0.2	−0.1	−1.1	−0.1	−0.7	0.0	0.2	−0.5	0.7	0.8	−0.8	0.5
Canada	0.7	−1.1	0.0	−2.3	−0.8	−1.6	−1.4	−1.5	−1.9	0.2	−1.8	−0.3
Other Advanced Economies	0.3	0.6	0.1	0.6	0.4	1.0	1.0	0.8	0.1	1.4	0.6	0.3
Memorandum												
Major Advanced Economies	−0.1	0.1	−0.1	−0.4	−0.2	−0.2	0.1	0.4	0.5	0.1	0.1	0.2
Newly Industrialized Asian Economies	0.2	1.5	0.9	2.0	1.3	2.1	1.9	2.0	0.5	1.8	1.6	1.0

[1]In this table, Other Advanced Economies means Advanced Economies excluding the G7 and Euro Area countries.
[2]Changes expressed as percent GDP in the preceding period.

Table A4. Emerging and Developing Economies: Real GDP[1]
(Annual percent change)

	Average 1992–2001	2002	2003	2004	2005	2006	2007	2008	2009	Projections 2010	2011	2015
Central and Eastern Europe[2]	**2.8**	**4.4**	**4.8**	**7.3**	**5.9**	**6.5**	**5.5**	**3.0**	**−3.6**	**3.7**	**3.1**	**4.1**
Albania	5.5	4.2	5.8	5.7	5.8	5.4	5.9	7.7	3.3	2.6	3.2	5.0
Bosnia and Herzegovina	. . .	5.0	3.5	6.3	4.0	6.1	6.1	5.7	−3.1	0.5	3.0	4.5
Bulgaria	−2.5	4.5	5.0	6.6	6.2	6.3	6.2	6.0	−5.0	0.0	2.0	5.0
Croatia	. . .	5.4	5.0	4.2	4.2	4.7	5.5	2.4	−5.8	−1.5	1.6	3.0
Estonia	. . .	7.9	7.6	7.2	9.4	10.6	6.9	−5.1	−13.9	1.8	3.5	3.1
Hungary	2.5	4.4	4.3	4.9	3.5	4.0	1.0	0.6	−6.3	0.6	2.0	3.0
Kosovo	. . .	−0.7	5.4	2.6	3.8	3.8	4.0	5.4	4.0	4.6	5.9	4.4
Latvia	. . .	6.5	7.2	8.7	10.6	12.2	10.0	−4.2	−18.0	−1.0	3.3	4.0
Lithuania	. . .	6.9	10.2	7.4	7.8	7.8	9.8	2.8	−14.8	1.3	3.1	3.6
Macedonia, Former Yugoslav Republic of	−0.8	0.9	2.8	4.1	4.1	3.9	6.1	5.0	−0.8	1.2	3.0	4.0
Montenegro	. . .	1.9	2.5	4.4	4.2	8.6	10.7	6.9	−5.7	−1.8	4.5	4.0
Poland	4.6	1.4	3.9	5.3	3.6	6.2	6.8	5.0	1.7	3.4	3.7	4.3
Romania	0.3	5.1	5.2	8.5	4.2	7.9	6.3	7.3	−7.1	−1.9	1.5	4.2
Serbia	. . .	3.9	2.4	8.5	5.4	5.2	6.9	5.5	−3.0	1.5	3.0	5.0
Turkey	3.0	6.2	5.3	9.4	8.4	6.9	4.7	0.7	−4.7	7.8	3.6	4.0
Commonwealth of Independent States[2,3]	**−3.1**	**5.2**	**7.7**	**8.1**	**6.7**	**8.8**	**9.0**	**5.3**	**−6.5**	**4.3**	**4.6**	**4.3**
Russia	−2.9	4.7	7.3	7.2	6.4	8.2	8.5	5.2	−7.9	4.0	4.3	4.0
Excluding Russia	. . .	6.6	9.1	10.8	7.6	10.5	10.0	5.4	−3.2	5.3	5.2	4.9
Armenia	. . .	13.2	14.0	10.5	13.9	13.2	13.7	6.9	−14.2	4.0	4.6	4.0
Azerbaijan	. . .	8.1	10.5	10.2	26.4	34.5	25.0	10.8	9.3	4.3	1.8	0.9
Belarus	−0.7	5.0	7.0	11.4	9.4	10.0	8.6	10.2	0.2	7.2	6.2	4.5
Georgia	. . .	5.5	11.1	5.9	9.6	9.4	12.3	2.3	−3.9	5.5	4.0	5.0
Kazakhstan	. . .	9.8	9.3	9.6	9.7	10.7	8.9	3.2	1.2	5.4	5.1	6.5
Kyrgyz Republic	. . .	0.0	7.0	7.0	−0.2	3.1	8.5	8.4	2.3	−3.5	7.1	4.7
Moldova	. . .	7.8	6.6	7.4	7.5	4.8	3.0	7.8	−6.5	3.2	3.5	5.0
Mongolia	1.2	4.7	7.0	10.6	7.3	8.6	10.2	8.9	−1.6	8.5	7.0	12.8
Tajikistan	. . .	9.1	10.2	10.6	6.7	7.0	7.8	7.9	3.4	5.5	5.0	5.0
Turkmenistan	. . .	15.8	17.1	14.7	13.0	11.4	11.6	10.5	6.1	9.4	11.5	7.2
Ukraine	−6.4	5.2	9.6	12.1	2.7	7.3	7.9	2.1	−15.1	3.7	4.5	4.0
Uzbekistan	0.3	4.0	4.2	7.4	7.0	7.5	9.5	9.0	8.1	8.0	7.0	6.0

Table A4 *(continued)*

	Average 1992–2001	2002	2003	2004	2005	2006	2007	2008	2009	Projections 2010	2011	2015
Developing Asia	**7.3**	**6.9**	**8.2**	**8.6**	**9.5**	**10.4**	**11.4**	**7.7**	**6.9**	**9.4**	**8.4**	**8.5**
Afghanistan, Islamic Republic of	. . .	. . .	15.1	8.8	16.1	8.2	14.2	3.4	22.5	8.9	6.8	7.0
Bangladesh	5.0	4.8	5.8	6.1	6.3	6.5	6.3	6.0	5.6	5.8	6.3	7.0
Bhutan	5.6	10.8	4.0	8.0	7.0	6.4	19.7	5.0	6.3	6.8	6.6	4.7
Brunei Darussalam	2.2	3.9	2.9	0.5	0.4	4.4	0.2	−1.9	−0.5	0.5	1.0	1.6
Cambodia	7.0	6.6	8.5	10.3	13.3	10.8	10.2	6.7	−2.0	4.8	6.8	6.8
China	10.3	9.1	10.1	10.1	11.3	12.7	14.2	9.6	9.1	10.5	9.6	9.5
Fiji	3.1	3.2	1.0	5.5	0.6	1.9	−0.5	−0.1	−2.2	1.8	2.0	2.4
India	5.7	4.6	6.9	8.1	9.2	9.7	9.9	6.4	5.7	9.7	8.4	8.1
Indonesia	3.6	4.5	4.8	5.0	5.7	5.5	6.3	6.0	4.5	6.0	6.2	7.0
Kiribati	4.0	6.1	2.3	2.2	3.9	1.9	0.4	−1.1	−0.7	1.5	1.2	1.2
Lao People's Democratic Republic	6.1	6.9	6.2	7.0	6.8	8.6	7.8	7.8	7.6	7.7	7.5	9.3
Malaysia	6.2	5.4	5.8	6.8	5.3	5.8	6.5	4.7	−1.7	6.7	5.3	5.0
Maldives	7.1	6.5	8.5	9.5	−4.6	18.0	7.2	6.2	−3.1	3.4	3.6	4.5
Myanmar	8.3	12.0	13.8	13.6	13.6	13.1	11.9	3.6	4.9	5.3	5.0	5.0
Nepal	4.9	0.1	3.9	4.7	3.5	3.4	3.4	6.1	4.9	3.0	4.0	4.8
Pakistan	3.6	3.2	4.9	7.4	7.7	6.1	5.6	1.6	3.4	4.8	2.8	6.0
Papua New Guinea	3.6	2.0	4.4	0.6	3.9	2.3	7.2	6.7	4.5	8.0	5.5	5.0
Philippines	3.3	4.4	4.9	6.4	5.0	5.3	7.1	3.7	1.1	7.0	4.5	4.5
Samoa	4.0	6.2	3.8	4.2	7.0	2.2	2.3	5.0	−4.9	−1.3	3.0	3.0
Solomon Islands	1.1	−2.8	6.5	4.9	5.4	6.9	10.7	7.3	−2.2	3.4	5.2	10.5
Sri Lanka	4.6	4.0	5.9	5.4	6.2	7.7	6.8	6.0	3.5	7.0	7.0	6.5
Thailand	3.8	5.3	7.1	6.3	4.6	5.1	4.9	2.5	−2.2	7.5	4.0	5.0
Timor-Leste	. . .	2.1	−0.1	4.4	6.5	−5.9	9.1	11.0	11.6	7.9	8.2	6.3
Tonga	1.2	3.1	1.8	0.0	−0.2	−0.3	0.4	0.8	−0.5	0.6	1.7	1.8
Vanuatu	2.7	−4.2	3.7	4.4	5.1	7.2	6.7	6.3	3.6	3.0	3.7	4.0
Vietnam	7.7	7.1	7.3	7.8	8.4	8.2	8.5	6.3	5.3	6.5	6.8	7.5

Table A4 *(continued)*

	Average 1992–2001	2002	2003	2004	2005	2006	2007	2008	2009	Projections 2010	2011	2015
Latin America and the Caribbean	**3.0**	**0.5**	**2.1**	**6.0**	**4.7**	**5.6**	**5.7**	**4.3**	**−1.7**	**5.7**	**4.0**	**3.9**
Antigua and Barbuda	3.3	2.0	4.3	5.4	5.0	12.9	6.5	1.8	−8.9	−4.1	3.1	4.4
Argentina[4]	2.7	−10.9	8.8	9.0	9.2	8.5	8.7	6.8	0.9	7.5	4.0	3.0
Bahamas, The	3.1	2.2	0.7	1.6	5.0	3.5	1.9	−1.7	−4.3	0.5	1.5	2.5
Barbados	1.1	0.7	2.0	4.8	3.9	3.6	3.8	−0.2	−5.5	−0.5	3.0	2.5
Belize	5.4	5.1	9.3	4.6	3.0	4.7	1.2	3.8	0.0	2.0	2.3	2.5
Bolivia	3.4	2.5	2.7	4.2	4.4	4.8	4.6	6.1	3.4	4.0	4.5	4.5
Brazil	2.6	2.7	1.1	5.7	3.2	4.0	6.1	5.1	−0.2	7.5	4.1	4.1
Chile	6.0	2.2	4.0	6.0	5.5	4.6	4.6	3.7	−1.5	5.0	6.0	4.5
Colombia	2.7	2.5	3.9	5.3	5.0	7.1	6.3	2.7	0.8	4.7	4.6	4.5
Costa Rica	5.1	2.9	6.4	4.3	5.9	8.8	7.9	2.8	−1.1	3.8	4.2	4.4
Dominica	1.5	−5.1	0.1	3.0	3.3	4.8	2.5	3.2	−0.3	1.4	2.5	3.0
Dominican Republic	6.2	5.8	−0.3	1.3	9.3	10.7	8.5	5.3	3.5	5.5	5.5	6.0
Ecuador	2.3	3.4	3.3	8.8	5.7	4.8	2.0	6.5	0.4	2.9	2.3	2.0
El Salvador	4.4	2.3	2.3	1.9	3.3	4.2	4.3	2.4	−3.5	1.0	2.5	4.0
Grenada	3.8	1.6	7.1	−5.7	11.0	−2.3	4.9	2.2	−7.7	0.8	2.0	4.0
Guatemala	3.6	3.9	2.5	3.2	3.3	5.4	6.3	3.3	0.5	2.4	2.6	3.2
Guyana	4.5	1.1	−0.7	1.6	−1.9	5.1	7.0	2.0	3.0	2.9	3.1	3.0
Haiti	0.1	−0.3	0.4	−3.5	1.8	2.2	3.3	0.8	2.9	−8.5	9.8	6.0
Honduras	3.2	3.8	4.5	6.2	6.1	6.6	6.2	4.0	−1.9	2.4	3.5	4.0
Jamaica	0.5	1.0	3.5	1.4	1.1	3.0	1.4	−0.9	−3.0	−0.1	1.8	2.1
Mexico	3.0	0.8	1.7	4.0	3.2	4.9	3.3	1.5	−6.5	5.0	3.9	3.8
Nicaragua	3.9	0.8	2.5	5.3	4.3	4.2	3.1	2.8	−1.5	3.0	3.0	4.0
Panama	4.6	2.2	4.2	7.5	7.2	8.5	12.1	10.1	3.0	6.2	6.7	6.7
Paraguay	1.7	0.0	3.8	4.1	2.9	4.3	6.8	5.8	−3.8	9.0	5.0	4.0
Peru	3.8	5.0	4.0	5.0	6.8	7.7	8.9	9.8	0.9	8.3	6.0	5.7
St. Kitts and Nevis	4.4	−0.3	−1.2	7.3	5.2	2.6	4.2	4.6	−5.5	−1.5	0.5	2.0
St. Lucia	1.7	0.6	3.5	3.8	4.4	4.8	1.5	0.7	−5.2	1.1	2.3	3.8
St. Vincent and the Grenadines	2.9	3.2	2.8	6.8	2.6	7.6	8.0	−0.6	−1.0	0.5	2.0	3.5
Suriname	0.8	2.8	6.3	8.5	4.4	3.8	5.2	6.0	2.5	4.0	4.7	6.0
Trinidad and Tobago	4.6	7.9	14.4	7.9	6.2	13.2	4.8	2.4	−3.5	1.2	2.5	2.6
Uruguay	2.2	−7.1	2.3	4.6	6.8	4.3	7.5	8.5	2.9	8.5	5.0	4.0
Venezuela	1.5	−8.9	−7.8	18.3	10.3	9.9	8.2	4.8	−3.3	−1.3	0.5	1.7
Middle East and North Africa	**3.4**	**3.8**	**6.9**	**5.8**	**5.3**	**5.8**	**6.0**	**5.0**	**2.0**	**4.1**	**5.1**	**4.9**
Algeria	2.0	4.7	6.9	5.2	5.1	2.0	3.0	2.4	2.4	3.8	4.0	4.1
Bahrain	4.9	5.2	7.2	5.6	7.9	6.7	8.4	6.3	3.1	4.0	4.5	5.2
Djibouti	−1.1	2.6	3.2	3.0	3.2	4.8	5.1	5.8	5.0	4.5	5.4	6.2
Egypt	4.5	3.2	3.2	4.1	4.5	6.8	7.1	7.2	4.7	5.3	5.5	6.5
Iran, Islamic Republic of	2.9	7.5	7.2	5.1	4.7	5.8	7.8	1.0	1.1	1.6	3.0	3.0
Iraq	. . .	. . .	. . .	. . .	−0.7	6.2	1.5	9.5	4.2	2.6	11.5	10.2
Jordan	5.1	5.8	4.2	8.6	8.1	7.9	8.5	7.6	2.3	3.4	4.2	5.5
Kuwait	8.9	2.8	17.4	11.2	10.4	5.3	4.5	5.5	−4.8	2.3	4.4	5.3
Lebanon	4.1	3.4	3.2	7.5	1.0	0.6	7.5	9.3	9.0	8.0	5.0	4.0
Libya	−1.7	−1.3	13.0	4.4	10.3	6.7	7.5	2.3	−2.3	10.6	6.2	7.7
Mauritania	2.9	1.1	5.6	5.2	5.4	11.4	1.0	3.7	−1.1	4.7	5.1	4.7
Morocco	2.4	3.3	6.3	4.8	3.0	7.8	2.7	5.6	4.9	4.0	4.3	5.0
Oman	4.4	2.1	0.3	3.4	4.0	5.5	6.8	12.8	3.6	4.7	4.7	4.5
Qatar	7.9	3.2	6.3	17.7	7.6	18.6	26.8	25.4	8.6	16.0	18.6	5.1
Saudi Arabia	1.9	0.1	7.7	5.3	5.6	3.2	2.0	4.2	0.6	3.4	4.5	4.7
Sudan	4.5	5.4	7.1	5.1	6.3	11.3	10.2	6.8	4.5	5.5	6.2	5.1
Syrian Arab Republic	4.1	5.9	−2.1	6.7	4.5	5.1	4.3	5.2	4.0	5.0	5.5	5.6
Tunisia	4.8	1.7	5.5	6.0	4.0	5.7	6.3	4.5	3.1	3.8	4.8	5.8
United Arab Emirates	4.3	2.6	11.9	9.7	8.2	8.7	6.1	5.1	−2.5	2.4	3.2	4.1
Yemen, Republic of	5.4	3.9	3.7	4.0	5.6	3.2	3.3	3.6	3.9	8.0	4.1	4.5

Table A4 *(concluded)*

	Average 1992–2001	2002	2003	2004	2005	2006	2007	2008	2009	Projections 2010	2011	2015
Sub-Saharan Africa	**2.8**	**7.4**	**5.0**	**7.2**	**6.3**	**6.4**	**7.0**	**5.5**	**2.6**	**5.0**	**5.5**	**5.4**
Angola	1.5	14.5	3.3	11.2	20.6	18.6	20.3	13.3	0.7	5.9	7.1	4.2
Benin	4.7	4.4	4.0	3.0	2.9	3.8	4.6	5.0	2.5	2.8	3.6	6.0
Botswana	5.4	9.0	6.3	6.0	1.6	5.1	4.8	3.1	–3.7	8.4	4.8	5.3
Burkina Faso	5.1	4.4	7.8	4.5	8.7	5.5	3.6	5.2	3.2	4.4	4.7	6.5
Burundi	–2.1	4.4	–1.2	4.8	0.9	5.1	3.6	4.5	3.5	3.9	4.5	5.0
Cameroon[5]	2.2	4.0	4.0	3.7	2.3	3.2	3.3	2.9	2.0	2.6	2.9	3.5
Cape Verde	7.3	5.3	4.7	4.3	6.5	10.1	8.6	5.6	3.0	4.1	6.0	6.8
Central African Republic	1.3	–0.6	–7.1	1.0	2.4	3.8	3.7	2.0	1.7	3.3	4.0	5.5
Chad	2.9	8.5	14.7	33.6	7.9	0.2	0.2	–0.4	–1.6	4.3	3.9	2.7
Comoros	2.0	4.1	2.5	–0.2	4.2	1.2	0.5	1.0	1.8	2.1	2.5	4.0
Congo, Democratic Republic of	–5.0	3.5	5.8	6.6	7.8	5.6	6.3	6.2	2.8	5.4	7.0	6.9
Congo, Republic of	1.6	4.6	0.8	3.5	7.8	6.2	–1.6	5.6	7.5	10.6	8.7	2.9
Côte d'Ivoire	3.3	–1.6	–1.7	1.6	1.9	0.7	1.6	2.3	3.8	3.0	4.0	6.0
Equatorial Guinea	38.3	19.5	14.0	38.0	9.7	1.3	21.4	10.7	5.3	0.9	2.1	0.7
Eritrea	. . .	3.0	–2.7	1.5	2.6	–1.0	1.4	–9.8	3.6	1.8	2.8	3.7
Ethiopia	4.4	1.6	–2.1	11.7	12.6	11.5	11.8	11.2	9.9	8.0	8.5	8.0
Gabon	1.3	–0.3	2.5	1.4	3.0	1.2	5.3	2.7	–1.4	4.5	5.0	2.4
Gambia, The	4.6	–3.2	6.9	7.0	0.3	3.4	6.0	6.3	5.6	5.0	5.4	5.4
Ghana	4.1	4.5	5.2	5.6	5.9	6.4	5.7	7.2	4.1	5.0	9.9	5.8
Guinea	4.3	4.2	1.2	2.3	3.0	2.5	1.8	4.9	–0.3	3.0	3.9	4.1
Guinea-Bissau	0.8	1.8	–3.5	3.1	5.0	2.2	0.2	3.6	3.0	3.5	4.3	4.7
Kenya	2.1	0.3	2.8	4.6	6.0	6.3	6.9	1.3	2.4	4.1	5.8	6.5
Lesotho	4.2	1.1	4.3	2.3	1.1	6.5	2.4	4.5	0.9	5.6	3.8	22.0
Liberia	. . .	3.8	–31.3	2.6	5.3	7.8	9.4	7.1	4.6	6.3	9.5	7.6
Madagascar	3.0	–12.4	9.8	5.3	4.6	5.0	6.2	7.1	–3.7	–2.0	2.8	5.0
Malawi	2.1	1.7	5.5	5.5	2.6	7.7	5.8	8.8	7.5	6.0	6.2	6.8
Mali	3.7	4.3	7.6	2.3	6.1	5.3	4.3	5.0	4.4	5.1	5.4	4.5
Mauritius	5.6	1.9	4.3	5.5	1.5	3.9	5.4	5.0	2.5	3.6	4.1	4.4
Mozambique	7.1	9.2	6.5	8.8	8.7	6.3	7.3	6.7	6.3	6.5	7.5	7.8
Namibia	3.5	4.8	4.3	12.3	2.5	7.1	5.4	4.3	–0.8	4.4	4.8	4.2
Niger	1.5	5.3	7.1	–0.8	8.4	5.8	3.4	8.7	–1.2	3.5	5.2	4.4
Nigeria	2.7	21.2	10.3	10.6	5.4	6.2	7.0	6.0	7.0	7.4	7.4	6.0
Rwanda	1.6	13.2	2.2	7.4	9.4	9.2	5.5	11.2	4.1	5.4	5.9	6.5
São Tomé and Príncipe	1.7	11.6	5.4	6.6	5.7	6.7	6.0	5.8	4.0	4.5	5.5	29.3
Senegal	3.3	0.7	6.7	5.9	5.6	2.4	5.0	3.2	2.2	4.0	4.4	5.0
Seychelles	4.0	1.2	–5.9	–2.9	7.5	8.3	19.7	–1.3	0.7	4.0	5.0	5.0
Sierra Leone	–5.3	27.4	9.5	7.4	7.2	7.3	6.4	5.5	3.2	4.5	5.2	6.5
South Africa	2.2	3.7	2.9	4.6	5.3	5.6	5.5	3.7	–1.8	3.0	3.5	4.5
Swaziland	2.9	1.8	3.9	2.5	2.2	2.9	3.5	2.4	1.2	2.0	2.5	2.4
Tanzania	3.3	7.2	6.9	7.8	7.4	6.7	7.1	7.4	6.0	6.5	6.7	7.0
Togo	0.7	–0.2	5.2	2.3	1.2	3.7	1.9	2.2	3.1	3.3	3.5	4.0
Uganda	6.6	8.7	6.5	6.8	6.3	10.8	8.4	8.7	7.2	5.8	6.1	7.0
Zambia	0.3	3.3	5.1	5.4	5.3	6.2	6.2	5.7	6.3	6.6	6.4	7.4
Zimbabwe[6]	. . .	. . .	. . .	. . .	. . .	–3.7	–3.7	–18.9	5.7	5.9	4.5	4.5

[1]For many countries, figures for recent years are IMF staff estimates. Data for some countries are for fiscal years.

[2]Data for some countries refer to real net material product (NMP) or are estimates based on NMP. For many countries, figures for recent years are IMF staff estimates. The figures should be interpreted only as indicative of broad orders of magnitude because reliable, comparable data are not generally available. In particular, the output growth of new private enterprises in the informal economy is not fully reflected in the recent figures.

[3]Georgia and Mongolia, which are not members of the Commonwealth of Independent States, are included in this group for reasons of geography and similarities in economic structure.

[4]Private analysts are of the view that real GDP growth has been lower than the official reports since the last quarter of 2008.

[5]The percent changes in 2002 are calculated over a period of 18 months, reflecting a change in the fiscal year cycle (from July–June to January–December).

[6]The Zimbabwe dollar ceased circulating in early 2009. Data are based on staff estimates of price and exchange rate developments in U.S. dollars. IMF staff estimates of U.S. dollar values may differ from the authorities' estimates. Real GDP is in constant 2009 prices.

Table A5. Summary of Inflation

(Percent)

	Average 1992–2001	2002	2003	2004	2005	2006	2007	2008	2009	Projections 2010	2011	2015
GDP Deflators												
Advanced Economies	**2.0**	**1.6**	**1.8**	**2.0**	**2.1**	**2.2**	**2.3**	**2.0**	**0.7**	**1.1**	**1.3**	**1.7**
United States	1.9	1.6	2.2	2.8	3.3	3.3	2.9	2.2	0.9	0.9	1.3	1.8
Euro Area	2.1	2.6	2.2	1.9	2.0	1.9	2.4	2.1	1.0	1.3	1.4	1.8
Japan	−0.2	−1.5	−1.6	−1.1	−1.2	−0.9	−0.7	−0.8	−0.9	−2.1	−1.2	0.4
Other Advanced Economies[1]	2.6	1.9	2.1	2.4	1.9	2.2	2.7	3.1	0.8	2.7	2.6	2.2
Consumer Prices												
Advanced Economies	**2.4**	**1.6**	**1.9**	**2.0**	**2.3**	**2.4**	**2.2**	**3.4**	**0.1**	**1.4**	**1.3**	**1.9**
United States	2.7	1.6	2.3	2.7	3.4	3.2	2.9	3.8	−0.3	1.4	1.0	1.9
Euro Area[2]	2.2	2.3	2.1	2.2	2.2	2.2	2.1	3.3	0.3	1.6	1.5	1.9
Japan	0.4	−0.9	−0.3	0.0	−0.3	0.3	0.0	1.4	−1.4	−1.0	−0.3	1.0
Other Advanced Economies[1]	2.6	1.7	1.8	1.8	2.1	2.1	2.1	3.8	1.5	2.5	2.5	2.2
Emerging and Developing Economies	**38.4**	**6.9**	**6.7**	**5.9**	**5.9**	**5.6**	**6.5**	**9.2**	**5.2**	**6.2**	**5.2**	**3.8**
Regional Groups												
Central and Eastern Europe	50.9	18.6	11.1	6.6	5.9	5.9	6.0	8.1	4.7	5.2	4.1	3.2
Commonwealth of Independent States[3]	172.1	14.0	12.3	10.4	12.1	9.5	9.7	15.6	11.2	7.0	7.9	5.2
Developing Asia	7.4	2.1	2.6	4.1	3.8	4.2	5.4	7.5	3.1	6.1	4.2	2.8
Latin America and the Caribbean	51.9	8.5	10.4	6.6	6.3	5.3	5.4	7.9	6.0	6.1	5.8	5.2
Middle East and North Africa	10.1	4.9	5.5	6.5	6.4	7.5	10.0	13.5	6.7	6.8	6.2	5.5
Sub-Saharan Africa	26.2	11.3	10.9	7.6	8.9	6.9	6.9	11.7	10.4	7.5	7.0	5.5
Memorandum												
European Union	5.8	2.5	2.2	2.3	2.3	2.3	2.4	3.7	0.9	1.9	1.8	2.0
Analytical Groups												
By Source of Export Earnings												
Fuel	71.3	11.9	11.5	9.8	10.0	9.0	10.1	15.0	9.4	8.0	8.0	6.3
Nonfuel	30.0	5.7	5.6	5.0	4.9	4.7	5.6	7.9	4.3	5.9	4.6	3.3
Of Which, Primary Products	. . .	5.6	5.0	3.8	5.2	5.2	5.1	9.1	5.2	4.4	4.7	3.9
By External Financing Source												
Net Debtor Economies	39.1	8.0	7.4	5.5	5.9	5.8	6.0	9.0	7.1	7.4	5.7	4.2
Of Which, Official Financing	19.6	4.4	8.5	7.4	8.6	8.3	9.0	14.7	9.0	7.0	6.6	4.9
Net Debtor Economies by Debt-Servicing Experience												
Economies with Arrears and/or Rescheduling during 2004–08	29.1	16.3	11.9	7.8	8.0	8.7	8.2	11.4	6.6	7.9	7.8	6.8
Memorandum												
Median Inflation Rate												
Advanced Economies	2.4	2.3	2.1	2.0	2.1	2.2	2.1	3.8	0.8	1.8	1.9	2.0
Emerging and Developing Economies	8.3	3.6	4.4	4.4	6.0	6.0	6.4	10.3	3.7	4.7	4.7	4.0

[1]In this table, Other Advanced Economies means advanced economies excluding the United States, Euro Area countries, and Japan.

[2]Based on Eurostat's harmonized index of consumer prices.

[3]Georgia and Mongolia, which are not members of the Commonwealth of Independent States, are included in this group for reasons of geography and similarities in economic structure.

Table A6. Advanced Economies: Consumer Prices
(Annual percent change)

	Average 1992–2001	2002	2003	2004	2005	2006	2007	2008	2009	Projections 2010	Projections 2011	Projections 2015	End of Period[1] 2009	End of Period[1] Projections 2010	End of Period[1] Projections 2011
Consumer Prices															
Advanced Economies	**2.4**	**1.6**	**1.9**	**2.0**	**2.3**	**2.4**	**2.2**	**3.4**	**0.1**	**1.4**	**1.3**	**1.9**	**1.0**	**1.1**	**1.5**
United States	2.7	1.6	2.3	2.7	3.4	3.2	2.9	3.8	−0.3	1.4	1.0	1.9	1.9	0.5	1.2
Euro Area[2]	2.2	2.3	2.1	2.2	2.2	2.2	2.1	3.3	0.3	1.6	1.5	1.9	0.9	1.6	1.5
Germany	2.1	1.4	1.0	1.8	1.9	1.8	2.3	2.8	0.2	1.3	1.4	2.0	0.8	1.3	1.4
France	1.6	1.9	2.2	2.3	1.9	1.9	1.6	3.2	0.1	1.6	1.6	1.9	0.1	1.6	1.6
Italy	3.3	2.6	2.8	2.3	2.2	2.2	2.0	3.5	0.8	1.6	1.7	2.0	1.0	1.7	1.7
Spain	3.7	3.6	3.1	3.1	3.4	3.6	2.8	4.1	−0.2	1.5	1.1	1.9	0.9	1.4	1.2
Netherlands	2.5	3.8	2.2	1.4	1.5	1.7	1.6	2.2	1.0	1.3	1.1	1.5	1.0	1.3	1.1
Belgium	1.9	1.6	1.5	1.9	2.5	2.3	1.8	4.5	0.0	2.0	1.9	2.2	0.0	2.5	2.0
Greece	7.6	3.9	3.4	3.0	3.5	3.3	3.0	4.2	1.4	4.6	2.2	1.0	2.0	4.4	1.4
Austria	1.9	1.7	1.3	2.0	2.1	1.7	2.2	3.2	0.4	1.5	1.7	2.0	1.1	1.1	2.1
Portugal	4.0	3.7	3.3	2.5	2.1	3.0	2.4	2.7	−0.9	0.9	1.2	1.9	−0.1	0.9	1.3
Finland	1.8	2.0	1.3	0.1	0.8	1.3	1.6	3.9	1.6	1.4	1.8	1.7	1.8	1.4	1.8
Ireland	2.7	4.7	4.0	2.3	2.2	2.7	2.9	3.1	−1.7	−1.6	−0.5	1.9	−2.6	−0.6	0.1
Slovak Republic	. . .	3.5	8.4	7.5	2.8	4.3	1.9	3.9	0.9	0.7	1.9	2.8	0.0	1.0	2.0
Slovenia	. . .	7.5	5.6	3.6	2.5	2.5	3.6	5.7	0.9	1.5	2.3	2.9	1.6	2.1	2.4
Luxembourg	2.1	2.1	2.0	2.2	2.5	2.7	2.3	3.4	0.4	2.3	1.9	1.9	1.8	2.7	1.2
Cyprus	3.5	2.8	4.0	1.9	2.0	2.2	2.2	4.4	0.2	2.2	2.3	2.2	1.6	1.3	3.3
Malta	3.1	2.6	1.9	2.7	2.5	2.6	0.7	4.7	1.8	1.9	2.1	2.4	−0.4	3.2	2.4
Japan	0.4	−0.9	−0.3	0.0	−0.3	0.3	0.0	1.4	−1.4	−1.0	−0.3	1.0	−1.7	−1.1	0.7
United Kingdom[2]	2.1	1.3	1.4	1.3	2.0	2.3	2.3	3.6	2.1	3.1	2.5	2.0	2.1	2.6	2.5
Canada	1.7	2.3	2.7	1.8	2.2	2.0	2.1	2.4	0.3	1.8	2.0	2.0	0.8	2.1	2.0
Korea	4.6	2.8	3.5	3.6	2.8	2.2	2.5	4.7	2.8	3.1	3.4	3.0	2.8	3.0	3.5
Australia	2.3	3.0	2.8	2.3	2.7	3.5	2.3	4.4	1.8	3.0	3.0	2.5	2.1	3.1	3.1
Taiwan Province of China	2.2	−0.2	−0.3	1.6	2.3	0.6	1.8	3.5	−0.9	1.5	1.5	2.0	−6.4	2.3	1.5
Sweden	2.0	1.9	2.3	1.0	0.8	1.5	1.7	3.3	2.0	1.8	1.9	2.0	2.8	1.6	1.9
Switzerland	1.5	0.6	0.6	0.8	1.2	1.1	0.7	2.4	−0.5	0.7	0.5	1.0	0.3	0.7	0.5
Hong Kong SAR	4.1	−3.0	−2.6	−0.4	0.9	2.0	2.0	4.3	0.5	2.7	3.0	2.5	−2.3	2.7	3.0
Czech Republic	. . .	1.9	0.1	2.8	1.8	2.5	2.9	6.3	1.0	1.6	2.0	2.0	1.0	2.3	2.2
Norway	2.3	1.3	2.5	0.5	1.5	2.3	0.7	3.8	2.2	2.5	1.4	2.5	2.0	1.6	1.9
Singapore	1.5	−0.4	0.5	1.7	0.5	1.0	2.1	6.6	0.6	2.8	2.4	2.0	−0.8	4.1	1.1
Denmark	2.0	2.4	2.1	1.2	1.8	1.9	1.7	3.4	1.3	2.0	2.0	2.0	1.5	2.2	2.0
Israel	7.8	5.7	0.7	−0.4	1.4	2.1	0.5	4.6	3.3	2.3	2.8	2.5	4.0	1.1	2.6
New Zealand	1.8	2.6	1.7	2.3	3.0	3.4	2.4	4.0	2.1	2.5	5.5	2.0	2.0	4.1	4.4
Iceland	3.2	4.8	2.1	3.2	4.0	6.8	5.0	12.4	12.0	5.9	3.5	2.5	7.5	4.0	2.7
Memorandum															
Major Advanced Economies	2.1	1.3	1.7	2.0	2.3	2.4	2.2	3.2	−0.1	1.2	1.1	1.8	1.1	0.7	1.4
Newly Industrialized Asian Economies	3.6	1.0	1.5	2.4	2.2	1.6	2.2	4.5	1.3	2.6	2.7	2.6	−0.7	2.9	2.7

[1]December–December changes. Several countries report Q4–Q4 changes.
[2]Based on Eurostat's harmonized index of consumer prices.

Table A7. Emerging and Developing Economies: Consumer Prices[1]
(Annual percent change)

	Average 1992–2001	2002	2003	2004	2005	2006	2007	2008	2009	Projections 2010	Projections 2011	Projections 2015	End of Period[2] 2009	End of Period[2] Projections 2010	End of Period[2] Projections 2011
Central and Eastern Europe[3]	**50.9**	**18.6**	**11.1**	**6.6**	**5.9**	**5.9**	**6.0**	**8.1**	**4.7**	**5.2**	**4.1**	**3.2**	**4.6**	**5.1**	**4.1**
Albania	31.1	5.2	2.3	2.9	2.4	2.4	2.9	3.4	2.2	3.4	2.9	3.0	3.5	3.0	2.9
Bosnia and Herzegovina	. . .	0.3	0.5	0.3	3.6	6.1	1.5	7.4	−0.4	2.4	2.5	2.5	0.0	3.3	2.0
Bulgaria	80.8	5.8	2.3	6.1	6.0	7.4	7.6	12.0	2.5	2.2	2.9	3.0	1.6	2.7	3.0
Croatia	. . .	1.7	1.8	2.0	3.3	3.2	2.9	6.1	2.4	1.9	2.8	3.0	1.9	2.5	2.8
Estonia	. . .	3.6	1.3	3.0	4.1	4.4	6.6	10.4	−0.1	2.5	2.0	2.5	−1.7	3.8	1.4
Hungary	17.6	5.3	4.6	6.8	3.6	3.9	7.9	6.1	4.2	4.7	3.3	3.0	5.6	3.5	3.3
Kosovo	. . .	3.6	0.3	−1.1	−1.4	0.6	4.4	9.4	−2.4	1.7	3.2	1.7	0.1	3.1	2.4
Latvia	. . .	2.0	2.9	6.2	6.9	6.6	10.1	15.3	3.3	−1.4	0.9	1.4	−1.4	1.3	0.3
Lithuania	. . .	0.3	−1.1	1.2	2.7	3.8	5.8	11.1	4.2	1.0	1.3	1.7	1.2	0.5	1.2
Macedonia, Former Yugoslav Republic of	72.6	2.2	1.2	−0.4	0.5	3.2	2.3	8.3	−0.8	1.9	3.0	3.0	−1.6	2.0	3.0
Montenegro	. . .	19.7	7.5	3.1	3.4	3.0	4.2	8.5	3.4	0.6	1.0	1.5	1.5	0.8	1.1
Poland	20.2	1.9	0.8	3.5	2.1	1.0	2.5	4.2	3.5	2.4	2.7	2.5	3.5	2.4	2.7
Romania	88.2	22.5	15.3	11.9	9.0	6.6	4.8	7.8	5.6	5.9	5.2	3.0	4.7	7.9	3.0
Serbia	. . .	19.5	11.7	10.1	17.3	12.7	6.5	12.4	8.1	4.6	4.4	4.0	6.6	6.8	5.0
Turkey	74.9	45.1	25.3	8.6	8.2	9.6	8.8	10.4	6.3	8.7	5.7	4.0	6.5	7.6	6.2
Commonwealth of Independent States[3,4]	**172.1**	**14.0**	**12.3**	**10.4**	**12.1**	**9.5**	**9.7**	**15.6**	**11.2**	**7.0**	**7.9**	**5.2**	**8.6**	**8.2**	**7.2**
Russia	157.4	15.8	13.7	10.9	12.7	9.7	9.0	14.1	11.7	6.6	7.4	5.0	8.8	7.5	6.8
Excluding Russia	. . .	9.2	8.7	9.1	10.7	8.9	11.6	19.5	10.1	8.2	8.9	5.6	8.1	9.9	8.2
Armenia	. . .	1.1	4.7	7.0	0.6	2.9	4.4	9.0	3.5	7.8	5.5	4.0	6.6	7.1	4.6
Azerbaijan	. . .	2.8	2.2	6.7	9.7	8.4	16.6	20.8	1.5	5.5	6.0	3.0	0.7	7.0	5.0
Belarus	324.8	42.6	28.4	18.1	10.3	7.0	8.4	14.8	13.0	7.3	10.8	5.0	10.1	10.0	10.0
Georgia	. . .	5.6	4.8	5.7	8.3	9.2	9.2	10.0	1.7	6.4	7.4	6.0	3.0	8.8	6.0
Kazakhstan	. . .	5.9	6.6	7.1	7.9	8.7	10.8	17.1	7.3	7.6	6.6	6.0	6.3	8.0	6.8
Kyrgyz Republic	45.5	2.1	3.1	4.1	4.3	5.6	10.2	24.5	6.8	4.8	5.7	7.9	0.0	6.0	8.0
Moldova	. . .	5.2	11.7	12.4	11.9	12.7	12.4	12.7	0.0	7.4	6.0	4.0	0.4	8.0	6.0
Mongolia	57.1	0.9	5.1	7.9	12.5	4.5	8.2	26.8	6.3	10.5	8.9	5.0	1.9	12.0	7.4
Tajikistan	. . .	12.2	16.4	7.2	7.3	10.0	13.2	20.4	6.5	7.0	8.0	5.0	5.0	9.0	7.0
Turkmenistan	. . .	8.8	5.6	5.9	10.7	8.2	6.3	14.5	−2.7	3.9	4.8	4.5	0.2	4.6	5.0
Ukraine	222.2	0.7	5.2	9.0	13.5	9.1	12.8	25.2	15.9	9.8	10.8	5.2	12.3	12.0	9.8
Uzbekistan	. . .	27.3	11.6	6.6	10.0	14.2	12.3	12.7	14.1	10.6	11.4	10.0	10.6	12.9	10.0

Table A7 *(continued)*

	Average 1992–2001	2002	2003	2004	2005	2006	2007	2008	2009	Projections 2010	Projections 2011	2015	End of Period[2] 2009	End of Period[2] Projections 2010	End of Period[2] Projections 2011
Developing Asia	**7.4**	**2.1**	**2.6**	**4.1**	**3.8**	**4.2**	**5.4**	**7.5**	**3.1**	**6.1**	**4.2**	**2.8**	**4.7**	**5.1**	**4.1**
Afghanistan, Islamic Republic of	...	5.1	24.1	13.2	12.3	5.1	13.0	26.8	−12.2	0.4	3.4	4.0	−5.1	5.0	4.0
Bangladesh	4.9	3.7	5.4	6.1	7.0	6.8	9.1	8.9	5.4	8.5	6.9	4.0	8.5	7.4	6.4
Bhutan	8.3	2.5	2.1	4.6	5.3	5.0	5.2	8.4	8.7	8.0	4.5	3.9	8.3	7.0	4.5
Brunei Darussalam	1.9	−2.3	0.3	0.9	1.1	0.2	0.3	2.7	1.8	1.8	1.8	1.8	1.8	1.8	1.8
Cambodia	20.1	0.1	1.0	3.9	6.3	6.1	7.7	25.0	−0.7	4.0	5.2	3.0	5.3	4.5	4.0
China	6.9	−0.8	1.2	3.9	1.8	1.5	4.8	5.9	−0.7	3.5	2.7	2.0	0.7	3.5	2.7
Fiji	3.2	0.8	4.2	2.8	2.4	2.5	4.8	7.7	3.7	6.2	3.8	3.0	6.8	4.0	3.3
India	8.0	4.3	3.8	3.8	4.2	6.2	6.4	8.3	10.9	13.2	6.7	4.0	15.0	8.6	5.7
Indonesia	13.4	11.8	6.8	6.1	10.5	13.1	6.0	9.8	4.8	5.1	5.5	3.7	2.8	5.9	5.8
Kiribati	3.1	3.2	1.9	−0.9	−0.3	−1.5	4.2	11.0	8.8	2.4	2.5	2.5	0.1	2.4	2.5
Lao People's Democratic Republic	28.5	10.6	15.5	10.5	7.2	6.8	4.5	7.6	0.0	5.4	5.7	3.3	3.9	5.5	5.7
Malaysia	3.3	1.8	1.1	1.4	3.0	3.6	2.0	5.4	0.6	2.2	2.1	2.5	1.2	2.2	2.1
Maldives	5.9	0.9	−2.8	6.3	2.5	3.5	7.4	12.3	4.0	4.5	5.5	3.0	4.0	5.0	6.0
Myanmar	24.7	58.1	24.9	3.8	10.7	26.3	32.9	22.5	8.0	7.9	9.1	9.3	6.8	9.0	9.2
Nepal	8.6	2.9	4.7	4.0	4.5	8.0	6.4	7.7	13.2	10.5	6.8	5.0	11.4	9.6	6.0
Pakistan	8.3	2.5	3.1	4.6	9.3	7.9	7.8	12.0	20.8	11.7	13.5	6.0	13.1	12.7	12.5
Papua New Guinea	9.7	11.8	14.7	2.1	1.8	2.4	0.9	10.8	6.9	7.1	8.0	5.0	5.7	8.5	7.5
Philippines	7.5	3.0	3.5	6.0	7.6	6.2	2.8	9.3	3.2	4.5	4.0	4.0	4.3	4.5	4.0
Samoa	3.9	7.4	4.3	7.8	7.8	3.2	4.5	6.2	14.4	−0.2	3.0	4.0	9.8	−0.3	6.0
Solomon Islands	9.6	9.5	10.5	6.9	7.0	11.1	7.7	17.4	7.1	4.8	6.2	5.2	1.8	6.5	6.0
Sri Lanka	9.9	9.6	9.0	9.0	11.0	10.0	15.8	22.6	3.4	6.5	8.0	6.0	4.8	6.5	8.6
Thailand	4.1	0.7	1.8	2.8	4.5	4.6	2.2	5.5	−0.8	3.0	2.8	2.0	3.5	1.5	5.8
Timor-Leste	...	4.7	7.2	3.2	1.8	4.1	8.9	7.6	0.1	4.0	4.0	4.0	2.0	4.0	4.0
Tonga	4.0	10.8	11.5	10.6	8.3	6.0	7.5	7.3	3.5	3.2	4.2	6.0	2.8	4.2	4.1
Vanuatu	2.8	2.0	3.0	1.4	1.2	2.0	3.9	4.8	4.5	3.7	3.0	3.0	2.3	3.9	3.0
Vietnam	8.6	4.1	3.3	7.9	8.4	7.5	8.3	23.1	6.7	8.4	8.0	5.0	6.5	8.0	7.1

Table A7 *(continued)*

	Average 1992–2001	2002	2003	2004	2005	2006	2007	2008	2009	Projections 2010	Projections 2011	Projections 2015	End of Period[2] Projections 2009	End of Period[2] Projections 2010	End of Period[2] Projections 2011
Latin America and the Caribbean	**51.9**	**8.5**	**10.4**	**6.6**	**6.3**	**5.3**	**5.4**	**7.9**	**6.0**	**6.1**	**5.8**	**5.2**	**4.8**	**6.7**	**5.8**
Antigua and Barbuda	2.4	2.4	2.0	2.0	2.1	1.8	1.4	5.3	−0.6	2.0	1.6	2.2	2.4	−1.1	4.4
Argentina[5]	4.6	25.9	13.4	4.4	9.6	10.9	8.8	8.6	6.3	10.6	10.6	11.0	7.7	11.0	11.0
Bahamas, The	2.0	2.2	3.0	1.0	2.2	1.8	2.5	4.5	2.1	1.7	1.4	2.0	1.3	1.7	1.2
Barbados	2.5	−1.2	1.6	1.4	6.1	7.3	4.0	8.1	3.7	5.0	3.6	2.1	4.3	5.0	2.2
Belize	1.6	2.2	2.6	3.1	3.7	4.2	2.3	6.4	2.0	2.8	4.2	2.5	−0.4	5.9	2.5
Bolivia	7.1	0.9	3.3	4.4	5.4	4.3	8.7	14.0	3.3	1.7	4.1	3.5	0.3	3.5	3.5
Brazil	157.1	8.4	14.8	6.6	6.9	4.2	3.6	5.7	4.9	5.0	4.6	4.5	4.3	5.2	4.8
Chile	7.6	2.5	2.8	1.1	3.1	3.4	4.4	8.7	1.7	1.7	3.0	3.0	−1.4	3.7	3.0
Colombia	17.8	6.3	7.1	5.9	5.0	4.3	5.5	7.0	4.2	2.4	2.6	3.0	2.0	3.2	3.3
Costa Rica	14.2	9.2	9.4	12.3	13.8	11.5	9.4	13.4	7.8	5.6	4.2	4.0	4.0	5.5	4.5
Dominica	1.7	0.1	1.6	2.4	1.6	2.6	3.2	6.4	0.0	2.3	1.5	1.5	3.2	1.5	1.5
Dominican Republic	7.2	5.2	27.4	51.5	4.2	7.6	6.1	10.6	1.4	6.9	4.9	4.0	5.8	6.3	5.0
Ecuador	41.4	12.6	7.9	2.7	2.1	3.3	2.3	8.4	5.2	4.0	3.5	3.0	4.3	3.7	3.2
El Salvador	7.2	1.9	2.1	4.5	4.7	4.0	4.6	7.3	0.4	1.1	2.8	2.8	0.0	1.5	2.8
Grenada	2.1	1.1	2.2	2.3	3.5	4.2	3.9	8.0	−0.3	3.6	1.9	2.0	−2.4	4.7	2.0
Guatemala	9.0	8.1	5.6	7.6	9.1	6.6	6.8	11.4	1.9	3.9	4.5	4.0	−0.3	5.5	5.0
Guyana	8.9	5.4	6.0	4.7	6.9	6.7	12.2	8.1	3.0	3.7	4.6	4.0	3.7	4.5	4.0
Haiti	19.7	9.3	26.7	28.3	16.8	14.2	9.0	14.4	3.4	4.9	8.8	5.5	−4.7	8.5	8.6
Honduras	15.5	7.7	7.7	8.0	8.8	5.6	6.9	11.5	8.7	4.6	5.5	5.3	3.0	5.7	5.8
Jamaica	19.1	7.0	10.1	13.5	15.1	8.5	9.3	22.0	9.6	12.7	5.8	5.5	10.2	10.2	5.3
Mexico	16.7	5.0	4.5	4.7	4.0	3.6	4.0	5.1	5.3	4.2	3.2	3.0	3.5	4.5	3.0
Nicaragua	10.7	3.8	5.3	8.5	9.6	9.1	11.1	19.8	3.7	5.7	6.4	6.9	0.9	7.0	6.7
Panama	1.1	1.0	0.6	0.5	2.9	2.5	4.2	8.8	2.4	3.4	3.0	2.5	1.9	4.1	2.7
Paraguay	11.8	10.5	14.2	4.3	6.8	9.6	8.1	10.2	2.6	4.6	5.2	3.7	1.9	5.5	5.5
Peru	17.5	0.2	2.3	3.7	1.6	2.0	1.8	5.8	2.9	1.7	2.5	2.0	0.2	2.8	2.0
St. Kitts and Nevis	3.1	2.1	2.3	2.2	3.4	8.5	4.5	5.4	1.9	2.5	2.4	2.5	1.0	2.2	2.5
St. Lucia	3.1	−0.3	1.0	1.5	3.9	3.6	1.9	7.2	0.6	1.7	2.5	2.2	1.0	1.9	2.1
St. Vincent and the Grenadines	2.0	0.7	0.2	3.0	3.7	3.1	6.9	10.1	0.4	1.2	2.8	2.9	−1.6	1.9	2.9
Suriname	77.3	15.5	23.0	9.1	9.9	11.3	6.4	14.6	−0.1	6.4	7.7	5.5	1.3	12.4	4.9
Trinidad and Tobago	5.3	4.2	3.8	3.7	6.9	8.3	7.9	12.0	7.0	9.4	8.2	5.0	1.3	10.4	6.0
Uruguay	26.5	14.0	19.4	9.2	4.7	6.4	8.1	7.9	7.1	6.5	6.4	5.5	5.9	7.0	6.0
Venezuela	40.8	22.4	31.1	21.7	16.0	13.7	18.7	30.4	27.1	29.2	32.2	22.9	25.1	33.3	31.0
Middle East and North Africa	**10.1**	**4.9**	**5.5**	**6.5**	**6.4**	**7.5**	**10.0**	**13.5**	**6.7**	**6.8**	**6.2**	**5.5**	**5.6**	**6.5**	**6.3**
Algeria	14.1	1.4	2.6	3.6	1.6	2.3	3.6	4.9	5.7	5.5	5.2	4.5	5.8	5.3	5.1
Bahrain	1.0	−0.5	1.7	2.2	2.6	2.0	3.3	3.5	2.8	2.6	2.5	2.5	2.8	2.5	2.5
Djibouti	3.1	0.6	2.0	3.1	3.1	3.5	5.0	12.0	1.7	3.9	4.0	3.0	2.2	3.9	3.5
Egypt	7.7	2.4	3.2	8.1	8.8	4.2	11.0	11.7	16.2	11.7	10.0	6.5	10.0	10.7	10.0
Iran, Islamic Republic of	23.0	15.7	15.6	15.3	10.4	11.9	18.4	25.4	10.8	9.5	8.5	10.0	10.4	8.0	10.0
Iraq	. . .	. . .	. . .	. . .	37.0	53.2	30.8	2.7	−2.8	5.1	5.0	4.0	−4.4	6.0	5.0
Jordan	2.9	1.8	1.6	3.4	3.5	6.3	4.7	13.9	−0.7	5.5	5.0	2.2	2.7	5.8	5.1
Kuwait	1.6	0.8	1.0	1.3	4.1	3.1	5.5	10.6	4.0	4.1	3.6	3.1	1.2	4.1	3.6
Lebanon	13.8	1.8	1.3	1.7	−0.7	5.6	4.1	10.8	1.2	5.0	3.5	2.2	3.4	4.7	2.8
Libya	3.6	−9.9	−2.1	1.0	2.9	1.4	6.2	10.4	2.8	4.5	3.5	3.0	2.8	4.5	3.5
Mauritania	5.4	5.4	5.3	10.4	12.1	6.2	7.3	7.3	2.2	6.1	5.2	5.0	5.0	5.3	5.1
Morocco	3.2	2.8	1.2	1.5	1.0	3.3	2.0	3.9	1.0	1.5	2.2	2.2	−1.6	1.5	2.2
Oman	−0.1	−0.3	0.2	0.7	1.9	3.4	5.9	12.6	3.5	4.4	3.5	2.8	4.0	3.9	3.3
Qatar	2.4	0.2	2.3	6.8	8.8	11.8	13.8	15.0	−4.9	1.0	3.0	4.0	−4.9	1.0	3.0
Saudi Arabia	0.3	0.2	0.6	0.4	0.6	2.3	4.1	9.9	5.1	5.5	5.3	4.0	4.2	6.5	4.5
Sudan	55.7	8.3	7.7	8.4	8.5	7.2	8.0	14.3	11.3	10.0	9.0	5.5	11.5	10.0	8.0
Syrian Arab Republic	5.1	−0.5	5.8	4.4	7.2	10.4	4.7	15.2	2.8	5.0	5.0	5.0	1.7	5.0	5.0
Tunisia	3.9	2.8	2.7	3.6	2.0	4.1	3.4	4.9	3.5	4.5	3.5	3.0	4.0	4.2	3.5
United Arab Emirates	3.4	2.9	3.1	5.0	6.2	9.3	11.1	12.3	1.2	2.0	2.5	3.5	1.6	2.2	2.7
Yemen, Republic of	31.2	12.2	10.8	12.5	9.9	10.8	7.9	19.0	3.7	9.8	8.9	7.0	8.8	10.8	7.1

Table A7 *(concluded)*

	Average 1992–2001	2002	2003	2004	2005	2006	2007	2008	2009	Projections 2010	Projections 2011	Projections 2015	End of Period[2] 2009	Projections 2010	Projections 2011
Sub-Saharan Africa	**26.2**	**11.3**	**10.9**	**7.6**	**8.9**	**6.9**	**6.9**	**11.7**	**10.4**	**7.5**	**7.0**	**5.5**	**7.9**	**7.3**	**6.6**
Angola	569.9	108.9	98.3	43.6	23.0	13.3	12.2	12.5	13.7	13.3	11.3	6.0	14.0	11.2	12.0
Benin	7.8	2.4	1.5	0.9	5.4	3.8	1.3	8.0	2.2	2.8	2.8	2.8	−2.9	3.0	2.8
Botswana	10.0	8.0	9.2	7.0	8.6	11.6	7.1	12.6	8.1	6.7	6.3	5.2	5.8	6.6	5.9
Burkina Faso	4.6	2.3	2.0	−0.4	6.4	2.4	−0.2	10.7	2.6	2.3	2.0	2.0	−0.3	2.0	2.0
Burundi	15.3	−1.3	10.7	8.0	13.5	2.7	8.3	24.4	10.7	7.2	8.4	5.0	4.6	9.8	7.0
Cameroon[6]	5.2	6.3	0.6	0.3	2.0	4.9	1.1	5.3	3.0	3.0	2.7	2.7	0.9	2.7	1.5
Cape Verde	5.5	1.9	1.2	−1.9	0.4	4.8	4.4	6.8	1.0	1.8	2.0	2.0	−0.4	2.7	2.0
Central African Republic	4.6	2.3	4.4	−2.2	2.9	6.7	0.9	9.3	3.5	1.4	2.4	2.0	−1.2	3.1	1.8
Chad	5.3	5.2	−1.8	−4.8	3.7	7.7	−7.4	8.3	10.1	6.0	3.0	3.0	4.7	9.0	3.0
Comoros	4.3	3.6	3.7	4.5	3.0	3.4	4.5	4.8	4.8	2.6	2.9	3.0	2.1	3.1	2.7
Congo, Democratic Republic of	818.7	25.3	12.8	4.0	21.4	13.2	16.7	18.0	46.2	26.2	13.5	8.3	52.3	15.0	12.0
Congo, Republic of	6.4	3.0	1.7	3.7	2.5	4.7	2.6	6.0	4.3	5.2	4.5	3.0	2.5	4.2	4.8
Côte d'Ivoire	6.3	3.1	3.3	1.5	3.9	2.5	1.9	6.3	1.0	1.4	2.5	2.5	−1.7	2.1	2.5
Equatorial Guinea	7.8	7.6	7.3	4.2	5.7	4.5	2.8	4.3	7.2	8.0	7.1	6.4	8.1	7.7	6.9
Eritrea	. . .	16.9	22.7	25.1	12.5	15.1	9.3	19.9	34.7	20.5	15.0	14.0	30.2	16.8	14.5
Ethiopia	4.6	−7.2	15.1	8.6	6.8	12.3	15.8	25.3	36.4	2.8	9.0	6.0	2.7	7.3	9.8
Gabon	5.5	0.2	2.1	0.4	1.2	−1.4	5.0	5.3	2.1	3.0	3.5	3.0	0.8	3.0	3.5
Gambia, The	3.8	8.6	17.0	14.3	5.0	2.1	5.4	4.5	4.6	3.9	5.0	5.0	2.7	5.0	5.0
Ghana	27.1	14.8	26.7	12.6	15.1	10.2	10.7	16.5	19.3	10.6	8.8	5.0	16.0	9.2	8.5
Guinea	6.0	3.0	11.0	17.5	31.4	34.7	22.9	18.4	4.7	15.4	16.5	5.0	7.9	19.4	13.5
Guinea-Bissau	27.3	3.3	−3.5	0.8	3.3	0.7	4.6	10.4	−1.6	1.5	2.5	2.5	−6.4	2.5	2.5
Kenya	14.5	2.0	9.8	11.8	9.9	6.0	4.3	16.2	9.3	4.1	5.0	5.0	5.3	5.0	5.0
Lesotho	9.5	12.5	7.3	5.0	3.4	6.1	8.0	10.7	7.2	6.3	6.0	5.0	4.2	5.8	5.6
Liberia	. . .	14.2	10.3	3.6	6.9	7.2	13.7	17.5	7.4	7.2	4.3	5.0	9.7	4.8	4.7
Madagascar	16.1	16.2	−1.1	14.0	18.4	10.8	10.4	9.2	9.0	9.0	8.8	5.0	8.0	9.2	8.5
Malawi	33.0	17.4	9.6	11.4	15.5	13.9	7.9	8.7	8.4	8.0	8.0	5.6	7.6	7.6	7.0
Mali	4.0	4.9	−1.2	−3.1	6.4	1.5	1.5	9.1	2.2	2.1	2.6	3.4	1.6	2.3	2.8
Mauritius	6.8	6.5	3.9	4.7	4.9	9.0	8.8	9.7	2.5	2.5	2.6	2.6	2.5	2.5	2.6
Mozambique	26.1	16.8	13.5	12.6	6.4	13.2	8.2	10.3	3.3	9.3	5.6	5.6	4.2	8.0	5.6
Namibia	9.7	11.3	7.2	4.1	2.3	5.1	6.7	10.0	9.1	6.5	5.9	4.9	7.0	6.0	5.7
Niger	5.3	2.7	−1.8	0.4	7.8	0.1	0.1	10.5	1.1	3.4	2.0	2.0	−0.6	1.8	2.0
Nigeria	29.2	12.9	14.0	15.0	17.9	8.2	5.4	11.6	12.4	11.9	9.8	8.5	11.9	11.2	8.5
Rwanda	14.6	2.0	7.4	12.0	9.1	8.8	9.1	15.4	10.4	6.4	6.5	5.0	5.7	7.0	6.0
São Tomé and Príncipe	31.9	9.2	9.6	12.8	17.2	23.1	18.5	26.0	17.0	12.3	7.4	3.0	16.1	9.0	6.0
Senegal	4.6	2.3	0.0	0.5	1.7	2.1	5.9	5.8	−1.7	0.9	2.1	2.1	−2.2	2.1	2.1
Seychelles	2.7	0.2	3.3	3.9	0.6	−1.9	5.3	37.0	31.8	−2.4	2.5	3.0	−2.5	1.1	2.9
Sierra Leone	23.5	−3.7	7.5	14.2	12.0	9.5	11.6	14.8	9.2	16.5	8.2	6.2	10.8	14.0	9.5
South Africa	8.0	9.2	5.8	1.4	3.4	4.7	7.1	11.5	7.1	5.6	5.8	4.5	6.3	5.8	5.7
Swaziland	8.8	11.7	7.4	3.4	4.8	5.3	8.2	13.1	7.6	6.2	5.6	4.8	5.4	5.9	5.3
Tanzania	17.1	4.6	4.4	4.1	4.4	7.3	7.0	10.3	12.1	7.2	5.0	5.0	12.2	5.0	5.0
Togo	6.5	3.1	−0.9	0.4	6.8	2.2	0.9	8.7	1.9	2.2	2.0	2.4	−2.4	4.3	1.0
Uganda	11.0	−2.0	5.7	5.0	8.0	6.6	6.8	7.3	14.2	9.4	5.5	5.8	12.3	4.2	4.4
Zambia	52.4	22.2	21.4	18.0	18.3	9.0	10.7	12.4	13.4	8.2	7.5	5.0	9.9	8.0	7.0
Zimbabwe[7]	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	6.5	4.7	7.8	4.9	−7.7	9.1	6.2

[1]In accordance with standard practice in the *World Economic Outlook*, movements in consumer prices are indicated as annual averages rather than as December–December changes during the year, as is the practice in some countries. For many countries, figures for recent years are IMF staff estimates. Data for some countries are for fiscal years.

[2]December–December changes. Several countries report Q4–Q4 changes.

[3]For many countries, inflation for the earlier years is measured on the basis of a retail price index. Consumer price index (CPI) inflation data with broader and more up-to-date coverage are typically used for more recent years.

[4]Georgia and Mongolia, which are not members of the Commonwealth of Independent States, are included in this group for reasons of geography and similarities in economic structure.

[5]Private analysts estimate that CPI inflation has been considerably higher. The authorities have created a board of academic advisors to assess these issues.

[6]The percent changes in 2002 are calculated over a period of 18 months, reflecting a change in the fiscal year cycle (from July–June to January–December).

[7]The Zimbabwe dollar ceased circulating in early 2009. Data are based on staff estimates of price and exchange rate developments in U.S. dollars. Staff estimates of U.S. dollar values may differ from authorities' estimates.

Table A8. Major Advanced Economies: General Government Fiscal Balances and Debt[1]
(Percent of GDP unless noted otherwise)

	Average 1994–2003	2004	2005	2006	2007	2008	2009	Projections 2010	2011	2015
Major Advanced Economies										
Net Lending/Borrowing	. . .	−4.2	−3.3	−2.3	−2.1	−4.7	−10.1	−9.3	−8.0	−5.0
Output Gap[2]	−0.1	−0.5	−0.3	0.3	0.5	−1.1	−5.4	−4.2	−3.5	−0.7
Structural Balance[2]	. . .	−3.6	−2.8	−2.3	−2.1	−3.8	−6.1	−6.8	−5.9	−4.5
United States										
Net Lending/Borrowing	. . .	−4.4	−3.2	−2.0	−2.7	−6.7	−12.9	−11.1	−9.7	−6.5
Output Gap[2]	0.1	−0.5	0.0	0.3	0.0	−1.8	−6.0	−4.9	−4.3	−1.3
Structural Balance[2]	. . .	−3.2	−2.3	−2.0	−2.3	−4.9	−7.2	−8.0	−7.1	−5.7
Net Debt	44.4	42.2	42.6	41.9	42.4	47.6	58.8	65.8	72.7	84.7
Gross Debt	63.3	61.4	61.6	61.1	62.1	71.1	84.3	92.7	99.3	110.7
Euro Area										
Net Lending/Borrowing	−2.7	−2.9	−2.5	−1.3	−0.6	−1.9	−6.3	−6.5	−5.1	−2.8
Output Gap[2]	−0.7	−0.8	−0.9	0.5	1.7	0.8	−3.7	−2.9	−2.5	−0.1
Structural Balance[2]	−2.8	−3.0	−2.7	−2.1	−1.8	−2.6	−4.3	−4.5	−3.6	−2.5
Net Debt	54.4	55.0	55.2	53.3	51.0	53.4	62.3	67.4	70.4	73.8
Gross Debt	69.7	69.5	70.1	68.3	65.9	69.5	79.0	84.1	87.0	89.3
Germany[3]										
Net Lending/Borrowing	−2.5	−3.8	−3.3	−1.6	0.2	0.0	−3.1	−4.5	−3.7	−1.4
Output Gap[2]	−0.2	−1.8	−2.2	−0.1	1.3	1.1	−4.3	−2.2	−1.5	0.2
Structural Balance[2,4]	−2.5	−2.9	−2.2	−1.6	−0.3	−0.3	−0.8	−3.1	−2.9	−1.5
Net Debt	41.4	50.5	53.1	52.7	50.1	49.7	55.9	58.7	60.4	61.7
Gross Debt	58.6	65.7	68.0	67.6	64.9	66.3	73.5	75.3	76.5	75.6
France										
Net Lending/Borrowing	−3.3	−3.6	−3.0	−2.3	−2.7	−3.3	−7.6	−8.0	−6.0	−2.2
Output Gap[2]	0.0	0.4	0.3	0.8	1.1	−0.4	−3.9	−3.5	−2.9	−0.2
Structural Balance[2,4]	−3.1	−3.6	−3.4	−2.6	−3.2	−3.1	−5.0	−5.0	−3.7	−1.9
Net Debt	48.4	55.2	56.7	53.9	54.1	57.8	68.4	74.5	77.9	78.7
Gross Debt	57.6	64.9	66.4	63.7	63.8	67.5	78.1	84.2	87.6	88.4
Italy										
Net Lending/Borrowing	−4.2	−3.6	−4.4	−3.3	−1.5	−2.7	−5.2	−5.1	−4.3	−3.0
Output Gap[2]	−0.1	0.0	−0.4	0.8	1.5	−0.5	−3.7	−3.0	−2.6	0.0
Structural Balance[2,5]	−4.4	−4.8	−4.6	−3.4	−2.5	−2.6	−3.9	−3.6	−2.8	−3.1
Net Debt	99.7	88.3	89.2	89.7	87.2	89.0	96.8	99.0	100.1	99.5
Gross Debt	113.9	103.8	105.8	106.5	103.5	106.1	115.8	118.4	119.7	118.8
Japan										
Net Lending/Borrowing	−6.0	−6.2	−4.8	−4.0	−2.4	−4.1	−10.2	−9.6	−8.9	−7.4
Output Gap[2]	−0.9	−1.1	−0.8	−0.3	0.4	−1.6	−7.1	−5.0	−4.1	−0.2
Structural Balance[2]	−5.6	−5.7	−4.6	−3.9	−2.5	−3.6	−7.3	−7.6	−7.2	−7.3
Net Debt	48.3	82.7	84.6	84.3	81.5	94.9	111.6	120.7	129.5	153.4
Gross Debt	126.0	178.1	191.6	191.3	187.7	194.7	217.6	225.9	234.1	249.2
United Kingdom										
Net Lending/Borrowing	−2.1	−3.4	−3.3	−2.6	−2.7	−4.9	−10.3	−10.2	−8.1	−2.4
Output Gap[2]	−0.1	0.1	−0.3	0.0	0.7	0.4	−4.0	−2.7	−2.3	−0.6
Structural Balance[2]	−1.9	−3.3	−3.1	−2.7	−3.1	−5.6	−8.3	−7.9	−6.2	−1.7
Net Debt	37.8	35.5	37.3	38.0	38.2	45.6	61.0	68.8	74.0	76.0
Gross Debt	43.1	40.2	42.1	43.1	43.9	52.1	68.5	76.7	81.9	83.9
Canada										
Net Lending/Borrowing	−1.0	0.9	1.5	1.6	1.6	0.1	−5.5	−4.9	−2.9	−0.2
Output Gap[2]	0.5	1.1	1.5	1.7	1.7	0.1	−3.8	−2.4	−1.5	0.0
Structural Balance[2]	−1.1	0.4	0.9	0.8	0.6	0.0	−3.2	−3.4	−2.0	−0.2
Net Debt	56.2	35.2	31.0	26.2	23.1	22.4	29.0	32.2	33.5	32.2
Gross Debt	90.6	72.6	71.6	69.4	65.1	69.8	81.6	81.7	80.5	71.6

Note: The methodology and specific assumptions for each country are discussed in Box A1 in the Statistical Appendix.

[1]Debt data refer to the end of the year. Debt data are not always comparable across countries.

[2]Percent of potential GDP.

[3]Beginning in 1995, the debt and debt-service obligations of the Treuhandanstalt (and of various other agencies) were taken over by the general government. This debt is equivalent to 8 percent of GDP, and the associated debt service to ½ to 1 percent of GDP.

[4]Excludes sizable one-off receipts from the sale of assets, including licenses.

[5]Excludes one-off measures based on the authorities' data and, in the absence of the latter, receipts from the sale of assets.

Table A9. Summary of World Trade Volumes and Prices
(Annual percent change)

	Averages		2002	2003	2004	2005	2006	2007	2008	2009	Projections	
	1992–2001	2002–11									2010	2011
Trade in Goods and Services												
World Trade[1]												
Volume	6.8	5.2	3.5	5.4	10.8	7.8	8.9	7.4	2.9	−11.0	11.4	7.0
Price Deflator												
In U.S. Dollars	5.6	4.5	1.2	10.5	9.5	5.3	5.6	8.0	11.2	−10.3	4.7	1.5
In SDRs	6.4	2.7	−0.5	2.1	3.6	5.5	6.0	3.8	7.7	−8.1	6.6	1.2
Volume of trade												
Exports												
Advanced Economies	6.5	4.1	2.5	3.3	9.1	6.2	8.7	6.6	1.9	−12.4	11.0	6.0
Emerging and Developing Economies	8.3	8.0	6.5	10.2	15.0	11.6	10.3	9.9	4.6	−7.8	11.9	9.1
Imports												
Advanced Economies	6.7	3.6	2.7	4.2	9.3	6.5	7.7	5.0	0.4	−12.7	10.1	5.2
Emerging and Developing Economies	7.3	9.2	6.4	10.6	16.0	11.8	10.9	13.0	9.0	−8.2	14.3	9.9
Terms of trade												
Advanced Economies	−0.1	0.0	0.8	1.0	−0.2	−1.4	−1.1	0.3	−1.8	2.8	−0.6	−0.1
Emerging and Developing Economies	−0.7	1.4	1.0	2.1	2.3	5.0	2.9	0.0	3.4	−4.2	1.2	0.4
Trade in Goods												
World Trade[1]												
Volume	6.8	5.4	4.0	7.0	11.3	7.5	8.8	7.1	2.7	−12.0	12.5	7.0
Price Deflator												
In U.S. Dollars	−1.0	4.4	0.4	9.2	9.4	6.1	6.2	7.7	11.7	−11.8	5.8	1.7
In SDRs	−0.3	2.6	−1.3	1.0	3.4	6.4	6.7	3.5	8.1	−9.6	7.6	1.5
World Trade Prices in U.S. Dollars[2]												
Manufactures	−1.0	3.2	−1.9	13.3	5.8	2.5	2.6	5.9	6.7	−6.1	3.1	1.4
Oil	2.3	12.5	2.5	15.8	30.7	41.3	20.5	10.7	36.4	−36.3	23.3	3.3
Nonfuel Primary Commodities	−1.3	6.4	1.9	5.9	15.2	6.1	23.2	14.1	7.5	−18.7	16.8	−2.0
Food	−2.0	5.8	3.5	6.3	14.0	−0.9	10.5	15.2	23.4	−14.7	6.8	−1.3
Beverages	−2.0	8.0	24.3	4.8	−0.9	18.1	8.4	13.8	23.3	1.6	11.7	−18.2
Agricultural Raw Materials	0.1	1.5	−0.2	0.6	4.1	0.5	8.8	5.0	−0.8	−17.0	23.9	−5.6
Metal	−1.1	11.1	−3.5	11.8	34.6	22.4	56.2	17.4	−8.0	−28.6	31.4	1.9
World Trade Prices in SDRs[2]												
Manufactures	−0.3	1.4	−3.6	4.7	0.0	2.8	3.0	1.7	3.4	−3.8	4.9	1.1
Oil	3.1	10.5	0.8	7.1	23.6	41.6	21.0	6.4	32.1	−34.8	25.5	3.1
Nonfuel Primary Commodities	−0.6	4.5	0.2	−2.1	9.0	6.3	23.8	9.6	4.1	−16.7	18.9	−2.3
Food	−1.3	3.9	1.8	−1.7	7.8	−0.7	11.0	10.7	19.5	−12.6	8.7	−1.6
Beverages	−1.3	6.1	22.2	−3.1	−6.3	18.3	8.8	9.4	19.4	4.1	13.6	−18.4
Agricultural Raw Materials	0.9	−0.3	−1.9	−7.0	−1.6	0.8	9.3	0.9	−3.9	−14.9	26.1	−5.8
Metal	−0.4	9.1	−5.1	3.3	27.3	22.7	56.9	12.8	−10.9	−26.8	33.7	1.6
World Trade Prices in Euros[2]												
Manufactures	2.3	−0.4	−7.0	−5.4	−3.8	2.3	1.8	−3.0	−0.6	−0.8	9.9	3.2
Oil	5.7	8.5	−2.8	−3.3	18.9	41.0	19.5	1.4	27.1	−32.7	31.4	5.3
Nonfuel Primary Commodities	2.0	2.6	−3.3	−11.6	4.8	5.9	22.3	4.5	0.1	−14.1	24.4	−0.2
Food	1.3	2.0	−1.8	−11.2	3.7	−1.1	9.6	5.6	14.9	−9.8	13.8	0.5
Beverages	1.2	4.1	17.9	−12.5	−9.9	17.8	7.5	4.2	14.8	7.3	19.0	−16.7
Agricultural Raw Materials	3.4	−2.1	−5.4	−16.0	−5.3	0.3	8.0	−3.8	−7.6	−12.3	32.0	−3.8
Metal	2.2	7.2	−8.4	−6.7	22.4	22.2	55.0	7.5	−14.3	−24.6	39.9	3.8

Table A9 *(concluded)*

	Averages		2002	2003	2004	2005	2006	2007	2008	2009	Projections	
	1992–2001	2002–11									2010	2011
Trade in Goods												
Volume of Trade												
Exports												
Advanced Economies	6.3	4.2	2.8	5.0	9.6	5.7	8.7	6.1	1.8	−13.8	12.4	5.9
Emerging and Developing Economies	8.3	7.7	6.9	11.6	14.1	10.7	9.5	8.8	4.3	−8.5	12.3	8.9
Fuel Exporters	4.4	4.3	2.6	12.1	9.0	5.7	4.1	4.6	2.7	−5.8	3.5	5.4
Nonfuel Exporters	9.8	9.0	8.5	11.4	15.9	12.6	11.8	10.6	5.0	−9.8	15.7	10.4
Imports												
Advanced Economies	6.7	4.0	3.4	5.9	10.1	6.4	8.0	5.0	0.3	−13.6	11.3	5.3
Emerging and Developing Economies	7.6	9.2	6.4	11.9	16.9	11.9	10.4	12.6	8.4	−9.3	14.9	10.2
Fuel Exporters	3.1	10.3	9.6	10.8	15.4	16.5	11.9	22.1	15.1	−10.9	7.1	8.9
Nonfuel Exporters	8.9	9.0	5.8	12.1	17.2	11.0	10.1	10.5	6.8	−8.9	16.8	10.5
Price Deflators in SDRs												
Exports												
Advanced Economies	−0.8	1.8	−1.2	1.7	2.4	3.6	4.3	2.8	5.0	−6.6	6.0	0.9
Emerging and Developing Economies	1.7	5.1	−0.2	1.1	7.4	14.2	12.2	5.5	13.7	−13.6	11.4	2.7
Fuel Exporters	2.8	8.9	0.7	4.3	17.3	32.4	18.8	7.7	25.8	−27.6	20.0	2.9
Nonfuel Exporters	1.3	3.6	−0.5	0.1	4.0	7.5	9.4	4.5	8.5	−6.9	8.1	2.6
Imports												
Advanced Economies	−0.9	1.8	−2.1	0.6	2.8	5.4	5.8	2.5	7.4	−10.2	5.8	0.9
Emerging and Developing Economies	1.6	3.5	−0.9	−0.3	4.0	7.4	8.5	5.1	10.0	−9.5	10.1	2.2
Fuel Exporters	0.7	3.4	0.2	−0.1	4.2	7.5	8.7	4.8	8.1	−7.3	7.8	0.7
Nonfuel Exporters	1.7	3.5	−1.1	−0.4	4.0	7.4	8.4	5.2	10.4	−10.0	10.6	2.6
Terms of trade												
Advanced Economies	0.1	0.0	0.9	1.1	−0.4	−1.7	−1.4	0.3	−2.3	4.0	0.2	0.0
Emerging and Developing Economies	0.1	1.6	0.7	1.5	3.3	6.3	3.4	0.4	3.3	−4.6	1.2	0.5
Regional Groups												
Central and Eastern Europe	−0.6	−0.1	0.4	0.9	1.1	−0.1	−1.6	1.3	−2.5	3.4	−3.2	−0.4
Commonwealth of Independent States[3]	−0.1	4.4	−1.7	8.8	12.2	14.9	9.3	2.3	15.0	−20.6	7.1	1.6
Developing Asia	−0.3	−0.7	0.7	−0.6	−1.9	−1.4	−1.0	−2.0	−3.1	5.3	−2.9	0.5
Latin America and the Caribbean	0.0	2.3	1.7	3.1	5.6	5.4	8.5	2.4	3.1	−4.6	−1.2	−0.8
Middle East and North Africa	1.7	4.4	0.3	1.8	9.3	22.7	5.6	1.2	13.5	−17.5	10.8	1.4
Sub-Saharan Africa	−0.1	4.1	2.7	2.1	5.3	12.9	9.4	3.5	9.7	−12.4	9.4	1.1
Analytical Groups												
By Source of Export Earnings												
Fuel Exporters	2.1	5.4	0.5	4.4	12.5	23.2	9.3	2.7	16.4	−21.9	11.3	2.2
Nonfuel Exporters	−0.4	0.1	0.6	0.5	0.0	0.1	0.9	−0.6	−1.8	3.4	−2.3	0.0
Memorandum												
World Exports in Billions of U.S. Dollars												
Goods and Services	6,420	14,749	8,020	9,342	11,332	12,889	14,857	17,283	19,733	15,746	18,334	19,955
Goods	5,122	11,790	6,382	7,460	9,054	10,347	11,978	13,827	15,853	12,321	14,669	16,012
Average Oil Price[4]	2.3	12.5	2.5	15.8	30.7	41.3	20.5	10.7	36.4	−36.3	23.3	3.3
In U.S. Dollars a Barrel	19.22	59.41	24.95	28.89	37.76	53.35	64.27	71.13	97.03	61.78	76.20	78.75
Export Unit Value of Manufactures[5]	−1.0	3.2	−1.9	13.3	5.8	2.5	2.6	5.9	6.7	−6.1	3.1	1.4

[1]Average of annual percent change for world exports and imports.

[2]As represented, respectively, by the export unit value index for manufactures of the advanced economies and accounting for 83 percent of the advanced economies' trade (export of goods) weights; the average of U.K. Brent, Dubai, and West Texas Intermediate crude oil prices; and the average of world market prices for nonfuel primary commodities weighted by their 2002–04 shares in world commodity exports.

[3]Georgia and Mongolia, which are not members of the Commonwealth of Independent States, are included in this group for reasons of geography and similarities in economic structure.

[4]Average of U.K. Brent, Dubai, and West Texas Intermediate crude oil prices.

[5]For manufactures exported by the advanced economies.

Table A10. Summary of Balances on Current Account
(Billions of U.S. dollars)

									Projections		
	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2015
Advanced Economies	**−216.3**	**−218.4**	**−219.9**	**−409.7**	**−453.0**	**−343.5**	**−492.6**	**−122.6**	**−110.1**	**−28.6**	**−274.4**
United States	−458.1	−520.7	−630.5	−747.6	−802.6	−718.1	−668.9	−378.4	−466.5	−400.4	−601.7
Euro Area[1]	43.4	23.6	76.6	14.6	−12.6	18.6	−226.4	−77.9	21.3	57.2	22.5
Japan	112.6	136.2	172.1	165.7	170.4	211.0	157.1	141.8	166.5	133.3	121.5
Other Advanced Economies[2]	83.3	125.3	123.2	127.5	133.5	116.9	120.0	164.8	168.7	181.3	183.3
Memorandum											
Newly Industrialized Asian economies	55.9	80.8	82.9	79.5	89.7	113.7	86.8	136.2	132.1	137.1	150.7
Emerging and Developing Economies	**79.9**	**145.4**	**219.6**	**444.5**	**662.8**	**654.3**	**703.4**	**339.1**	**312.3**	**325.2**	**763.8**
Regional Groups											
Central and Eastern Europe	−20.1	−33.3	−53.4	−59.8	−87.4	−132.9	−153.0	−40.2	−64.7	−73.8	−112.3
Commonwealth of Independent States[3]	30.3	35.7	63.5	87.5	96.3	71.7	107.7	42.4	74.6	65.3	45.2
Developing Asia	67.1	85.0	92.9	167.5	289.2	418.3	435.6	321.7	273.2	308.1	731.2
Latin America and the Caribbean	−16.2	9.2	21.4	36.7	49.8	15.1	−28.9	−21.9	−56.6	−80.2	−109.8
Middle East and North Africa	31.3	60.9	103.2	215.3	284.1	272.3	343.5	52.3	97.1	127.1	234.5
Sub-Saharan Africa	−12.4	−12.2	−8.0	−2.8	30.8	9.7	−1.5	−15.1	−11.3	−21.4	−24.9
Memorandum											
European Union	16.5	15.3	64.5	−10.5	−44.6	−66.9	−189.5	−48.7	−11.1	23.3	−0.2
Analytical Groups											
By Source of Export Earnings											
Fuel	60.5	104.9	185.9	351.9	479.4	434.9	587.3	156.3	262.9	288.3	381.3
Nonfuel	19.5	40.5	33.7	92.6	183.4	219.4	116.0	182.8	49.4	36.9	382.4
Of Which, Primary Products	−4.4	−4.4	−0.9	−1.8	9.3	6.5	−13.6	−3.0	−12.6	−18.2	−18.2
By External Financing Source											
Net Debtor Economies	−36.8	−32.4	−57.3	−96.5	−118.3	−213.6	−363.5	−176.0	−265.8	−330.0	−426.3
Of Which, Official Financing	−4.8	−7.1	−6.2	−9.0	−10.2	−12.7	−24.8	−15.9	−20.1	−25.1	−26.4
Net Debtor Economies by Debt-Servicing Experience											
Economies with Arrears and/or Rescheduling during 2004–08	2.4	2.7	−5.9	−7.7	−5.6	−18.0	−32.5	−30.2	−31.7	−39.9	−39.5
World[1]	**−136.4**	**−73.0**	**−0.2**	**34.8**	**209.8**	**310.8**	**210.7**	**216.6**	**202.3**	**296.6**	**489.4**
Memorandum											
In Percent of Total World Current Account Transactions	−0.8	−0.4	0.0	0.1	0.7	0.9	0.5	0.7	0.6	0.7	0.9
In Percent of World GDP	−0.4	−0.2	0.0	0.1	0.4	0.6	0.3	0.4	0.3	0.5	0.6

[1]Reflects errors, omissions, and asymmetries in balance of payments statistics on the current account, as well as the exclusion of data for international organizations and a limited number of countries. Calculated as the sum of the balances of individual Euro Area countries. See "Classification of Countries" in the introduction to this Statistical Appendix.

[2]In this table, Other Advanced Economies means Advanced Economies excluding the United States, Euro Area countries, and Japan.

[3]Georgia and Mongolia, which are not members of the Commonwealth of Independent States, are included in this group for reasons of geography and similarities in economic structure.

Table A11. Advanced Economies: Balance on Current Account
(Percent of GDP)

	2002	2003	2004	2005	2006	2007	2008	2009	Projections 2010	2011	2015
Advanced Economies	**−0.8**	**−0.7**	**−0.7**	**−1.2**	**−1.2**	**−0.9**	**−1.2**	**−0.3**	**−0.3**	**−0.1**	**−0.6**
United States	−4.3	−4.7	−5.3	−5.9	−6.0	−5.1	−4.7	−2.7	−3.2	−2.6	−3.3
Euro Area[1]	0.7	0.5	1.2	0.4	0.4	0.4	−0.7	−0.4	0.2	0.5	0.2
Germany	2.0	1.9	4.7	5.1	6.5	7.6	6.7	4.9	6.1	5.8	3.9
France	1.2	0.7	0.5	−0.5	−0.6	−1.0	−1.9	−1.9	−1.8	−1.8	−1.8
Italy	−0.8	−1.3	−0.9	−1.7	−2.6	−2.4	−3.4	−3.2	−2.9	−2.7	−2.4
Spain	−3.3	−3.5	−5.3	−7.4	−9.0	−10.0	−9.7	−5.5	−5.2	−4.8	−4.3
Netherlands	2.5	5.5	7.5	7.3	9.3	8.6	4.8	5.4	5.7	6.8	6.3
Belgium	4.6	4.1	3.5	2.6	2.0	1.6	−2.9	0.3	0.5	1.8	4.1
Greece	−6.5	−6.6	−5.8	−7.3	−11.3	−14.4	−14.6	−11.2	−10.8	−7.7	−4.0
Austria	2.7	1.7	2.2	2.2	2.8	3.5	3.3	2.3	2.3	2.4	2.3
Portugal	−7.7	−5.8	−7.2	−9.1	−9.6	−9.0	−11.6	−10.0	−10.0	−9.2	−8.4
Finland	8.5	4.8	6.2	3.4	4.2	4.3	3.1	1.3	1.4	1.6	1.7
Ireland	−1.0	0.0	−0.6	−3.5	−3.6	−5.3	−5.2	−3.0	−2.7	−1.1	−1.2
Slovak Republic	−7.9	−5.9	−7.8	−8.5	−7.8	−5.3	−6.6	−3.2	−1.4	−2.6	−2.3
Slovenia	1.1	−0.8	−2.7	−1.7	−2.5	−4.8	−6.7	−1.5	−0.7	−0.7	−1.0
Luxembourg	10.5	8.1	11.9	11.0	10.3	9.7	5.3	5.7	6.9	7.2	8.5
Cyprus	−3.8	−2.3	−5.0	−5.9	−7.0	−11.7	−17.5	−8.3	−7.9	−7.4	−6.1
Malta	2.5	−3.1	−6.0	−8.8	−9.2	−6.2	−5.6	−6.1	−5.4	−5.3	−4.5
Japan	2.9	3.2	3.7	3.6	3.9	4.8	3.2	2.8	3.1	2.3	1.9
United Kingdom	−1.7	−1.6	−2.1	−2.6	−3.4	−2.6	−1.6	−1.1	−2.2	−2.0	−1.1
Canada	1.7	1.2	2.3	1.9	1.4	0.8	0.4	−2.8	−2.8	−2.7	−1.8
Korea	0.9	1.9	3.9	1.8	0.6	0.6	−0.6	5.1	2.6	2.9	2.0
Australia	−3.6	−5.2	−6.0	−5.7	−5.3	−6.2	−4.5	−4.4	−2.4	−2.3	−6.0
Taiwan Province of China	8.8	9.8	5.8	4.8	7.0	8.9	6.8	11.3	10.0	9.5	8.6
Sweden	5.0	7.1	6.7	6.9	8.5	8.4	7.6	7.2	5.9	5.7	6.2
Switzerland	8.8	13.3	13.4	14.0	15.1	9.0	2.0	8.5	9.6	10.3	11.3
Hong Kong SAR	7.6	10.4	9.5	11.4	12.1	12.3	13.6	8.7	8.3	8.3	9.0
Czech Republic	−5.7	−6.3	−5.3	−1.3	−2.5	−3.3	−0.6	−1.1	−1.2	−0.6	−0.3
Norway	12.6	12.3	12.7	16.3	17.2	14.1	17.9	13.1	16.6	16.4	15.8
Singapore	12.9	22.8	17.1	21.3	24.2	26.7	18.5	17.8	20.5	18.4	14.1
Denmark	2.7	3.7	3.3	4.1	3.1	1.6	1.9	4.2	3.4	3.0	2.5
Israel	−1.1	0.6	1.8	3.1	5.1	2.9	0.7	3.8	6.2	5.7	4.5
New Zealand	−3.9	−4.2	−6.2	−8.3	−8.4	−8.0	−8.6	−3.0	−3.2	−4.4	−6.6
Iceland	1.6	−4.8	−9.8	−16.1	−25.6	−16.3	−26.0	−6.5	−0.9	2.1	−0.4
Memorandum											
Major Advanced Economies	−1.4	−1.5	−1.4	−1.9	−2.0	−1.3	−1.4	−0.8	−0.9	−0.8	−1.3
Euro Area[2]	0.6	0.3	0.8	0.1	−0.1	0.2	−1.7	−0.6	0.2	0.5	0.2
Newly Industrialized Asian Economies	4.9	6.7	6.2	5.3	5.4	6.2	5.0	8.5	7.1	6.9	5.8

[1]Calculated as the sum of the balances of individual Euro Area countries.
[2]Corrected for reporting discrepancies in intra-area transactions.

Table A12. Emerging and Developing Economies: Balance on Current Account
(Percent of GDP)

	2002	2003	2004	2005	2006	2007	2008	2009	Projections 2010	2011	2015
Central and Eastern Europe	**−3.1**	**−4.2**	**−5.4**	**−5.1**	**−6.6**	**−8.0**	**−7.9**	**−2.5**	**−3.7**	**−4.0**	**−4.6**
Albania	−7.2	−5.0	−4.0	−6.1	−5.6	−10.4	−15.2	−14.0	−9.2	−8.9	−4.9
Bosnia and Herzegovina	−17.8	−19.4	−16.4	−17.2	−8.0	−10.7	−14.5	−6.9	−5.5	−5.5	−5.0
Bulgaria	−2.4	−5.5	−6.6	−12.4	−18.4	−26.9	−24.2	−9.5	−3.0	−3.1	−4.0
Croatia	−7.5	−5.3	−4.4	−5.5	−6.9	−7.6	−9.2	−5.3	−3.8	−4.7	−6.4
Estonia	−10.6	−11.3	−11.3	−10.0	−15.3	−17.2	−9.7	4.5	4.2	3.4	−4.0
Hungary	−7.0	−8.0	−8.4	−7.2	−7.1	−6.5	−7.1	0.2	0.5	0.7	−1.8
Kosovo	−6.7	−8.1	−8.3	−7.4	−6.7	−8.8	−16.0	−18.6	−18.5	−18.2	−11.5
Latvia	−6.6	−8.1	−12.9	−12.5	−22.5	−22.3	−13.1	8.6	5.5	2.9	−2.5
Lithuania	−5.2	−6.9	−7.6	−7.1	−10.7	−14.6	−12.2	4.2	1.9	0.2	−4.2
Macedonia, Former Yugoslav Republic of	−9.5	−4.1	−8.4	−2.6	−0.9	−7.0	−12.8	−7.2	−3.9	−4.4	−3.9
Montenegro	. . .	−6.7	−7.2	−8.5	−24.1	−39.5	−51.8	−30.3	−17.0	−12.0	−9.0
Poland	−2.8	−2.5	−4.0	−1.2	−2.7	−4.8	−5.1	−1.7	−2.4	−2.6	−2.4
Romania	−3.3	−5.8	−8.4	−9.8	−10.4	−13.4	−11.9	−4.5	−5.1	−5.4	−4.9
Serbia	−8.3	−7.2	−12.1	−8.7	−10.2	−16.0	−17.7	−6.7	−9.6	−9.4	−5.5
Turkey	−0.3	−2.5	−3.7	−4.6	−6.1	−5.9	−5.7	−2.3	−5.2	−5.4	−6.2
Commonwealth of Independent States[1]	**6.5**	**6.2**	**8.2**	**8.7**	**7.4**	**4.2**	**4.9**	**2.6**	**3.8**	**3.0**	**1.4**
Russia	8.4	8.2	10.1	11.1	9.5	5.9	6.2	4.0	4.7	3.7	1.3
Excluding Russia	1.0	0.2	2.2	1.3	0.6	−1.3	0.8	−1.8	1.0	0.6	1.6
Armenia	−6.2	−6.8	−0.5	−1.0	−1.8	−6.4	−11.8	−16.0	−14.6	−12.6	−8.1
Azerbaijan	−12.3	−27.8	−29.8	1.3	17.6	27.3	35.5	23.6	24.1	22.2	21.1
Belarus	−2.3	−2.4	−5.3	1.4	−3.9	−6.7	−8.7	−13.1	−14.0	−13.9	−9.5
Georgia	−6.4	−9.6	−6.9	−11.1	−15.1	−19.7	−22.7	−11.7	−12.0	−12.5	−8.9
Kazakhstan	−4.2	−0.9	0.8	−1.8	−2.5	−8.1	4.6	−3.2	3.2	2.0	2.5
Kyrgyz Republic	−4.0	1.7	4.9	2.8	−3.1	−0.2	−8.1	2.1	−5.4	−9.4	−3.9
Moldova	−1.2	−6.6	−1.8	−7.6	−11.4	−15.3	−16.3	−8.1	−11.2	−11.4	−7.5
Mongolia	−8.6	−7.1	1.3	1.3	7.0	6.7	−14.0	−9.8	−13.9	−22.9	−4.9
Tajikistan	−3.5	−1.3	−3.9	−2.7	−2.8	−8.6	−7.7	−4.9	−3.6	−5.7	−6.6
Turkmenistan	6.7	2.7	0.6	5.1	15.7	15.5	18.7	−16.1	−4.7	3.4	22.7
Ukraine	7.5	5.8	10.6	2.9	−1.5	−3.7	−7.1	−1.5	−0.4	−1.3	−3.2
Uzbekistan	1.2	5.8	7.2	7.7	9.1	7.3	8.7	2.7	3.8	6.3	2.0

Table A12 *(continued)*

	2002	2003	2004	2005	2006	2007	2008	2009	Projections 2010	2011	2015
Developing Asia	**2.5**	**2.8**	**2.6**	**4.1**	**6.0**	**6.9**	**5.9**	**4.1**	**3.0**	**3.0**	**4.8**
Afghanistan, Islamic Republic of	−3.7	−17.0	−4.6	−2.5	−4.9	0.9	−0.9	−1.8	0.6	−0.4	−5.5
Bangladesh	0.3	0.3	−0.3	0.0	1.2	1.1	1.9	3.3	2.5	1.1	−0.2
Bhutan	−15.1	−22.8	−17.6	−29.2	−4.3	12.2	−2.2	−9.6	−7.2	−13.8	−23.4
Brunei Darussalam	41.2	47.7	48.6	52.8	56.3	50.9	59.1	46.7	43.3	43.2	50.9
Cambodia	−2.4	−3.6	−2.2	−3.8	−0.6	−2.5	−6.2	−5.2	−7.3	−9.1	−6.8
China	2.4	2.8	3.6	7.1	9.3	10.6	9.6	6.0	4.7	5.1	7.8
Fiji	2.5	−6.4	−12.6	−9.9	−18.7	−13.6	−17.9	−8.9	−10.1	−13.8	−8.2
India	1.4	1.5	0.1	−1.3	−1.0	−0.7	−2.0	−2.9	−3.1	−3.1	−2.2
Indonesia	4.0	3.5	0.6	0.1	3.0	2.4	0.0	2.0	0.9	0.1	−1.0
Kiribati	7.6	−19.5	−11.1	−18.5	−2.9	−1.0	−0.6	−4.1	−7.1	−8.1	−10.3
Lao People's Democratic Republic	−9.8	−13.1	−17.8	−18.1	−11.2	−15.9	−18.5	−17.6	−10.2	−13.6	−20.0
Malaysia	8.0	12.0	12.1	15.0	16.4	15.9	17.5	16.5	14.7	13.8	10.2
Maldives	−5.6	−4.5	−15.8	−36.4	−33.0	−41.5	−51.4	−31.7	−26.0	−17.4	−7.4
Myanmar	0.2	−1.0	2.4	3.7	7.1	0.6	−2.2	−1.6	−2.4	−2.3	1.8
Nepal	6.4	2.4	2.7	1.9	2.1	−0.1	2.7	4.2	−2.9	−0.1	−0.3
Pakistan	3.9	4.9	1.8	−1.4	−3.9	−4.8	−8.5	−5.7	−2.0	−3.1	−4.2
Papua New Guinea	−1.4	4.3	2.1	6.1	8.0	3.3	10.0	−6.8	−16.1	−18.5	5.6
Philippines	−0.4	0.4	1.9	2.0	4.5	4.9	2.2	5.3	4.1	3.4	2.1
Samoa	−8.9	−8.3	−8.4	−9.6	−11.1	−15.9	−6.2	−2.0	−9.3	−15.0	−3.0
Solomon Islands	−4.3	6.3	16.3	−7.0	−1.6	−8.2	−16.4	−21.1	−30.1	−27.6	−32.9
Sri Lanka	−1.4	−0.4	−3.1	−2.5	−5.3	−4.3	−9.8	−0.5	−4.3	−4.6	−5.0
Thailand	3.7	3.4	1.7	−4.3	1.1	6.3	0.6	7.7	3.6	2.5	0.0
Timor-Leste	−15.6	−15.1	21.1	78.8	165.5	329.0	455.6	245.3	223.8	188.4	117.7
Tonga	0.6	0.7	0.4	−5.2	−8.2	−8.8	−11.6	−15.7	−18.6	−20.0	−12.1
Vanuatu	−4.6	−5.7	−6.0	−8.4	−5.3	−6.9	−5.9	−2.2	−2.4	−3.8	−6.1
Vietnam	−1.7	−4.9	−3.5	−1.1	−0.3	−9.8	−11.9	−8.0	−8.3	−8.1	−6.1

Table A12 *(continued)*

	2002	2003	2004	2005	2006	2007	2008	2009	Projections		
									2010	2011	2015
Latin America and the Caribbean	**−0.9**	**0.5**	**1.0**	**1.4**	**1.6**	**0.4**	**−0.7**	**−0.6**	**−1.2**	**−1.6**	**−1.7**
Antigua and Barbuda	−11.5	−12.9	−14.5	−18.9	−31.4	−32.9	−29.4	−25.4	−14.8	−16.7	−15.4
Argentina	8.5	6.3	1.7	2.6	3.2	2.3	1.5	2.0	1.7	1.2	1.1
Bahamas, The	−7.4	−5.4	−2.8	−9.9	−19.6	−17.8	−15.9	−12.6	−13.9	−13.7	−12.1
Barbados	−6.5	−6.3	−12.0	−10.7	−6.9	−4.5	−9.6	−5.8	−4.2	−4.2	−3.8
Belize	−17.7	−18.2	−14.7	−13.6	−2.1	−4.1	−9.8	−6.8	−5.7	−6.7	−8.0
Bolivia	−4.1	1.0	3.8	6.5	11.3	12.0	12.1	4.6	6.5	5.2	4.2
Brazil	−1.5	0.8	1.8	1.6	1.2	0.1	−1.7	−1.5	−2.6	−3.0	−3.3
Chile	−0.9	−1.1	2.2	1.2	4.9	4.5	−1.5	2.6	−0.7	−2.0	−2.3
Colombia	−1.4	−1.0	−0.8	−1.3	−1.9	−2.8	−2.9	−2.2	−2.7	−2.8	−1.5
Costa Rica	−5.1	−5.0	−4.3	−4.9	−4.5	−6.3	−9.2	−1.8	−4.2	−4.8	−5.5
Dominica	−18.9	−20.0	−20.4	−26.0	−15.7	−25.0	−31.8	−28.1	−25.4	−23.3	−20.6
Dominican Republic	−3.2	5.1	4.8	−1.4	−3.6	−5.3	−9.9	−4.6	−6.9	−6.3	−2.7
Ecuador	−3.9	−1.4	−1.6	1.0	3.9	3.6	2.2	−0.7	−0.8	−1.6	−1.8
El Salvador	−2.8	−4.7	−4.1	−3.5	−4.2	−6.0	−7.6	−1.8	−2.8	−3.1	−3.3
Grenada	−26.6	−25.3	−9.0	−31.3	−33.2	−43.2	−38.7	−25.7	−25.0	−26.0	−24.8
Guatemala	−6.1	−4.7	−4.9	−4.6	−5.0	−5.2	−4.5	−0.6	−2.9	−3.5	−4.8
Guyana	−7.5	−5.8	−6.7	−10.1	−13.1	−11.1	−13.2	−8.6	−11.3	−10.2	−7.5
Haiti	−0.9	−1.6	−1.6	2.6	−1.4	−0.3	−4.5	−3.2	−2.1	−3.7	−3.3
Honduras	−3.6	−6.8	−7.7	−3.0	−3.7	−9.0	−12.9	−3.2	−6.3	−6.9	−6.8
Jamaica	−11.1	−7.6	−6.4	−9.5	−10.0	−16.5	−18.3	−10.5	−7.7	−7.3	−3.6
Mexico	−2.0	−1.0	−0.7	−0.5	−0.5	−0.8	−1.5	−0.6	−1.2	−1.4	−1.3
Nicaragua	−18.2	−16.1	−14.5	−15.1	−13.6	−17.7	−24.1	−13.7	−16.4	−16.0	−12.3
Panama	−0.8	−4.5	−7.5	−4.9	−3.1	−7.2	−11.6	0.0	−7.9	−7.9	−4.4
Paraguay	1.8	2.3	2.1	0.3	1.4	1.8	−2.5	−1.0	−1.2	−1.6	−0.7
Peru	−1.9	−1.5	0.0	1.4	3.1	1.3	−3.7	0.2	−1.3	−2.2	−1.8
St. Kitts and Nevis	−39.1	−34.8	−20.1	−18.3	−20.4	−24.0	−34.2	−26.4	−24.7	−22.8	−20.6
St. Lucia	−15.0	−14.7	−10.9	−17.1	−30.2	−31.3	−30.7	−20.0	−21.2	−22.1	−23.7
St. Vincent and the Grenadines	−11.3	−20.5	−24.4	−22.3	−23.7	−34.6	−35.2	−34.7	−48.3	−33.0	−20.7
Suriname	−14.4	−18.0	−10.3	−13.0	7.5	7.5	4.0	−2.4	0.1	−2.3	12.4
Trinidad and Tobago	0.9	8.7	12.4	22.5	39.6	24.8	31.3	9.0	17.8	16.7	17.5
Uruguay	2.9	−0.7	0.0	0.2	−2.0	−0.9	−4.8	0.7	−0.1	−0.7	−1.3
Venezuela	8.2	14.1	13.8	17.7	14.8	8.8	12.0	2.6	7.8	8.2	8.0
Middle East and North Africa	**4.0**	**7.0**	**10.0**	**16.8**	**18.6**	**15.2**	**15.3**	**2.6**	**4.4**	**5.2**	**7.0**
Algeria	7.7	13.0	13.0	20.5	24.7	22.8	20.2	0.3	3.4	3.6	7.0
Bahrain	−0.7	2.0	4.2	11.0	13.8	15.7	10.3	2.7	5.2	5.5	7.7
Djibouti	−1.6	3.4	−1.3	−3.2	−14.7	−24.9	−27.6	−17.3	−14.3	−18.0	−22.5
Egypt	0.7	2.4	4.3	3.2	1.6	1.9	0.5	−2.4	−2.0	−1.6	−0.6
Iran, Islamic Republic of	3.1	0.6	0.6	8.8	9.2	11.9	7.3	3.6	4.2	4.5	3.6
Iraq	. . .	. . .	. . .	6.2	19.0	12.5	12.8	−25.7	−14.4	−8.6	6.9
Jordan	5.7	11.5	0.1	−18.0	−11.0	−16.9	−9.6	−5.0	−7.2	−8.5	−7.4
Kuwait	11.2	19.7	26.2	37.2	44.6	36.8	40.7	29.1	30.1	30.3	36.5
Lebanon	−13.9	−13.0	−15.3	−13.4	−5.3	−6.8	−9.3	−9.5	−11.1	−11.2	−9.9
Libya	3.0	8.4	20.3	39.6	49.8	41.7	41.7	15.7	20.1	20.3	24.7
Mauritania	3.0	−13.6	−34.6	−47.2	−1.3	−18.3	−15.7	−12.5	−7.6	−8.7	−1.4
Morocco	3.7	3.2	1.7	1.8	2.2	−0.1	−5.2	−5.0	−5.3	−4.9	−1.8
Oman	6.8	2.4	4.5	16.8	15.4	5.9	8.3	−0.6	5.8	6.1	−1.4
Qatar	21.9	25.3	22.4	32.8	26.6	26.9	31.2	14.3	15.6	23.0	18.3
Saudi Arabia	6.3	13.1	20.8	28.5	27.8	24.3	27.8	6.1	6.7	6.2	8.5
Sudan	−10.3	−7.9	−6.5	−11.1	−15.2	−12.5	−9.0	−12.9	−8.9	−7.1	−6.7
Syrian Arab Republic	−3.6	−12.6	−1.6	−2.3	−1.8	−2.2	−3.6	−4.5	−3.9	−3.4	−2.1
Tunisia	−3.2	−2.7	−2.4	−0.9	−1.8	−2.4	−3.8	−2.8	−4.4	−4.1	−2.8
United Arab Emirates	4.9	8.6	9.1	16.4	20.6	9.7	8.6	4.0	5.4	5.6	6.7
Yemen, Republic of	4.1	1.5	1.6	3.8	1.1	−7.0	−4.6	−10.7	−4.9	−4.5	−3.5

Table A12 *(concluded)*

	2002	2003	2004	2005	2006	2007	2008	2009	Projections 2010	2011	2015
Sub-Saharan Africa	**−3.7**	**−2.8**	**−1.4**	**−0.4**	**4.3**	**1.2**	**−0.2**	**−1.7**	**−1.1**	**−1.9**	**−1.7**
Angola	−1.3	−5.2	3.5	16.8	25.2	15.6	7.6	−5.0	1.6	1.3	−1.8
Benin	−7.9	−9.4	−7.0	−6.3	−5.1	−10.1	−8.0	−8.5	−9.6	−9.0	−7.0
Botswana	2.7	5.7	3.5	15.2	17.2	14.5	3.5	−2.1	−0.5	0.4	4.6
Burkina Faso	−10.2	−9.0	−11.0	−11.6	−9.1	−8.2	−11.7	−6.3	−6.4	−8.1	−8.1
Burundi	−3.5	−4.6	−8.4	−1.2	−14.5	−15.7	−12.3	−14.5	−9.1	−10.7	−10.2
Cameroon	−5.1	−1.8	−3.4	−3.4	1.6	1.4	−1.8	−2.7	−3.9	−4.1	−1.3
Cape Verde	−11.1	−11.1	−14.3	−3.5	−5.4	−14.7	−12.9	−9.9	−18.6	−18.2	−8.9
Central African Republic	−1.6	−2.2	−1.8	−6.5	−3.0	−6.2	−10.3	−7.8	−7.6	−8.2	−8.9
Chad	−94.7	−48.8	−17.4	2.4	−9.0	−10.6	−13.7	−33.7	−32.0	−25.4	−5.3
Comoros	−1.7	−3.2	−4.6	−7.4	−6.7	−6.3	−11.1	−7.9	−8.9	−12.5	−10.3
Congo, Democratic Republic of	−2.5	0.4	−3.3	−12.3	−2.0	−1.1	−15.9	−10.1	−20.7	−21.6	−2.2
Congo, Republic of	0.6	2.5	−7.5	2.1	1.9	−8.2	0.6	−7.7	4.2	7.9	2.1
Côte d'Ivoire	6.7	2.1	1.6	0.2	2.8	−0.7	1.9	7.2	6.8	2.5	−2.0
Equatorial Guinea	0.9	−33.3	−21.6	−6.2	7.1	4.3	9.1	−16.0	−2.8	−11.6	−6.3
Eritrea	6.8	9.7	−0.7	0.3	−3.6	−6.1	−5.5	−5.0	−1.4	3.2	−3.3
Ethiopia	−4.5	−1.3	−1.4	−6.3	−9.1	−4.5	−5.6	−5.0	−3.9	−8.0	−4.7
Gabon	6.9	9.5	11.2	22.9	15.6	17.6	23.4	16.6	15.2	14.3	9.7
Gambia, The	−6.1	−7.3	−7.0	−13.6	−10.2	−9.7	−12.7	−10.5	−11.1	−10.8	−9.0
Ghana	−1.1	−1.6	−4.0	−8.3	−9.9	−12.0	−18.8	−5.2	−11.6	−9.1	−5.7
Guinea	−2.5	−0.8	−2.8	−0.4	−2.2	−8.8	−8.4	−10.1	−9.7	−9.0	−9.5
Guinea-Bissau	−2.7	−2.6	3.5	−0.2	−5.5	0.2	2.3	3.2	2.0	1.9	1.8
Kenya	2.2	−0.2	0.1	−0.8	−2.5	−3.8	−7.9	−6.7	−6.7	−7.4	−4.4
Lesotho	−21.7	−13.5	−6.1	−7.9	4.7	14.0	9.5	−0.3	−22.0	−22.4	−12.0
Liberia	−11.5	−1.4	−32.8	−37.4	−13.9	−31.4	−57.3	−33.2	−36.7	−55.6	−12.7
Madagascar	−6.0	−6.0	−9.2	−10.6	−8.8	−12.7	−20.6	−20.7	−14.3	−7.1	−7.1
Malawi	−8.6	−11.7	−11.2	−15.4	−7.9	−1.5	−9.9	−8.1	−1.7	−1.6	2.0
Mali	−3.0	−6.7	−7.9	−8.5	−4.0	−7.7	−12.0	−9.6	−8.0	−9.3	−8.4
Mauritius	5.2	1.7	−1.8	−5.2	−9.4	−5.6	−10.4	−7.8	−9.4	−9.0	−5.5
Mozambique	−20.7	−17.3	−10.7	−11.6	−10.7	−9.7	−11.9	−11.9	−13.6	−12.8	−12.8
Namibia	3.4	6.1	7.0	4.7	13.8	9.1	2.7	−1.7	−2.6	−6.0	−1.3
Niger	−9.7	−7.5	−7.3	−8.9	−8.6	−8.2	−13.0	−23.7	−24.2	−21.1	−7.9
Nigeria	−13.0	−5.9	5.7	6.6	26.5	18.7	15.7	14.1	13.0	11.8	10.6
Rwanda	−2.0	−2.5	1.8	1.0	−4.3	−2.2	−4.9	−7.3	−7.7	−8.6	−3.5
São Tomé and Príncipe	−17.0	−14.5	−16.8	−10.3	−28.8	−38.0	−37.7	−28.0	−29.1	−36.6	−36.7
Senegal	−6.0	−6.4	−6.9	−9.0	−9.5	−11.8	−14.3	−8.7	−8.7	−9.1	−9.7
Seychelles	−13.6	0.2	−6.0	−19.7	−13.9	−23.0	−51.8	−35.1	−39.5	−35.5	−17.1
Sierra Leone	−2.0	−4.8	−5.8	−7.1	−5.6	−5.5	−11.5	−8.4	−9.3	−9.5	−8.3
South Africa	0.8	−1.0	−3.0	−3.5	−5.3	−7.2	−7.1	−4.0	−4.3	−5.8	−6.5
Swaziland	9.1	4.4	4.4	−4.1	−7.4	0.7	−4.1	−6.2	−12.6	−12.3	−5.4
Tanzania	−3.0	−0.2	−2.3	−3.7	−7.6	−9.1	−10.2	−10.0	−8.8	−8.8	−7.4
Togo	−5.4	−4.2	−3.0	5.3	−3.0	−6.2	−6.4	−7.0	−7.8	−7.0	−6.5
Uganda	−4.6	−4.7	0.1	−1.4	−3.4	−3.9	−3.3	−4.0	−6.4	−9.2	−9.1
Zambia	−13.6	−14.3	−10.4	−8.5	−0.4	−6.5	−7.1	−3.2	−2.4	−3.9	−6.2
Zimbabwe[2]	. . .	. . .	. . .	−12.2	−9.4	−7.6	−23.4	−29.9	−21.6	−20.0	−19.1

[1]Georgia and Mongolia, which are not members of the Commonwealth of Independent States, are included in this group for reasons of geography and similarities in economic structure.

[2]The Zimbabwe dollar ceased circulating in early 2009. Data are based on IMF staff estimates of price and exchange rate developments in U.S. dollars. IMF staff estimates of U.S. dollar values may differ from the authorities' estimates.

Table A13. Emerging and Developing Economies: Net Financial Flows[1]
(Billions of U.S. dollars)

	Average 1999–2001	2002	2003	2004	2005	2006	2007	2008	2009	Projections 2010	Projections 2011
Emerging and Developing Economies											
Private Financial Flows, Net	75.9	61.2	176.6	232.0	290.4	253.1	696.5	184.4	234.8	339.6	300.1
Private Direct Investment, Net	161.9	149.8	147.5	187.2	252.5	258.3	417.2	439.0	240.8	296.3	328.7
Private Portfolio Flows, Net	−23.8	−47.2	2.1	23.7	32.4	−36.9	86.9	−82.5	91.5	32.8	32.2
Other Private Financial Flows, Net	−62.1	−41.4	27.0	21.1	5.4	31.7	192.5	−172.1	−97.6	10.5	−60.8
Official Financial Flows, Net[2]	−10.4	15.3	−53.7	−65.1	−116.2	−187.6	−103.1	−94.8	84.6	40.2	−22.2
Change in Reserves[3]	−70.6	−154.2	−324.0	−411.5	−584.3	−756.0	−1,208.7	−738.4	−498.4	−677.1	−582.6
Memorandum											
Current Account[4]	41.5	79.9	145.4	219.6	444.5	662.8	654.3	703.4	339.1	312.3	325.2
Central and Eastern Europe											
Private Financial Flows, Net	25.0	16.6	40.1	51.5	102.7	121.2	187.2	153.1	25.5	66.6	81.0
Private Direct Investment, Net	16.0	12.9	15.1	31.3	40.0	65.0	77.2	68.1	32.3	27.9	38.8
Private Portfolio Flows, Net	2.6	0.0	5.6	17.1	18.2	−0.4	−3.2	−9.5	7.6	22.3	14.6
Other Private Financial Flows, Net	6.4	3.7	19.5	3.1	44.5	56.5	113.1	94.6	−14.3	16.4	27.6
Official Flows, Net[2]	0.7	15.9	4.9	9.6	3.4	4.5	−6.7	22.3	46.7	32.7	8.4
Change in Reserves, Net[3]	−5.4	−7.9	−10.4	−12.6	−45.4	−38.9	−30.5	−6.3	−23.1	−32.4	−17.4
Commonwealth of Independent States[5]											
Private Financial Flows, Net	−7.9	−0.3	21.0	5.6	29.1	51.6	129.2	−96.3	−62.2	−1.2	9.3
Private Direct Investment, Net	4.0	5.1	5.4	13.2	11.7	21.3	28.3	52.3	15.7	22.7	31.5
Private Portfolio Flows, Net	1.0	1.0	2.0	4.7	3.9	4.9	19.5	−31.4	−9.5	−1.2	0.2
Other Private Financial Flows, Net	−12.9	−6.4	13.5	−12.3	13.5	25.4	81.4	−117.1	−68.5	−22.6	−22.4
Official Flows, Net[2]	−7.8	5.3	−11.2	−10.1	−18.3	−25.4	−6.0	−19.0	41.9	7.7	8.7
Change in Reserves, Net[3]	−13.8	−15.1	−32.7	−54.9	−77.1	−127.8	−168.0	27.0	−8.0	−71.7	−71.1
Developing Asia											
Private Financial Flows, Net	4.8	51.6	81.1	143.4	89.1	51.7	190.0	38.4	161.8	135.4	58.9
Private Direct Investment, Net	49.0	60.1	58.5	68.1	93.8	85.6	153.3	134.2	64.6	73.2	65.1
Private Portfolio Flows, Net	−12.6	−12.1	23.7	39.2	14.4	−45.1	67.3	−3.1	35.8	24.0	18.2
Other Private Financial Flows, Net	−31.7	3.6	−1.2	36.0	−19.1	11.1	−30.6	−92.7	61.3	38.2	−24.3
Official Flows, Net[2]	2.4	−10.7	−17.8	0.5	1.5	−3.5	−1.1	7.0	10.3	7.5	9.4
Change in Reserves, Net[3]	−34.3	−112.0	−188.9	−243.2	−277.9	−354.5	−616.0	−505.2	−450.0	−427.4	−395.9
Latin America and the Caribbean											
Private Financial Flows, Net	50.8	9.4	18.4	16.7	45.9	39.2	107.3	59.9	25.1	91.2	100.3
Private Direct Investment, Net	74.8	51.3	38.2	49.8	54.7	31.8	88.5	94.0	63.8	79.4	97.5
Private Portfolio Flows, Net	−6.1	−16.3	−12.4	−22.9	3.6	16.1	36.4	−17.8	31.1	6.7	5.1
Other Private Financial Flows, Net	−17.8	−25.5	−7.3	−10.2	−12.5	−8.7	−17.6	−16.3	−69.9	5.1	−2.4
Official Flows, Net[2]	9.8	14.4	5.2	−10.8	−39.4	−54.3	−6.0	1.0	44.8	26.3	6.3
Change in Reserves, Net[3]	0.1	1.4	−33.6	−22.3	−33.4	−50.6	−133.4	−50.3	−51.3	−75.0	−28.6
Middle East and North Africa											
Private Financial Flows, Net	−1.8	−19.0	10.5	−4.2	1.2	−23.7	53.2	2.5	58.6	11.1	3.7
Private Direct Investment, Net	7.9	9.8	17.7	13.1	35.3	44.9	46.7	57.2	36.6	67.8	64.6
Private Portfolio Flows, Net	−8.0	−18.3	−15.6	−23.6	−13.1	−29.9	−43.2	−2.2	16.2	−30.3	−22.1
Other Private Financial Flows, Net	−1.7	−10.4	8.4	6.3	−21.0	−38.7	49.6	−52.6	5.8	−26.4	−38.8
Official Flows, Net[2]	−14.4	−11.3	−32.4	−45.9	−53.7	−76.6	−75.7	−103.7	−65.8	−42.6	−66.5
Change in Reserves, Net[3]	−14.6	−19.4	−57.0	−59.7	−128.0	−153.2	−231.7	−186.1	26.4	−66.9	−66.2
Sub-Saharan Africa											
Private Financial Flows, Net	5.1	2.8	5.5	19.0	22.4	13.2	29.7	26.8	25.9	36.6	46.9
Private Direct Investment, Net	10.2	10.7	12.6	11.6	17.0	9.5	23.2	33.3	27.8	25.4	31.2
Private Portfolio Flows, Net	−0.7	−1.5	−1.4	9.2	5.5	17.5	10.0	−18.5	10.2	11.2	16.2
Other Private Financial Flows, Net	−4.4	−6.4	−5.8	−1.8	−0.1	−13.8	−3.5	12.0	−12.1	−0.1	−0.5
Official Flows, Net[2]	−1.1	1.8	−2.4	−8.3	−9.7	−32.2	−7.5	−2.4	6.6	8.6	11.5
Change in Reserves, Net[3]	−2.6	−1.2	−1.3	−18.8	−22.6	−30.9	−29.0	−17.4	7.6	−3.7	−3.5
Memorandum											
Fuel Exporting Countries											
Private Financial Flows, Net	−17.4	−28.8	18.9	−6.5	5.7	−4.7	123.6	−158.9	−54.6	−50.0	−41.1
Other Countries											
Private Financial Flows, Net	93.4	90.0	157.7	238.5	284.6	257.8	572.8	343.2	289.3	389.7	341.2

[1]Net financial flows comprise net direct investment, net portfolio investment, other net official and private financial flows, and changes in reserves.
[2]Excludes grants and includes transactions in external assets and liabilities of official agencies.
[3]A minus sign indicates an increase.
[4]The sum of the current account balance, net private financial flows, net official flows, and the change in reserves equals, with the opposite sign, the sum of the capital account and errors and omissions.
[5]Georgia and Mongolia, which are not members of the Commonwealth of Independent States, are included in this group for reasons of geography and similarities in economic structure.

Table A14. Emerging and Developing Economies: Private Financial Flows[1]
(Billions of U.S. dollars)

	Average 1999–2001	2002	2003	2004	2005	2006	2007	2008	2009	Projections 2010	Projections 2011
Emerging and Developing Economies											
Private Financial Flows, Net	75.9	61.2	176.6	232.0	290.4	253.1	696.5	184.4	234.8	339.6	300.1
Assets	−128.6	−101.3	−139.0	−240.1	−402.3	−750.3	−1,029.8	−638.6	−298.3	−327.5	−458.4
Liabilities	204.3	161.7	313.9	470.7	689.4	998.9	1,721.3	819.4	533.8	667.1	757.8
Central and Eastern Europe											
Private financial flows, net	25.0	16.6	40.1	51.5	102.7	121.2	187.2	153.1	25.5	66.6	81.0
Assets	−9.3	−2.4	−10.4	−31.2	−18.7	−55.3	−46.6	−31.4	−0.4	−3.8	−10.7
Liabilities	34.2	18.5	50.0	81.6	118.8	172.8	228.8	182.3	26.8	71.0	91.6
Commonwealth of Independent States											
Private financial flows, net	−7.9	−0.3	21.0	5.6	29.1	51.6	129.2	−96.3	−62.2	−1.2	9.3
Assets	−16.5	−24.1	−24.4	−53.1	−80.5	−100.4	−160.7	−264.5	−72.8	−69.9	−85.6
Liabilities	8.6	23.9	45.4	58.7	109.6	151.9	289.8	168.2	10.6	68.8	94.8
Developing Asia											
Private financial flows, net	4.8	51.6	81.1	143.4	89.1	51.7	190.0	38.4	161.8	135.4	58.9
Assets	−51.4	−33.5	−35.9	−26.6	−141.0	−237.9	−321.9	−267.0	−128.2	−148.7	−213.5
Liabilities	56.2	85.0	116.6	169.8	229.8	288.6	511.5	305.1	289.4	283.7	272.4
Latin America and the Caribbean											
Private Financial Flows, Net	50.8	9.4	18.4	16.7	45.9	39.2	107.3	59.9	25.1	91.2	100.3
Assets	−34.6	−26.4	−34.9	−46.9	−50.9	−92.0	−119.3	−82.4	−98.8	−78.2	−88.6
Liabilities	85.0	35.4	52.3	63.4	96.3	131.3	226.7	141.3	124.4	169.2	188.5
Middle East and North Africa											
Private Financial Flows, Net	−1.8	−19.0	10.5	−4.2	1.2	−23.7	53.2	2.5	58.6	11.1	3.7
Assets	−7.4	−7.0	−22.5	−71.3	−93.6	−236.9	−356.8	16.8	7.7	−10.6	−46.1
Liabilities	5.6	−11.9	33.0	67.1	94.8	213.3	409.9	−14.4	50.9	21.7	49.8
Sub-Saharan Africa											
Private Financial Flows, Net	5.1	2.8	5.5	19.0	22.4	13.2	29.7	26.8	25.9	36.6	46.9
Assets	−9.4	−7.8	−10.9	−11.0	−17.6	−27.8	−24.6	−10.2	−5.8	−16.2	−14.0
Liabilities	14.7	10.9	16.5	30.2	40.1	41.0	54.5	36.8	31.7	52.8	60.7

[1]Private financial flows comprise direct investment, portfolio investment, and other long- and short-term investment flows.

Table A15. Emerging and Developing Economies: Reserves[1]

	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
					Billions of U.S. Dollars					
Emerging and Developing Economies	**1,032.5**	**1,363.1**	**1,814.3**	**2,309.2**	**3,078.6**	**4,374.7**	**4,957.0**	**5,518.3**	**6,194.4**	**6,776.3**
Regional Groups										
Central and Eastern Europe	92.8	115.9	135.8	166.2	211.7	268.1	265.4	305.8	338.2	355.5
Commonwealth of Independent States[2]	58.0	92.3	148.7	214.3	355.7	548.3	502.6	512.7	584.4	655.5
Russia	44.6	73.8	121.5	176.5	296.2	467.6	412.7	417.8	468.7	508.1
Excluding Russia	13.3	18.5	27.2	37.8	59.5	80.8	89.9	94.9	115.7	147.4
Developing Asia	496.7	670.3	934.6	1,156.1	1,489.4	2,129.0	2,533.9	3,007.9	3,434.4	3,829.7
China	292.0	409.2	615.5	822.5	1,069.5	1,531.3	1,950.3	2,348.8	2,693.4	3,025.6
India	68.2	99.5	127.2	132.5	171.3	267.6	248.0	266.2	281.6	295.9
Excluding China and India	136.5	161.6	191.8	201.1	248.5	330.0	335.5	393.0	459.4	508.2
Latin America and the Caribbean	160.5	195.4	220.6	255.3	310.3	445.1	497.3	547.8	622.8	651.4
Brazil	37.5	48.9	52.5	53.3	85.2	179.5	192.9	237.4	274.9	292.7
Mexico	50.6	59.0	64.1	74.1	76.3	87.1	95.1	99.6	119.6	129.6
Middle East and North Africa	188.9	250.2	313.8	436.5	597.5	839.0	1,001.7	987.6	1,054.5	1,120.6
Sub-Saharan Africa	35.5	39.2	60.7	80.8	114.0	145.2	156.2	156.4	160.1	163.6
Excluding Nigeria and South Africa	22.0	25.3	30.4	33.7	48.4	64.0	72.3	78.5	87.1	97.3
Analytical Groups										
By Source of Export Earnings										
Fuel	214.9	291.7	419.1	612.9	927.2	1,343.1	1,473.5	1,424.8	1,554.2	1,670.6
Nonfuel	817.6	1,071.4	1,395.2	1,696.3	2,151.4	3,031.5	3,483.5	4,093.4	4,640.2	5,105.7
Of Which, Primary Products	30.3	32.2	35.9	39.2	47.3	58.9	71.8	83.3	95.1	103.4
By External Financing Source										
Net Debtor Economies	461.4	585.8	686.7	777.9	976.3	1,356.3	1,405.1	1,593.8	1,775.8	1,905.5
Of Which, Official Financing	22.0	38.9	42.4	42.7	46.5	54.3	54.6	70.5	78.7	86.2
Net Debtor Economies by Debt-Servicing Experience										
Economies with Arrears and/or Rescheduling during 2004–08	29.9	35.6	46.0	59.8	72.6	100.6	104.2	119.5	126.2	132.7
Other Groups										
Heavily Indebted Poor Countries	16.0	18.6	23.3	24.3	31.4	41.5	45.1	55.6	60.6	69.3

Table A15 *(concluded)*

	2002	2003	2004	2005	2006	2007	2008	2009	Projections 2010	2011
Ratio of Reserves to Imports of Goods and Services [3]										
Emerging and Developing Economies	**54.4**	**60.5**	**63.2**	**67.1**	**75.4**	**86.8**	**80.0**	**108.5**	**99.5**	**96.6**
Regional Groups										
Central and Eastern Europe	39.5	37.9	33.9	35.6	37.3	37.3	30.6	49.9	48.9	47.5
Commonwealth of Independent										
States [2]	40.8	52.4	65.3	76.8	101.1	115.5	81.1	118.2	115.1	113.0
Russia	52.9	71.5	93.0	107.4	141.7	165.5	112.3	164.8	152.8	143.8
Excluding Russia	23.1	25.3	28.0	32.9	41.6	42.1	35.7	52.6	57.5	65.0
Developing Asia	67.9	74.4	79.4	81.7	89.5	107.1	106.3	143.8	125.0	119.2
China	89.0	91.1	101.5	115.5	125.4	148.0	158.2	211.0	169.6	157.8
India	90.0	107.1	97.0	72.8	75.5	95.1	71.5	81.6	76.2	69.7
Excluding China and India	41.6	44.9	43.6	38.6	42.5	49.1	41.8	60.2	58.2	58.4
Latin America and the Caribbean	40.2	47.2	44.4	43.4	44.8	53.8	49.8	70.5	63.4	61.0
Brazil	60.8	76.8	65.6	54.4	70.7	113.8	87.6	135.9	117.9	110.0
Mexico	27.3	31.4	29.8	30.5	27.4	28.5	28.5	38.7	35.9	36.5
Middle East and North Africa	69.3	79.4	80.0	90.4	104.0	113.9	104.7	114.8	111.0	109.2
Sub-Saharan Africa	31.5	27.9	35.2	38.9	48.5	49.3	42.0	50.2	46.4	42.9
Excluding Nigeria and South Africa	37.7	36.2	34.8	32.1	40.8	41.6	35.3	42.6	43.2	43.7
Analytical Groups										
By Source of Export Earnings										
Fuel	57.3	66.6	76.8	89.5	112.6	123.6	105.0	122.0	117.6	115.0
Nonfuel	53.8	59.0	60.1	61.6	66.0	76.7	72.6	104.4	94.6	91.8
Of Which, Primary Products	63.5	60.0	54.3	47.5	49.7	47.4	44.0	64.5	58.3	56.6
By External Financing Source										
Net Debtor Economies	43.1	47.3	44.1	41.7	43.9	50.1	42.4	61.0	58.0	56.5
Of Which, Official Financing	38.9	60.0	54.7	45.6	42.6	40.2	32.7	46.2	44.8	44.0
Net Debtor Economies by Debt-Servicing Experience										
Economies with Arrears and/or Rescheduling during 2004–08	31.7	32.4	32.6	34.9	35.7	39.4	32.1	45.1	42.0	40.6
Other Groups										
Heavily Indebted Poor Countries	31.3	31.9	32.0	27.4	30.1	32.6	28.2	38.9	37.7	39.5

[1]In this table, official holdings of gold are valued at SDR 35 an ounce. This convention results in a marked underestimation of reserves for countries that have substantial gold holdings.
[2]Georgia and Mongolia, which are not members of the Commonwealth of Independent States, are included in this group for reasons of geography and similarities in economic structure.
[3]Reserves at year-end in percent of imports of goods and services for the year indicated.

Table A16. Summary of Sources and Uses of World Savings
(Percent of GDP)

	Averages								Projections		
	1988–95	1996–2003	2004	2005	2006	2007	2008	2009	2010	2011	2012–15
World											
Savings	22.2	21.8	22.1	22.8	24.1	24.3	24.1	21.8	23.0	23.8	25.1
Investment	23.3	22.1	22.1	22.5	23.2	23.7	23.8	21.6	22.6	23.3	24.6
Advanced Economies											
Savings	22.0	21.0	20.0	20.2	20.9	20.8	19.6	17.1	18.1	18.9	19.7
Investment	22.7	21.3	20.7	21.2	21.6	21.6	20.9	17.8	18.4	19.0	20.1
Net Lending	–0.7	–0.3	–0.7	–1.0	–0.7	–0.8	–1.3	–0.7	–0.3	–0.1	–0.4
Current Transfers	–0.4	–0.5	–0.7	–0.7	–0.7	–0.8	–0.8	–0.8	–0.8	–0.8	–0.8
Factor Income	–0.6	0.3	0.5	0.7	1.2	0.7	0.4	0.1	0.5	0.5	0.2
Resource Balance	0.3	0.0	–0.5	–0.9	–1.0	–0.6	–0.7	0.1	0.2	0.3	0.3
United States											
Savings	15.9	17.0	14.5	15.1	16.2	14.3	12.4	10.9	12.4	13.8	15.5
Investment	18.4	19.6	19.7	20.3	20.5	19.6	18.0	14.8	15.9	16.5	18.5
Net Lending	–2.5	–2.7	–5.2	–5.2	–4.3	–5.2	–5.6	–4.0	–3.4	–2.6	–3.0
Current Transfers	–0.4	–0.6	–0.7	–0.8	–0.7	–0.8	–0.8	–0.9	–0.9	–0.8	–0.7
Factor Income	–0.7	0.8	0.7	1.3	2.0	0.6	0.1	–0.4	0.9	1.2	1.0
Resource Balance	–1.3	–2.9	–5.1	–5.7	–5.7	–5.0	–4.9	–2.7	–3.4	–3.1	–3.3
Euro area											
Savings	. . .	21.3	21.9	21.6	22.6	23.4	22.0	19.0	19.6	19.9	20.1
Investment	. . .	20.8	20.4	20.8	21.7	22.3	21.9	18.9	18.8	18.9	19.4
Net Lending	. . .	0.5	1.5	0.8	0.9	1.2	0.1	0.1	0.7	1.0	0.7
Current Transfers[1]	–0.6	–0.7	–0.8	–0.9	–0.9	–1.0	–1.1	–1.1	–1.1	–1.2	–1.3
Factor Income[1]	–0.8	–0.5	0.2	0.1	0.5	0.5	0.0	–0.3	–0.4	–0.6	–1.3
Resource Balance[1]	1.0	1.7	2.1	1.6	1.3	1.7	1.2	1.5	2.2	2.7	3.3
Germany											
Savings	22.9	20.0	22.9	23.2	25.7	28.8	28.4	23.3	24.9	24.5	23.0
Investment	23.6	20.2	17.1	16.9	17.6	18.3	18.5	16.5	17.0	17.0	17.2
Net Lending	–0.7	–0.1	5.8	6.4	8.1	10.4	9.9	6.8	7.9	7.5	5.9
Current Transfers	–1.6	–1.3	–1.3	–1.3	–1.2	–1.3	–1.4	–1.5	–1.6	–1.7	–2.1
Factor Income	–0.8	–0.5	2.1	2.4	3.6	4.6	4.4	3.0	2.3	1.3	–1.3
Resource Balance	1.7	1.7	5.0	5.3	5.7	7.2	6.9	5.3	7.3	7.9	9.2
France											
Savings	20.2	21.0	20.0	19.8	20.6	21.2	20.1	17.1	17.8	18.4	18.8
Investment	20.3	18.9	19.5	20.3	21.1	22.2	22.0	19.0	19.6	20.1	20.6
Net Lending	–0.2	2.0	0.5	–0.5	–0.6	–1.0	–1.9	–1.9	–1.8	–1.8	–1.8
Current Transfers	–0.7	–0.9	–1.1	–1.3	–1.2	–1.2	–1.2	–1.4	–1.4	–1.4	–1.5
Factor Income	–0.6	1.0	1.1	1.4	1.6	1.6	1.5	1.3	1.4	1.3	1.2
Resource Balance	1.0	1.9	0.5	–0.6	–1.0	–1.4	–2.2	–1.8	–1.7	–1.7	–1.5
Italy											
Savings	20.4	20.9	19.9	19.0	19.0	19.4	17.7	15.7	16.4	17.1	17.9
Investment	21.0	20.2	20.8	20.7	21.6	21.9	21.1	18.9	19.3	19.8	20.4
Net Lending	–0.6	0.7	–0.9	–1.7	–2.6	–2.4	–3.4	–3.2	–2.9	–2.7	–2.5
Current Transfers	–0.5	–0.5	–0.6	–0.7	–0.9	–0.9	–1.0	–0.8	–0.8	–0.8	–0.8
Factor Income	–1.5	–1.1	–1.1	–1.0	–0.9	–1.3	–1.9	–1.8	–1.8	–1.8	–1.6
Resource Balance	1.3	2.3	0.7	0.0	–0.8	–0.3	–0.5	–0.5	–0.2	0.0	–0.1
Japan											
Savings	33.1	28.1	26.8	27.2	27.7	28.5	26.8	23.1	23.2	23.3	24.0
Investment	30.7	25.6	23.0	23.6	23.8	23.7	23.6	20.4	20.1	21.0	21.9
Net Lending	2.3	2.5	3.7	3.6	3.9	4.8	3.2	2.7	3.1	2.3	2.1
Current Transfers	–0.2	–0.2	–0.2	–0.2	–0.2	–0.3	–0.3	–0.2	–0.2	–0.2	–0.1
Factor Income	0.8	1.5	1.8	2.3	2.7	3.1	3.1	2.5	2.4	2.4	2.6
Resource Balance	1.7	1.3	2.0	1.5	1.4	1.9	0.4	0.5	0.9	0.1	–0.4
United Kingdom											
Savings	15.8	16.0	15.0	14.5	14.1	15.6	15.0	12.5	12.2	12.8	14.8
Investment	18.4	17.4	17.1	17.1	17.5	18.2	16.6	13.6	14.4	14.9	16.2
Net Lending	–2.6	–1.5	–2.1	–2.6	–3.4	–2.6	–1.6	–1.1	–2.2	–2.0	–1.4
Current Transfers	–0.7	–0.8	–0.9	–0.9	–0.9	–1.0	–1.0	–1.1	–1.1	–1.1	–1.1
Factor Income	–0.4	0.7	1.5	1.7	0.6	1.4	1.9	2.2	1.6	1.3	1.0
Resource Balance	–1.5	–1.3	–2.7	–3.4	–3.1	–3.1	–2.6	–2.3	–2.7	–2.3	–1.3

Table A16 *(continued)*

	Averages		2004	2005	2006	2007	2008	2009	Projections		
	1988–95	1996–2003	2004	2005	2006	2007	2008	2009	2010	2011	2012–15
Canada											
Savings	16.7	20.8	23.0	24.0	24.4	24.1	23.6	18.1	19.0	19.7	20.4
Investment	19.9	19.8	20.7	22.1	23.0	23.2	23.1	21.0	21.8	22.5	22.5
Net Lending	−3.2	1.0	2.3	1.9	1.4	0.8	0.4	−2.9	−2.8	−2.7	−2.1
Current Transfers	−0.1	0.1	−0.1	−0.1	−0.1	−0.1	0.0	−0.1	−0.1	−0.2	−0.2
Factor Income	−3.5	−2.9	−1.9	−1.7	−0.9	−0.9	−1.0	−0.9	−1.1	−1.2	−1.6
Resource Balance	0.5	3.8	4.2	3.7	2.4	1.9	1.5	−1.8	−1.6	−1.4	−0.3
Newly Industrialized Asian											
Economies											
Savings	35.5	32.2	32.9	31.6	31.9	32.5	32.7	32.2	33.6	33.5	32.9
Investment	32.1	28.1	26.7	26.1	26.4	26.1	27.8	23.6	26.5	26.6	26.9
Net Lending	3.4	4.1	6.2	5.5	5.5	6.4	5.0	8.6	7.1	6.9	6.0
Current Transfers	−0.1	−0.4	−0.7	−0.7	−0.7	−0.7	−0.6	−0.6	−0.5	−0.5	−0.5
Factor Income	1.0	0.4	0.5	0.2	0.5	0.7	1.4	1.4	0.6	0.2	0.4
Resource Balance	2.5	4.2	6.4	6.0	5.7	6.3	4.1	7.8	7.0	7.2	6.1
Emerging and Developing											
Economies											
Savings	23.4	25.0	29.6	31.1	33.0	33.3	33.8	32.1	32.5	32.9	33.8
Investment	25.9	25.0	27.3	26.9	27.9	29.2	30.3	30.1	31.0	31.5	32.0
Net Lending	−2.0	0.0	2.5	4.1	5.1	4.0	3.5	2.0	1.6	1.5	1.9
Current Transfers	0.6	1.1	1.6	1.7	1.8	1.6	1.5	1.4	1.3	1.3	1.2
Factor Income	−1.7	−1.9	−1.9	−1.8	−1.7	−1.6	−1.6	−1.3	−1.5	−1.4	−1.1
Resource Balance	−0.9	0.8	2.7	4.2	5.1	4.1	3.7	1.8	1.6	1.6	1.7
Memorandum											
Acquisition of Foreign Assets	1.7	4.0	7.0	9.3	11.5	14.1	7.0	4.8	4.4	4.2	4.4
Change in Reserves	0.8	1.5	4.6	5.4	5.9	7.7	3.9	2.8	3.3	2.6	2.3
Regional Groups											
Central and Eastern Europe											
Savings	21.6	18.1	16.4	16.5	16.9	16.9	17.1	16.6	17.1	17.6	18.4
Investment	23.1	21.4	21.8	21.5	23.5	25.0	25.0	18.9	20.7	21.5	22.8
Net Lending	−1.4	−3.2	−5.4	−5.1	−6.7	−8.1	−7.8	−2.4	−3.7	−3.9	−4.4
Current Transfers	1.7	2.0	2.0	1.9	2.0	1.8	1.7	1.9	1.6	1.7	1.7
Factor Income	−1.7	−1.3	−2.5	−2.1	−2.4	−2.9	−2.5	−2.2	−2.2	−2.2	−2.0
Resource Balance	−1.4	−4.1	−5.0	−4.9	−6.3	−7.0	−7.1	−2.2	−3.3	−3.6	−4.2
Memorandum											
Acquisition of Foreign Assets	0.8	2.0	4.0	5.1	6.3	5.3	2.3	1.6	2.8	2.1	2.7
Change in Reserves	−0.2	1.2	1.3	3.9	3.0	1.9	0.3	1.4	1.9	0.9	1.1
Commonwealth of Independent											
States[2]											
Savings	24.1	25.2	30.0	30.0	30.3	30.7	30.5	22.6	24.4	25.1	25.1
Investment	37.4	20.6	21.6	21.2	23.0	26.7	25.7	19.8	20.5	22.2	23.6
Net Lending	−10.3	4.7	8.4	8.8	7.3	4.0	4.8	2.8	3.9	3.0	1.6
Current Transfers	0.8	0.5	0.5	0.5	0.4	0.3	0.4	0.4	0.3	0.3	0.3
Factor Income	−1.3	−2.8	−2.2	−2.7	−3.3	−2.9	−3.4	−3.6	−3.9	−3.1	−2.0
Resource Balance	−10.2	6.9	9.9	11.0	10.3	6.8	8.0	5.8	7.4	5.8	3.5
Memorandum											
Acquisition of Foreign Assets	1.0	6.5	14.1	15.4	14.8	17.4	10.0	1.5	5.6	5.8	4.3
Change in Reserves	−0.3	2.1	7.1	7.7	9.8	9.8	−1.2	0.5	3.7	3.2	1.9
Developing Asia											
Savings	30.3	32.9	38.4	40.2	42.9	43.8	44.2	45.0	44.6	44.7	45.4
Investment	32.7	31.5	35.8	36.1	36.9	36.9	38.4	40.9	41.6	41.7	41.5
Net Lending	−2.4	1.4	2.6	4.1	6.0	6.9	5.8	4.1	3.0	3.0	4.0
Current Transfers	0.9	1.5	2.1	2.2	2.2	2.2	2.0	1.7	1.8	1.8	1.7
Factor Income	−1.8	−1.5	−1.0	−0.7	−0.4	−0.2	0.0	0.0	0.0	−0.1	0.0
Resource Balance	−1.5	1.4	1.6	2.6	4.2	4.9	3.8	2.4	1.1	1.3	2.2
Memorandum											
Acquisition of Foreign Assets	4.2	5.4	7.3	9.5	11.3	14.6	9.0	7.1	5.4	5.0	5.7
Change in Reserves	1.5	2.4	6.9	6.8	7.4	10.2	6.8	5.7	4.7	3.9	3.3

Table A16 *(continued)*

	Averages								Projections		
	1988–95	1996–2003	2004	2005	2006	2007	2008	2009	2010	2011	2012–15
Latin America and the Caribbean											
Savings	19.2	18.5	21.8	21.9	23.1	22.4	22.4	19.2	19.8	19.9	20.5
Investment	20.3	20.9	20.8	20.5	21.7	22.3	23.6	19.8	21.1	21.7	22.5
Net Lending	−1.2	−2.5	1.0	1.4	1.4	0.1	−1.2	−0.6	−1.3	−1.8	−2.0
Current Transfers	0.8	1.2	2.1	2.0	2.1	1.8	1.6	1.5	1.3	1.3	1.4
Factor Income	−2.3	−3.0	−3.1	−3.1	−3.3	−3.0	−3.1	−2.6	−2.8	−2.8	−2.6
Resource Balance	0.3	−0.7	2.1	2.4	2.6	1.3	0.3	0.5	0.1	−0.3	−0.7
Memorandum											
Acquisition of Foreign Assets	0.4	2.1	2.9	3.4	3.2	6.3	2.2	3.5	2.3	1.6	1.3
Change in Reserves	0.7	0.3	1.0	1.3	1.6	3.6	1.2	1.3	1.6	0.6	0.5
Middle East and North Africa											
Savings	20.3	27.3	34.4	41.0	42.4	42.3	43.7	32.0	33.3	33.8	34.2
Investment	24.4	23.5	25.2	23.7	23.6	27.3	28.3	29.3	28.9	28.6	22.8
Net Lending	−4.1	3.8	10.3	17.4	19.0	15.3	15.4	3.6	5.0	5.8	−4.4
Current Transfers	−2.1	−1.3	−0.6	0.0	−0.3	−0.8	−1.0	−1.4	−1.3	−1.4	1.7
Factor Income	0.9	0.7	−0.1	0.1	1.2	1.3	0.5	0.2	−0.8	−0.8	−2.0
Resource Balance	−2.9	4.4	11.1	17.3	18.4	15.0	15.9	4.0	6.6	7.4	−4.2
Memorandum											
Acquisition of Foreign Assets	0.3	5.6	15.0	22.7	31.6	36.0	12.3	4.2	4.5	5.6	2.7
Change in Reserves	0.3	2.2	5.8	10.0	10.0	12.9	8.3	−1.3	3.0	2.7	1.1
Sub-Saharan Africa											
Savings	16.2	16.1	18.4	19.3	24.9	22.8	22.5	20.9	22.5	20.9	20.2
Investment	17.0	18.4	19.7	19.6	20.5	21.6	22.5	22.3	23.4	22.6	21.5
Net Lending	−0.9	−2.3	−1.3	−0.3	4.5	1.2	0.0	−1.4	−0.9	−1.7	−1.3
Current Transfers	2.0	2.2	2.6	2.6	4.6	4.6	4.5	4.7	4.0	3.6	3.4
Factor Income	−2.9	−4.0	−5.0	−5.5	−4.4	−5.8	−5.8	−4.0	−4.7	−4.7	−5.0
Resource Balance	0.2	−0.2	1.2	2.7	4.4	2.6	1.4	−2.0	−0.1	−0.6	0.3
Memorandum											
Acquisition of Foreign Assets	0.4	2.4	2.5	4.7	9.4	7.7	3.7	3.6	5.3	4.6	4.4
Change in Reserves	0.5	0.8	3.6	3.6	4.3	3.5	1.9	−0.9	0.4	0.3	0.9
Analytical Groups											
By Source of Export Earnings											
Fuel Exporters											
Savings	20.4	28.0	33.7	38.1	39.8	38.5	38.9	29.4	31.2	31.3	30.9
Investment	25.2	22.9	23.5	22.3	23.1	26.6	26.3	24.9	24.8	25.1	25.1
Net Lending	−2.9	5.1	10.9	15.9	16.8	12.0	12.6	4.9	6.7	6.5	5.8
Current Transfers	−3.5	−1.8	−1.1	−0.6	−0.3	−0.7	−0.7	−1.0	−1.0	−1.0	−1.1
Factor Income	0.5	−1.2	−2.0	−2.2	−1.9	−1.9	−2.7	−2.1	−3.0	−2.6	−1.4
Resource Balance	0.3	8.2	14.0	18.7	19.2	14.8	16.2	7.5	10.3	9.8	8.5
Memorandum											
Acquisition of Foreign Assets	0.6	6.6	14.9	21.2	24.9	27.4	12.4	3.8	5.9	6.4	6.0
Change in Reserves	−0.1	1.7	7.0	9.2	10.4	11.0	3.7	−1.5	3.1	2.5	2.5
Nonfuel Exporters											
Savings	23.8	24.4	28.7	29.2	31.1	31.8	32.3	32.7	32.8	33.2	34.6
Investment	25.7	25.4	28.2	28.1	29.3	30.0	31.5	31.4	32.5	33.0	33.7
Net Lending	−1.8	−1.1	0.5	1.1	1.9	1.8	0.8	1.3	0.3	0.2	0.9
Current Transfers	1.4	1.7	2.3	2.3	2.4	2.3	2.1	2.0	1.9	1.9	1.8
Factor Income	−2.1	−2.0	−1.9	−1.7	−1.6	−1.5	−1.3	−1.1	−1.1	−1.1	−1.0
Resource Balance	−1.2	−0.7	0.0	0.4	1.1	1.0	−0.1	0.4	−0.5	−0.5	0.0
Memorandum											
Acquisition of Foreign Assets	1.9	3.4	5.1	6.2	7.6	10.2	5.4	5.1	4.1	3.6	4.0
Change in Reserves	1.0	1.5	4.0	4.4	4.6	6.7	3.9	3.9	3.3	2.6	2.3

Table A16 *(concluded)*

	Averages		2004	2005	2006	2007	2008	2009	Projections		
	1988–95	1996–2003	2004	2005	2006	2007	2008	2009	2010	2011	2012–15
By External Financing Source											
Net Debtor Economies											
Savings	20.3	19.0	21.6	21.5	22.6	22.9	22.0	20.6	21.4	21.9	23.5
Investment	22.1	21.4	22.7	23.1	24.2	25.5	25.8	22.5	24.0	24.9	26.5
Net Lending	–1.9	–2.4	–1.1	–1.6	–1.7	–2.6	–3.8	–1.9	–2.6	–3.0	–3.0
Current Transfers	1.7	2.2	3.0	3.0	3.0	2.9	2.8	2.8	2.6	2.5	2.5
Factor Income	–1.9	–2.3	–2.5	–2.5	–2.6	–2.6	–2.5	–2.3	–2.4	–2.4	–2.3
Resource Balance	–1.6	–2.4	–1.6	–2.1	–2.2	–2.9	–4.1	–2.5	–2.8	–3.1	–3.2
Memorandum											
Acquisition of Foreign Assets	0.6	2.0	3.2	3.0	4.5	6.2	1.6	2.2	2.4	1.8	1.9
Change in Reserves	0.7	0.8	1.6	2.0	2.5	4.0	1.0	1.5	1.8	1.2	1.1
Official Financing											
Savings	17.2	18.0	21.0	20.9	21.2	21.8	19.6	21.6	21.5	22.0	23.7
Investment	20.3	20.8	23.3	24.0	24.3	24.9	24.5	24.3	25.2	26.4	27.2
Net Lending	–3.2	–2.8	–2.3	–3.1	–3.1	–3.1	–4.9	–2.7	–3.7	–4.4	–3.5
Current Transfers	5.5	6.5	9.7	10.3	10.4	10.7	10.7	10.7	10.7	10.1	9.3
Factor Income	–2.0	–2.0	–2.1	–2.2	–2.0	–1.2	–1.2	–1.2	–1.6	–2.1	–1.6
Resource Balance	–6.7	–7.3	–9.8	–11.4	–11.5	–12.6	–14.6	–12.4	–13.0	–12.6	–11.3
Memorandum											
Acquisition of Foreign Assets	0.8	0.3	0.8	–4.2	0.9	1.7	0.2	0.7	1.5	0.9	1.3
Change in Reserves	1.4	1.3	0.8	0.6	1.3	2.2	0.4	2.9	1.9	1.6	1.7
Net Debtor Economies by **Debt-Servicing Experience**											
Economies with Arrears and/or **Rescheduling During 2004–08**											
Savings	14.7	15.1	19.8	21.0	22.8	21.9	20.8	18.8	19.6	19.7	19.8
Investment	18.1	18.6	20.7	22.2	23.3	24.4	24.9	22.1	22.9	23.6	23.2
Net Lending	–3.4	–3.5	–0.8	–1.1	–0.5	–2.5	–4.1	–3.3	–3.3	–3.9	–3.4
Current Transfers	1.8	2.8	5.3	5.2	5.0	4.6	4.1	4.1	3.8	3.6	3.4
Factor Income	–3.6	–4.4	–5.1	–4.4	–3.9	–4.2	–4.6	–3.7	–3.8	–4.0	–3.4
Resource Balance	–1.6	–2.0	–1.2	–2.0	–1.7	–2.9	–3.8	–3.9	–3.4	–3.7	–3.5
Memorandum											
Acquisition of Foreign Assets	1.8	2.9	3.4	2.6	3.6	5.5	1.3	0.9	1.7	1.3	1.7
Change in Reserves	0.3	0.3	2.5	3.3	2.1	3.6	0.6	1.5	0.8	0.7	1.1

Note: The estimates in this table are based on individual countries' national accounts and balance of payments statistics. Country group composites are calculated as the sum of the U.S. dollar values for the relevant individual countries. This differs from the calculations in the April 2005 and earlier issues of the *World Economic Outlook*, where the composites were weighted by GDP valued at purchasing power parities as a share of total world GDP. For many countries, the estimates of national savings are built up from national accounts data on gross domestic investment and from balance-of-payments-based data on net foreign investment. The latter, which is equivalent to the current account balance, comprises three components: current transfers, net factor income, and the resource balance. The mixing of data source, which is dictated by availability, implies that the estimates for national savings that are derived incorporate the statistical discrepancies. Furthermore, errors, omissions, and asymmetries in balance of payments statistics affect the estimates for net lending; at the global level, net lending, which in theory would be zero, equals the world current account discrepancy. Despite these statistical shortcomings, flow of funds estimates, such as those presented in these tables, provide a useful framework for analyzing developments in savings and investment, both over time and across regions and countries.

[1]Calculated from the data of individual Euro Area countries.

[2]Georgia and Mongolia, which are not members of the Commonwealth of Independent States, are included in this group for reasons of geography and similarities in economic structure.

Table A17. Summary of World Medium-Term Baseline Scenario

	Averages				Projections			
	1992–99	2000–07	2008	2009	2010	2011	2008–11	2012–15
	Annual Percent Change Unless Noted Otherwise							
World Real GDP	**3.1**	**4.2**	**2.8**	**−0.6**	**4.8**	**4.2**	**2.8**	**4.6**
Advanced Economies	2.8	2.6	0.2	−3.2	2.7	2.2	0.4	2.5
Emerging and Developing Economies	3.6	6.5	6.0	2.5	7.1	6.4	5.5	6.6
Memorandum								
Potential Output								
Major Advanced Economies	2.5	2.3	1.4	1.0	1.1	1.3	1.2	1.6
World Trade, Volume[1]	**7.1**	**6.9**	**2.9**	**−11.0**	**11.4**	**7.0**	**2.2**	**6.9**
Imports								
Advanced Economies	6.9	5.8	0.4	−12.7	10.1	5.2	0.4	5.5
Emerging and Developing Economies	7.2	10.5	9.0	−8.2	14.3	9.9	5.9	9.2
Exports								
Advanced Economies	6.8	5.9	1.9	−12.4	11.0	6.0	1.2	5.5
Emerging and Developing Economies	8.5	9.8	4.6	−7.8	11.9	9.1	4.2	9.2
Terms of trade								
Advanced Economies	0.2	−0.3	−1.8	2.8	−0.6	−0.1	0.0	−0.1
Emerging and Developing Economies	−1.3	2.1	3.4	−4.2	1.2	0.4	0.2	0.2
World Prices in U.S. Dollars								
Manufactures	−0.6	2.8	6.7	−6.1	3.1	1.4	1.2	1.2
Oil	−0.9	18.8	36.4	−36.3	23.3	3.3	2.6	2.7
Nonfuel Primary Commodities	−1.5	7.9	7.5	−18.7	16.8	−2.0	0.0	−1.5
Consumer Prices								
Advanced Economies	2.4	2.1	3.4	0.1	1.4	1.3	1.6	1.7
Emerging and Developing Economies	47.2	6.7	9.2	5.2	6.2	5.2	6.5	4.1
Interest Rates (in percent)								
Real Six-Month LIBOR[2]	3.2	1.1	0.9	0.2	−0.3	−0.4	0.1	1.2
World Real Long-Term Interest Rate[3]	3.8	2.1	0.4	3.2	1.9	2.5	2.0	3.1
	Percent of GDP							
Balances on Current Account								
Advanced Economies	0.0	−0.9	−1.2	−0.3	−0.3	−0.1	−0.5	−0.3
Emerging and Developing Economies	−1.5	2.6	3.7	1.9	1.5	1.4	2.1	1.9
Total External Debt								
Emerging and Developing Economies	37.4	32.7	24.5	27.3	24.7	24.0	25.1	22.4
Debt Service								
Emerging and Developing Economies	7.7	10.0	9.2	9.5	8.2	7.8	8.7	7.7

[1]Data refer to trade in goods and services.
[2]London interbank offered rate on U.S. dollar deposits minus percent change in U.S. GDP deflator.
[3]GDP-weighted average of 10-year (or nearest maturity) government bond rates for Canada, France, Germany, Italy, Japan, United Kingdom, and United States.

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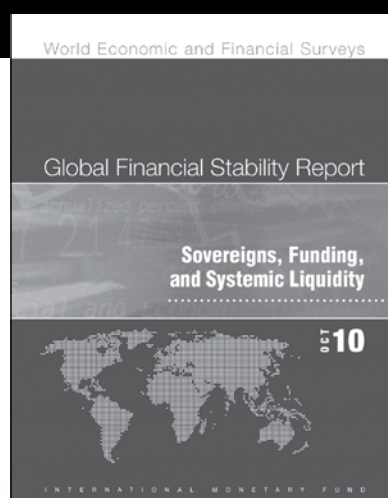
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