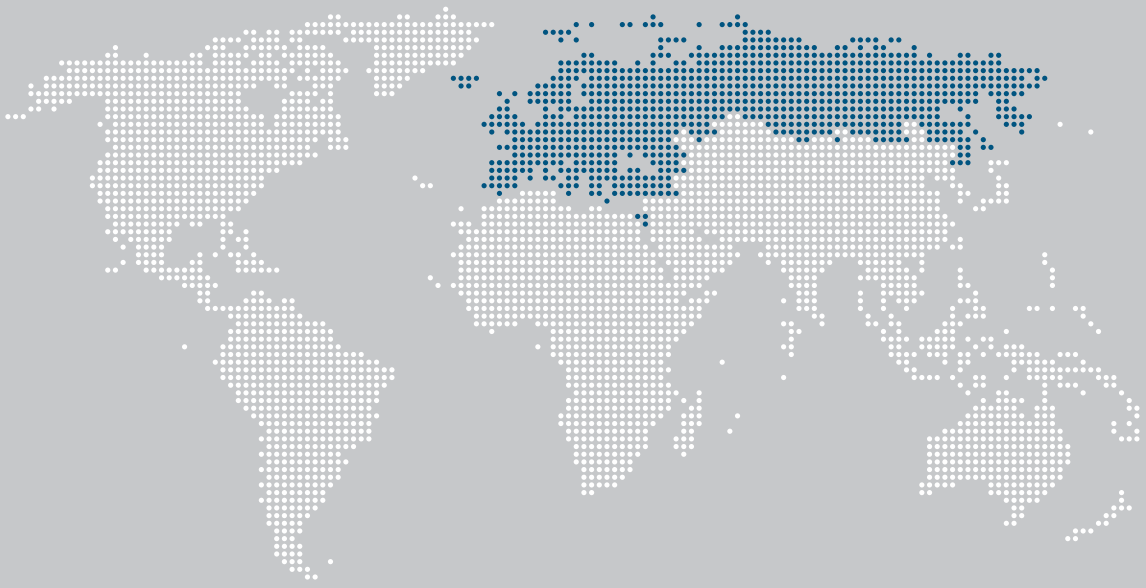
World Economic and Financial Surveys

Regional Economic Outlook

Europe

Dealing with Shocks



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This *Regional Economic Outlook: Europe—Dealing With Shocks* was written by Rudolphs Bems, Thomas Harjes, Dora Iakova, Philip Schellekens, Silvia Sgherri, Athanasios Vamvakidis, and Edda Zoli under the guidance of Luc Everaert, Ajai Chopra, and Alessandro Leipold, with contributions from Chadi Abdallah, Allan Brunner, Martin Cihak, Wim Fonteyne, Alessandro Galesi (University of Pisa), Gavin Gray, Bertrand Gruss, Iryna Ivaschenko, John Kiff, Douglas Laxton, Rodolfo Luzio, Paul Mills, Dirk Muir, Aditya Narain, Emil Stavrev, Andrew Tiffin, and Boriana Yontcheva. This *Regional Economic Outlook: Europe* was coordinated by the Regional Studies Division of the IMF's European Department in close cooperation with the IMF's Monetary and Capital Markets Department. Pavel Lukyantsau and Haiyan Shi, Dominique Raelison-Rajaobelina, and Thomas Walter provided research, administrative, and editorial assistance, respectively. Marina Primorac of the External Relations Department oversaw the production. The report is based on data available as of September 16, 2008. The views expressed in this report are those of the IMF staff and should not be attributed to Executive Directors or their national authorities.

Executive Summary

Multiple adverse shocks have combined to dampen economic activity in Europe. High commodity prices have depressed real incomes and consumption, and propelled inflation to levels not seen in a decade. A strong euro and slowing demand from trade partners have acted as a drag on exports. And extraordinary financial stresses have been negatively affecting advanced economies, while testing the resilience of emerging economies.

Activity is expected to stagnate in most advanced economies in the near term, as asset price and consumption booms deflate and financial institutions curb credit to reduce leverage. In most emerging economies, growth is projected to slow significantly. With the adjustment in the financial system likely to be arduous and protracted, a modest recovery is expected only later in 2009. Intensifying strains in the financial sector and a mutually reinforcing deterioration in financial and economic conditions constitute key downside risks. Increases in oil and food prices should ordinarily not generate a sustained rise in inflation. However, these increases have been so broad and sizable that concerns have arisen about demands for higher wages, which would put upward pressure on all prices. Emerging markets in which prior overheating pressures prevailed are particularly prone to a wage-price spiral. In advanced economies, the projected sharp weakening of activity together with the recent reduction in several key commodity prices should lead to a steady decline in inflation.

Stabilizing financial conditions is the policy priority. Achieving this goal necessitates global action, including liquidity provision when needed, and the restoration of healthy financial balance sheets by encouraging loss recognition and rebuilding of capital bases. European leaders will need to make a commitment to concerted and coordinated action to alleviate financial stresses. Given the importance of cross-border financial institutions, the ongoing financial turmoil has made it clear that the European Union needs to put in place joint responsibility and accountability for financial stability to avoid the serious risk of backtracking on European financial integration.

While containing inflation remains a policy concern, nurturing the recovery is likely to gain policy prominence. In most advanced economies, headline inflation is projected to drop to levels below central bank objectives as a result of the very weak outlook for activity. In these circumstances and with further downside risks emanating from the financial sector, scope for easing monetary policy has emerged. Meanwhile, operation of automatic fiscal stabilizers should support activity, but safeguarding long-term fiscal sustainability requires deficits to be kept within the limits of fiscal rules. Exceptions can be considered, if and when public resources are needed to directly alleviate financial stresses. In many emerging economies, macroeconomic policy settings may need to be tightened further to address inflationary pressures and external vulnerabilities. And contingency plans should be put in place to deal with possible financial instability and hard landings.

Advanced economies are better positioned than their emerging counterparts to head off second-round effects on inflation from the surge in commodity prices (Chapter 2). Though vestiges of indexation remain in some countries, improved labor market flexibility, strong monetary policy credibility and the weak outlook for activity should limit the pass-through of commodity price shocks to core inflation. The risks of spillovers of price pressures to a broad range of goods are greater in the emerging economies, for which food and fuel account for a substantial share of consumption. For some of these economies, the rise in commodity prices adds to existing price pressures from overheating. Moreover, inflation may be more difficult to control in emerging markets with fixed exchange rates or limited monetary policy credibility.

The appropriate policy response to the commodity price increases depends on the source of the price pressures, the credibility of policymakers, and the degree of labor market flexibility. Because global demand factors played an important role in the run-up of commodity prices, a tighter-than-usual monetary policy stance may be warranted, especially in some emerging economies and in countries with greater labor market rigidities. Past experience suggests that policymakers should resist the temptation to try to maintain high growth in the face of adverse commodity price shocks. Rather, fiscal and structural policies are best aimed at easing supply bottlenecks and providing the right incentives to producers and consumers.

As the ongoing financial market turmoil underscores, financial systems are inherently subject to cycles, with important but dissimilar consequences for real activity across countries (Chapter 3). Developments in national housing and corporate finance systems—which are reinforcing the role of financial assets as borrowing collateral—have the potential to make bank lending procyclical. In this way, the financial sector can amplify business cycle fluctuations, as well as the impact of monetary policy shocks and asset price movements on real activity. Cross-border ownership of assets further bolsters this mechanism. Analysis suggests that emerging economies are likely to be more vulnerable than advanced economies to the current downturn in the credit cycle, though with large differences across countries.

What can policymakers do to lessen the undesirable macroeconomic volatility associated with asset price dynamics? While there is no consensus yet on this issue, the introduction of a countercyclical element in prudential regulation could substantially reduce the volatility of investment, particularly in financially integrated economies with tighter borrowing limits. In this respect, financial integration remains essential to foster smooth and growth-oriented adjustment. At the same time, supervision needs to keep pace with increasingly complex linkages across borders by ensuring adequate coordination of financial policies across Europe, and especially within the euro area.

Along with international capital, the flow of labor across the borders of the European Union's New Member States has been a key feature in their convergence process (Chapter 4). Since the onset of transition, these labor movements have intensified

appreciably and become increasingly diverse and flexible. Labor mobility has significant advantages: it speeds up convergence, boosts economy-wide capital-labor ratios, supports aggregate demand through remittances, and may help augment skills through the reintegration of returning migrants in domestic labor markets.

Contrary to some perceptions, restricting labor mobility is not the answer to overheating pressures; policies to improve overall labor mobilization are a much better avenue. Rather than being a source of overheating, labor mobility is more likely to play a moderating role. Indeed, the wage increases during economic booms diminish the incentive to seek employment abroad and instead attract immigrants, both of which lessen pressure on domestic wages. However, outward labor mobility speeds up the wage increases normally associated with the process of income convergence. In the presence of labor market rigidities, such increases could set off second-round inflationary effects, which would need to be kept in check to preserve competitiveness. In addition, differences in age and skills composition between labor outflows and inflows could contribute to labor market mismatches. Policies to improve mobilization and utilization of labor are therefore key to supporting sustainable growth and securing a smooth domestic reallocation of resources.

1. Outlook: Dealing with Shocks

After holding up well in early 2008, growth slowed markedly in Europe, mainly owing to the ongoing impact of external shocks. Inflation rose to levels not seen in a decade, but with commodity prices stabilizing and the prospect of very weak activity, inflationary pressures are expected to recede. Advanced economies have been hit by extraordinary financial stress whose alleviation has become the overriding policy concern. For most emerging economies, where resource pressures continue even though growth is moderating, the principal challenges are to bring inflation under control and address external imbalances. Meanwhile, contingency plans need to be prepared to deal with possible financial instability.

Advanced Economies

Commodity Price Shocks Helped Trigger Sharp Slowdown and Caused High Inflation

Mostly external factors have dampened economic activity in the advanced economies of Europe.[1] The commodity price shocks intensified in the first half of 2008, causing a spike in headline inflation and sapping real disposable income and consumer demand (Figure 1). Financial turmoil, which was expected to dissipate, instead worsened again, first in June–July 2008, when large financial institutions came under renewed pressure, and more recently in September with the failure of some large U.S. financial institutions. Europe was affected directly, through bank losses and an associated tightening of financial conditions for borrowers, and indirectly, through a weakening of demand from the United States, where the turmoil originated. Moreover, insufficient progress in resolving global current account imbalances caused the euro to appreciate disproportionately—beyond its medium-term equilibrium value (Box 1)—exerting a drag on growth.

Commodity price shocks have played an important role in the slowdown in activity in Europe, but tightening financial conditions have now taken over. Commodity price shocks adversely affected consumption in a few advanced economies already in the second half of 2007. This process came to a head in the second quarter of 2008, when the price level in the euro area jumped by nearly 2 percent above the first quarter, triggering a significant decline in consumption. Investment, which had held up well, also fell as confidence plummeted and evidence surfaced of the worsening consequences for Europe of the global financial turmoil. While the euro area initially resisted the adverse shocks somewhat better than the United States, it has subsequently slowed faster, as dollar depreciation and more expansionary macroeconomic policies have helped support growth in the United States.

Meanwhile, headline inflation in Europe rose to a level not seen in a decade, though there are some tentative signs that it may have peaked in June–July 2008 (Figure 1). For the euro area, headline inflation, after being pushed up repeatedly by a sequence of commodity price shocks, stabilized at 4 percent in July 2008, before easing to 3.8 percent in August 2008 as the result of falling energy prices. Inflation, excluding energy, food, alcohol, and tobacco, has been relatively stable throughout, remaining below 2 percent. Observations on other advanced economies are similar, but the upward momentum in headline inflation has yet to turn in Norway, Sweden, and the United Kingdom. Inflation expectations edged up following the latest spike in energy prices but have subsequently receded, especially in the euro area. Moreover, when adjusted for inflation risk premiums, break-even

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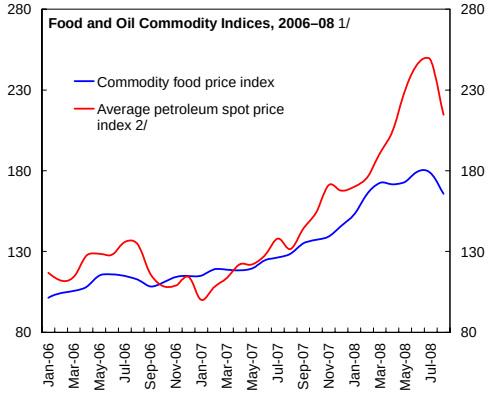
Note: The main authors of this chapter are Thomas Harjes and Athanasios Vamvakidis.

[1] For the purpose of this document, Europe is divided into advanced and emerging economies. The latter comprise Albania, Belarus, Bosnia and Herzegovina, Bulgaria, Croatia, the Czech Republic, Estonia, Hungary, Latvia, Lithuania, FYR Macedonia, Moldova, Montenegro, Poland, Romania, Russia, Serbia, the Slovak Republic, Turkey, and Ukraine. All other European economies are included in the group of advanced economies.

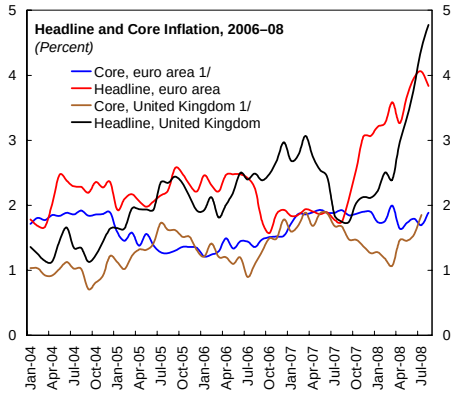
Figure 1. Key Short-Term Indicators

The surge in commodity prices...



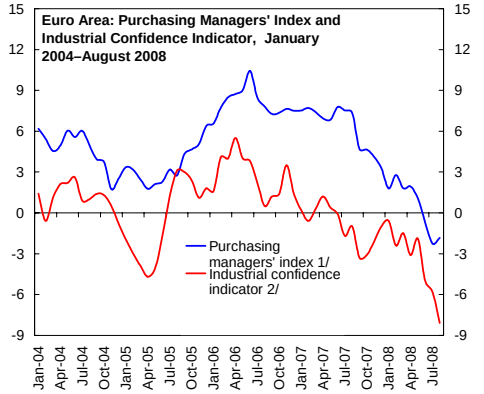
Source: IMF staff calculations.
1/ In terms of U.S. dollars, 2005 = 100.
2/ Average of U.K. Brent, Dubai, and West Texas Intermediate, equally weighted.

...pushed up headline inflation…



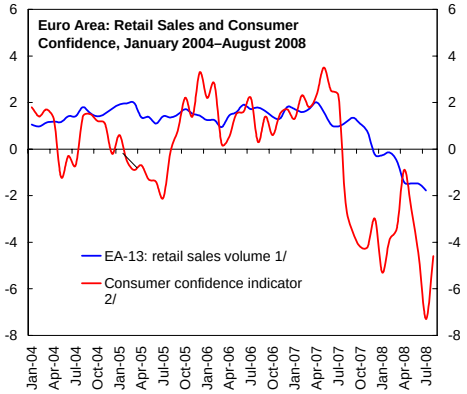
Source: Eurostat.
1/ Harmonized index of consumer price inflation (excluding energy, food, alcohol, and tobacco).

...dampening business...



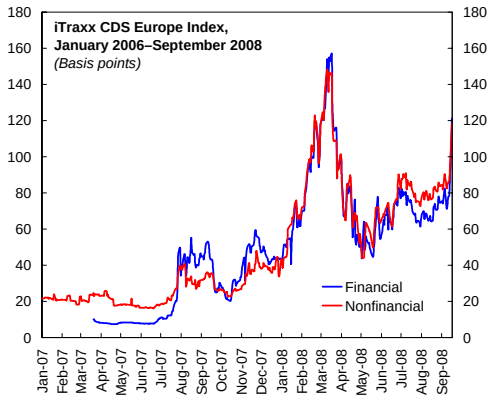
Sources: Eurostat, European Commission Business and Consumer Surveys; Haver Analytics; and IMF staff calculations.
1/ Seasonally adjusted; deviations from an index value of 50.
2/ Percentage balance; difference from the value three months earlier.

…and consumer confidence.



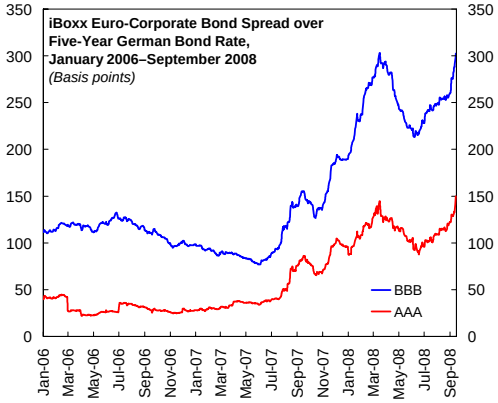
Sources: Eurostat; European Commission Business and Consumer Surveys; and IMF staff calculations.
1/ Three-month moving average of annual percentage changes.
2/ Percentage balance; difference from the value three months earlier.

Financial strains intensified...



Source: Datastream.

…raising the cost of finance.

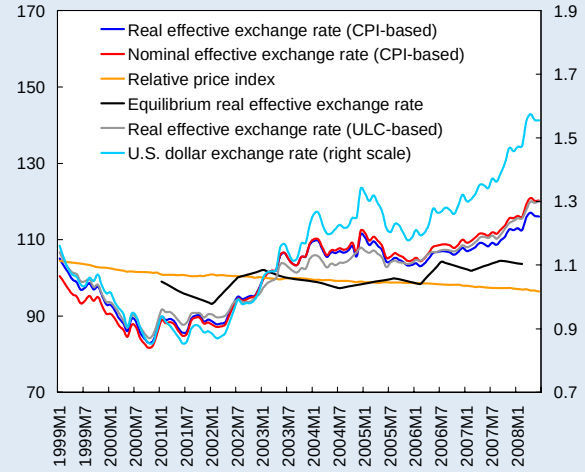


Source: Datastream.

Box 1. How Strong Is the Euro?

On the eve of its 10-year anniversary, the euro remains close to the strongest it has ever been, though the trend appreciation that began at the end of 2005 may have ended in August 2008. At its current level, the euro is assessed to have appreciated beyond its fundamental equilibrium level, but by considerably less than what the bilateral euro–U.S. dollar exchange rate may suggest. The recent appreciation of the euro has contributed to slower growth and provoked concerns about competitiveness for some euro area members.

Euro Exchange Rate, January 1999–June 2008
(Average, 1999 to 2007 = 100, unless otherwise indicated)



Source: IMF staff calculations.

The euro has appreciated considerably with respect to the U.S. dollar in recent years but significantly less in real effective terms (first figure). Its value has risen by 31 percent since the end of 2005 relative to the U.S. dollar, but in nominal effective terms it has appreciated by only half as much. In real terms, the euro has appreciated by 12 percent when measured based on consumer prices and by 15 percent when measured based on relative unit labor costs. The euro area's prices have been on a declining trend relative to the prices of the area's trading partners, falling by 7½ percent since the introduction of the euro and by 2 percent since the end of 2005.[1]

With these developments, the euro was on the strong side relative to fundamentals up to the middle of 2008. IMF estimates of the equilibrium real effective exchange rate (REER) of the euro suggest that it was above its medium-run fundamentals by somewhat more than 10 percent.[2] The euro area's medium-run current account deficit is projected at about ¾ percent of GDP, compared with an equilibrium surplus of 0.2 percent of GDP based on real exchange rate models.[3]

Price level–disaggregated data also confirm that the euro is on the strong side (second figure). Cross-country comparisons of purchasing power parity (PPP) prices relative to per capita GDP show that almost all euro

. . . continued

[1] The weights of the countries in the REER calculation that had higher inflation rates than the euro area in the period 2005–07 add to 68.9 percent, compared with 31.3 percent for countries that had lower inflation rates. Moreover, inflation in the first group was higher than in the euro area by 2.3 percent, while inflation in the second group was lower than in the euro area by only 0.8 percent.

[2] Equilibrium estimates are based on the IMF's CGER approach. CGER stands for the Consultative Group on Exchange Rate Issues, which was established by the IMF in 1995 to strengthen its capacity to assess current account positions and exchange rate levels. The CGER assessments are based on three complementary approaches: the macroeconomic balance approach, the reduced-form equilibrium real exchange rate approach, and the external sustainability approach. For more details, see Lee and others (2008).

[3] For more details, see IMF (2008d, Box 2).

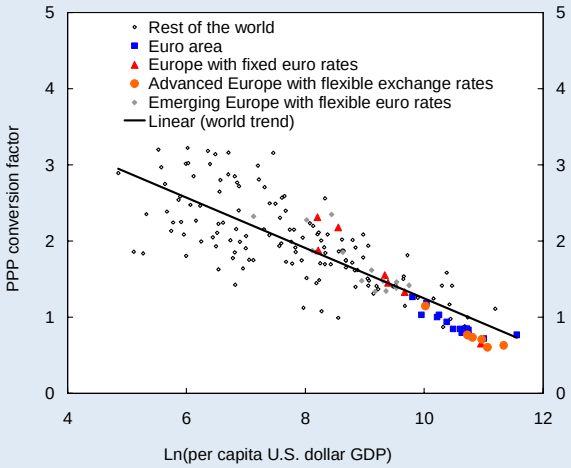
Box 1 *(concluded)*

area countries are somewhat "expensive" relative to their income levels (they are below the world trend line).[4] However, they do not seem to be more so than advanced European economies with flexible exchange rates.

Most countries in the euro area or with fixed euro exchange rates have increased their export market shares in recent years despite the appreciation of the euro, though there are a few exceptions (third figure). The trade patterns of countries in the euro area and countries with fixed euro exchange rates have not shifted inward (fourth figure), as would have been expected in response to deteriorating competitiveness. If anything, euro area and fixed euro exchange rate economies seem to have increased their trade with countries with flexible exchange rates with respect to the euro.

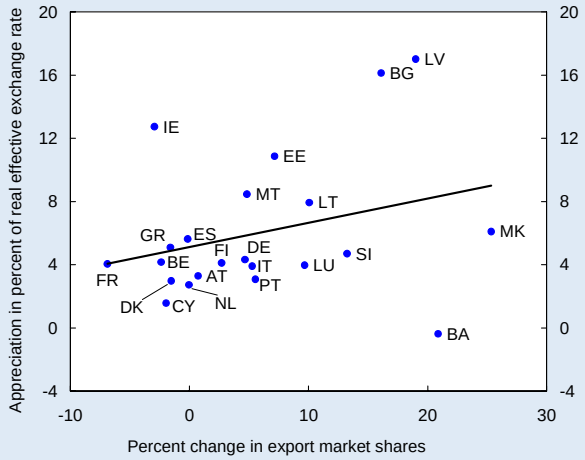
Simulations of a cross-country econometric model estimated in Fabrizio, Igan, and Mody (2007) suggest that improvements in the quality of exported European products may have partly offset the negative impact of the euro appreciation on exports. The model explains movements in export market shares based on changes in REERs and a number of indicators related to changes in product quality and technology of exports. Based on these simulations, the euro appreciation during January 2006 to May 2008 should reduce export market shares (normalized by the country's GDP share in world GDP) by 3½ percentage points in the euro area and by 6 percentage points in

Per Capita GDP and PPP Prices, 2007



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

Change in Export Market Shares in the World Economy and Appreciation of Real Effective Exchange Rate in Countries of the Euro Area or with Exchange Rates Pegged to the Euro, 2006–07

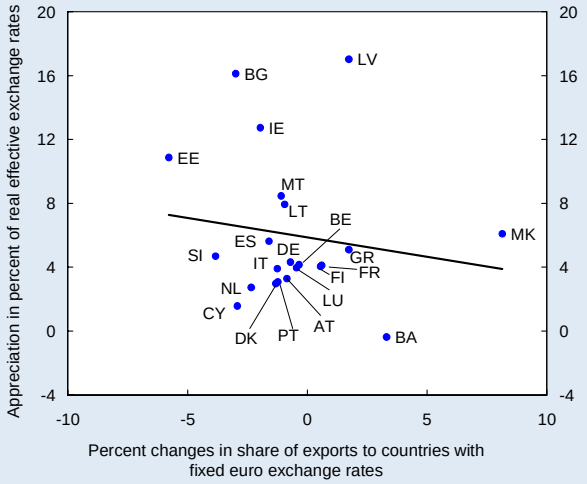


Source: IMF staff calculations.
Note: Country names are abbreviated according to the ISO standard codes.

[4] PPP prices are used to adjust GDP to take into account the fact that prices of nontradable goods are usually cheaper in less developed countries and, therefore, the purchasing power of consumers in these countries is higher than dollar GDP numbers would imply. Accordingly, the higher a country's per capita GDP, the lower its PPP conversion factor (the conversion factor is less than one in developed economies). Therefore, countries with conversion factors lower than those in other countries with similar income levels have a higher level of prices, which suggests that real exchange rates in the former countries may be overvalued.

European countries with fixed exchange rates to the euro, keeping everything else constant. The fact that export market shares in these economies have not deteriorated suggests that other factors in the model, such as quality improvements, may have played an offsetting role.

Appreciation in Real Effective Exchange Rate and Change in Trade Patterns in Selected Countries, 2006–07



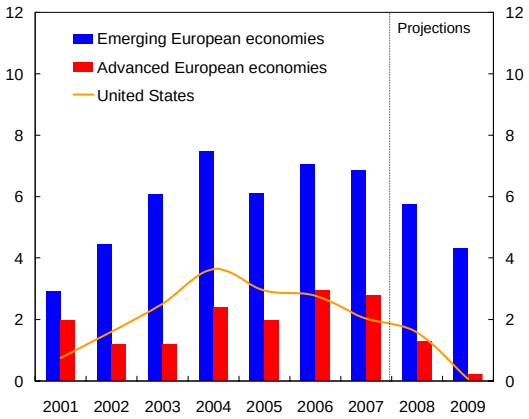
Source: IMF staff calculations.
Note: Country names are abbreviated according to the ISO standard codes.

inflation rates derived from bond yields suggest that inflation expectations have remained well behaved in the euro area (Bank for International Settlements, 2008).

Activity Expected to Stagnate While Inflation Recedes

Activity in the advanced economies is expected to be very weak during the second half of 2008 and first half of 2009, as the adverse consequences of the financial turmoil dampen growth, despite some relief from stabilizing commodity prices (Figure 2). Euro area growth will average 1.3 percent in 2008 and 0.2 percent in 2009, before returning to 1.4 percent in 2010 (Table 1). For many economies, the profile is likely to be one of stagnation into the first half of 2009, with several countries experiencing even a slight, temporary decline in activity.[2] Indeed, the continuing deterioration in business and consumer confidence and in other coincident and leading indicators does not bode well for the immediate future. Countries experiencing declining house prices after previous booms (e.g., Denmark,

Figure 2. Europe and the United States: Real GDP Growth, 2001–09
(*Percent*)



Source: IMF, *World Economic Outlook*.

Ireland, Spain, and the United Kingdom) are expected to see the sharper downturns (Hilbers and others, 2008).

Given the nature of the shocks hitting the European economy, a slowdown in growth is unavoidable. With Europe a net energy importer, the energy price shock is acting as a tax on household income paid abroad. Because the shock is generally perceived as permanent, households are not expected to dip into their savings, especially in the context of falling equity values and slower

[2] See the IMF's October *World Economic Outlook* (2008a) for detailed assumptions underlying these projections and the global context.

Table 1. European Countries: Real GDP Growth and CPI Inflation, 2006–09
(Percent)

	Real GDP Growth				CPI Inflation			
	2006	2007	2008	2009	2006	2007	2008	2009
Europe 1/ 2/	**4.1**	**3.9**	**2.6**	**1.4**	**3.6**	**3.6**	**5.8**	**4.2**
Advanced European economies 1/	3.0	2.8	1.3	0.2	2.2	2.1	3.5	2.2
Emerging European economies 1/ 2/	7.0	6.8	5.7	4.3	7.5	7.5	11.5	9.2
European Union 1/	3.3	3.1	1.7	0.6	2.3	2.4	3.9	2.4
Euro area	2.8	2.6	1.3	0.2	2.2	2.1	3.5	1.9
Austria	3.4	3.1	2.0	0.8	1.7	2.2	3.5	2.3
Belgium	2.9	2.8	1.4	0.2	2.3	1.8	4.6	2.8
Cyprus	4.0	4.4	3.4	2.8	2.2	2.2	4.6	3.5
Finland	4.9	4.5	2.5	1.6	1.3	1.6	3.9	2.5
France	2.2	2.2	0.8	0.2	1.9	1.6	3.4	1.6
Germany	3.0	2.5	1.8	0.0	1.8	2.3	2.9	1.4
Greece	4.2	4.0	3.2	2.0	3.3	3.0	4.4	3.1
Ireland	5.7	6.0	-1.8	-0.6	2.7	2.9	3.5	2.4
Italy	1.8	1.5	-0.1	-0.2	2.2	2.0	3.4	1.9
Luxembourg	6.1	4.5	2.3	1.8	2.7	2.3	3.7	1.8
Malta	3.1	3.7	2.8	2.3	2.6	0.7	3.7	2.2
Netherlands	3.4	3.5	2.3	1.0	1.7	1.6	2.9	2.6
Portugal	1.4	1.9	0.6	0.1	3.0	2.4	3.2	2.0
Slovenia	5.7	6.1	4.3	3.7	2.5	3.6	5.9	3.3
Spain	3.9	3.7	1.4	-0.2	3.6	2.8	4.5	2.6
Other EU advanced economies								
Denmark	3.9	1.7	1.0	0.5	1.9	1.7	3.4	2.8
Sweden	4.1	2.7	1.2	1.4	1.5	1.7	3.4	2.8
United Kingdom	2.8	3.0	1.0	-0.1	2.3	2.3	3.8	2.9
New EU countries 1/	6.6	6.3	5.0	3.5	3.3	4.1	6.4	4.4
Bulgaria	6.3	6.2	6.3	4.2	7.4	7.6	12.2	7.0
Czech Republic	6.8	6.6	4.0	3.4	2.5	2.8	6.7	3.4
Hungary	3.9	1.3	1.9	2.3	3.9	7.9	6.3	4.1
Poland	6.2	6.6	5.2	3.8	1.0	2.5	4.0	3.3
Romania	7.9	6.0	8.6	4.8	6.6	4.8	8.2	6.6
Slovak Republic	8.5	10.4	7.4	5.6	4.3	1.9	3.9	3.6
Estonia	10.4	6.3	-1.5	0.5	4.4	6.6	10.2	5.1
Latvia	12.2	10.3	-0.9	-2.2	6.5	10.1	15.9	10.6
Lithuania	7.9	8.9	3.9	0.7	3.8	5.8	11.3	6.2
Non-EU advanced economies								
Iceland	4.4	4.9	0.3	-3.1	6.8	5.0	12.1	11.2
Israel	5.2	5.4	4.3	2.8	2.1	0.5	4.8	3.3
Norway	2.5	3.7	2.5	1.2	2.3	0.8	3.2	2.7
Switzerland	3.4	3.3	1.7	0.7	1.0	0.7	2.6	1.5
Other emerging economies								
Albania	5.4	6.0	6.1	6.3	2.4	2.9	4.0	3.0
Belarus	10.0	8.2	9.2	8.0	7.0	8.4	15.3	9.6
Bosnia and Herzegovina	6.9	6.8	5.5	5.0	6.1	1.5	8.5	5.2
Croatia	4.8	5.6	3.8	3.7	3.2	2.9	7.0	4.9
Macedonia, FYR	4.0	5.0	5.5	5.0	3.2	2.3	8.5	3.0
Moldova	4.8	4.0	6.5	6.5	12.7	12.4	13.7	9.7
Montenegro	8.6	9.7	7.5	5.0	2.1	3.5	9.2	5.2
Russia	7.4	8.1	7.0	5.5	9.7	9.0	14.0	12.0
Serbia	5.6	7.1	6.0	6.0	12.7	6.8	10.7	7.5
Turkey	6.9	4.6	3.5	3.0	9.6	8.8	10.5	8.4
Ukraine	7.3	7.6	6.4	2.5	9.1	12.8	25.3	18.8

Source: IMF, *World Economic Outlook* .
1/ Average weighted by PPP GDP.
2/ Montenegro is excluded from the aggregate calculations.

increases or declines in house prices. Exports to commodity producers may pick up somewhat, but will not meaningfully compensate for the reduction in domestic demand. Moreover, higher energy prices are likely to have adverse consequences for potential output as energy-intensive capacity has to be phased out, which could be aggravated by real wage rigidities. The food price shock is different from this perspective, because it acts mostly to redistribute income among countries within Europe; however, it poses problems within each country because of its disproportionate effect on low-income households. While the stabilization of commodity prices might help real disposable income growth, resolving the banking crisis that is now affecting Europe will be an arduous and protracted process. Banks' deleveraging will weigh on economic growth well into 2009.

In the baseline forecast, inflation is projected to recede steadily from mid-2008 onward, falling to below 2 percent by end-2009 in most advanced economies. This projection assumes that commodity prices stabilize, that there are no significant second-round effects through a wage-price spiral, and that monetary policy credibility is preserved. While uncertainty is high, risks to the outlook for commodity prices appear balanced. The empirical analysis reported in Chapter 2 together with the projected weakness in activity give ground for optimism about the validity of other baseline assumptions. Energy price shocks are not found to have fed into core inflation in advanced economies, while the effect of food price increases on core inflation has been small. Though vestiges of indexation remain, labor market flexibility in Europe has increased compared with earlier episodes of commodity price shocks, and monetary policy credibility seems well established. Moreover, the projected weakening of activity should put considerable downward pressure on wages and prices.

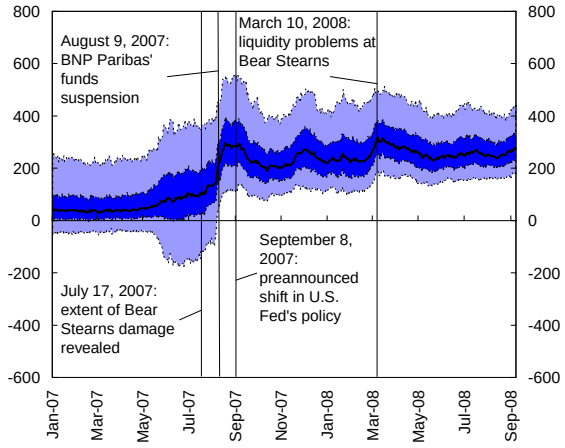
The extent of the slowdown and the shape of the recovery are highly uncertain. Commodity prices and the value of the euro could move favorably compared with the baseline. Although the recent easing of the pressures on these fronts may seem helpful, it seems to reflect an underlying demand slowdown and a reassessment of the relative growth prospects of Europe and the United States, to the detriment of the former. External demand could falter more broadly, especially if an adverse feedback loop develops between advanced and emerging economies, based on trade linkages and the increased degree of production sharing. Domestic demand could, however, be stronger than expected as households in the majority of countries and nonfinancial enterprises have maintained sound balance sheets. For continental Europe, second-round effects on inflation from real wage settlements in excess of productivity constitute a further albeit small risk, in particular as (partial) indexation is still practiced in some countries (European Central Bank, 2008a, p. 51). Finally, against the background of unrelenting tensions in financial markets, the possibility of a mutually reinforcing deterioration of financial and economic conditions persists as the key risk.

Financial Turmoil Continues . . .

Highly volatile financial markets continue to display significant stresses and high perceptions of risk (Figures 1 and 3). While global financial conditions improved following the rescue of U.S. investment bank Bear Stearns in March, tensions flared up again in July, when a large U.S. mortgage lender failed, and the U.S. Treasury and the Federal Reserve decided to extend wide-ranging and explicit guarantees to the government-sponsored enterprises (GSEs).[3] In September, financial strains intensified further, causing the failure of systemically important U.S. financial institutions and requiring extraordinary public intervention to prevent a meltdown of the U.S. financial system. The banking crisis also reached Europe, where several financial institutions had to be rescued or resolved. Financial stock prices have

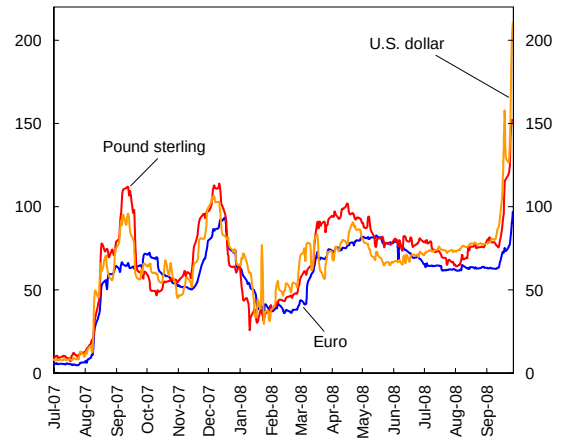
[3] Federal Home Loan Mortgage Corporation and Federal National Mortgage Association.

Figure 3. Estimating Shifts in the Global Price of Risk, 2007–08 1/
(Basis points)



Sources: Bloomberg L.P.; and IMF staff calculations.
1/ Selected percentiles of the estimated probability distribution for the expected unit price of risk that is common across assets. There is a 50 percent chance that the global price of risk will be inside the blue-shaded range and 90 percent chance that the outturn will be inside either the blue- or the purple-shaded area. The central thick black line denotes the estimated median price of risk. See Lombardi and Sgherri (forthcoming) for analytical underpinnings.

Figure 4. Spreads of Three-Month Interbank Rates over Expected Policy Rates, 2007–08
(Basis points)



Source: Bloomberg L.P.

fallen substantially, reflecting investor uncertainty about the viability of some banks.

Markets are concerned about losses related to subprime assets, exposures to unviable financial institutions, and the impact of the economic slowdown on general asset quality. One year after the onset of the financial turmoil, U.S. subprime-related write-downs and recorded credit losses at European banks amounted to about $200 billion, not much less than those incurred by North American banks. Swiss banks' losses reached a staggering $50 billion. As recorded losses are now shifting from trading to loan books and from large global banking groups to regional banks with large mortgage portfolios, the share of U.S. housing market–related losses borne by European banks should diminish. But recent failures of banks and insurance companies are adding further losses. Moreover, the economic slowdown in Europe is contributing to a broader deterioration of loan quality, especially in regions where housing markets are in decline.

Financial institutions are under severe pressure to reduce their high leverage.[4] Markets are paying increasing attention to pure rather than risk-weighted leverage, an indicator on which European financial institutions score less favorably than their U.S. equivalents. Moreover, while recapitalization initially went well, with European banks raising $155 billion between the onset of the turmoil and mid-2008, it is now likely to slow. The appetite of sovereign wealth funds and institutional investors has diminished, while volatile financial markets, together with legal requirements that protect existing shareholders from dilution of ownership, weigh on the cost of raising capital. Instead, public intervention, asset sales, and bank consolidation have begun to play a more prominent role in attempts to strengthen capital positions.

Borrowing costs and credit default spreads have risen, and term spreads in money markets have remained at elevated levels (Figures 1 and 4). Segmentation in money markets has increased as well and term funding is virtually unavailable. These problems have moved to commercial paper, and, together with rising risk aversion, have pushed corporate bond yields of all ratings close to their highest levels of this decade. Generally, availability of credit has become severely impaired.

Financial stability continues to be at risk, though not likely in a systemic manner. As noted

[4] See the IMF's *Global Financial Stability Report* (2008b) for more details.

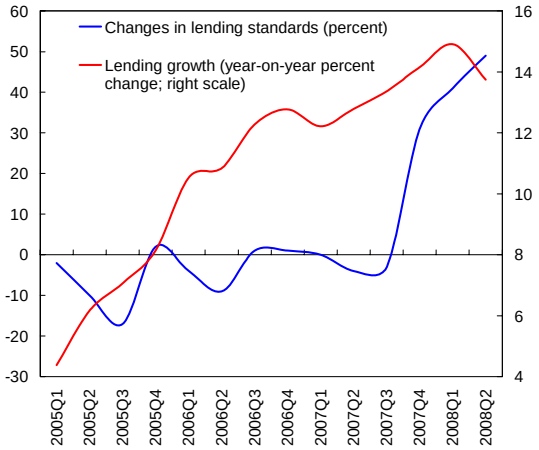
by the European Central Bank (ECB) in June, risks to the euro area's financial stability had on balance increased since the beginning of the year (European Central Bank, 2008b), in line with similar observations by the central banks of the United Kingdom and Sweden (Bank of England, 2008; and Riksbank, 2008). The disruptions in the U.S. financial system in September have heightened the risk of a systemic financial crisis in Europe further, though a full-blown crisis remains improbable and recent actions by the authorities should help in this respect. Nonetheless, additional banks may fail, as implied by their very high risk spreads and market doubts about the viability of their business models.

. . . with Adverse Effects on Real Activity

Household credit is slowing significantly, and mortgage credit has slumped in several regional housing markets. Features of mortgage markets, in particular the role of collateral, are a key factor in determining the boom-bust dynamics of asset prices and their real effects (see Chapter 3 for details). In Ireland, house prices have now declined for over a year, and in the United Kingdom, they have dropped sharply over the past few months; meanwhile, in Spain they have started falling recently. Consequently, in these countries, construction activity has been contracting noticeably. The reliance on wholesale funding by Spanish banks entails a risk that the credit squeeze will stretch to other sectors, especially if funding costs rise further and the maturity profile of debt liabilities continues to shorten. Also, in the United Kingdom, there is an acute risk that adverse feedback loops between housing and credit sectors will have a sizable negative effect on real activity.

Tighter financing conditions are expected to temper the issuance of debt securities by European corporates. Debt issuance is expected to grind to a halt after a period of robust growth. Corporate bank lending is beginning to show signs of moderation, in line with the typically lagged response of such lending to the tightening of

Figure 5. Changes in Credit Standards for Loans and Lending to Enterprises, 2005–08 1/



Sources: Haver Analytics; and European Central Bank.
1/ Net percentage of banks reporting tightening of credit standards.

financing conditions over the credit cycle (Figure 5). These tighter conditions should increasingly affect European businesses that are highly dependent on bank lending and highly leveraged, with adverse consequences on business activity. Default rates are expected to rise from their recent historically low levels, with highly leveraged corporations and real estate–related businesses being particularly vulnerable.

Policies Need to Limit the Damage from Financial Turmoil

The immediate priority for central banks in advanced economies is to restore calm to financial markets through provision of liquidity as needed. With these economies set to slow, commodity prices stabilizing, and risks tilted to the downside from the financial turmoil, scope for monetary easing has emerged. In the euro area, the ECB signaled its determination to anchor inflation expectations and meet its inflation objective with an increase in the policy rate in early July 2008. Since then it has remained on hold as upside risks to inflation are diminishing and downside risks to output are rising. With the slowdown in activity clearly under way and inflation expectations well behaved, a more accommodative policy stance is now feasible. Meanwhile, to keep inflation expectations anchored, the Bank of England has

kept rates unchanged since August 2008, but the sharp deterioration of the economic outlook for the United Kingdom is bringing forward the prospect of an easing of the policy stance. In other cases, such as Norway and Sweden, where activity has remained stronger, central banks have recently tightened further, but the tightening cycle is likely to have run its course.

Financial sector policies should aim at resolving the stresses in the financial system. Actions on a scale similar to the U.S. intervention are unlikely to be required, but coordinated and concerted action is also needed in Europe. Proactive liquidity management has been appropriate, and helpful adjustments to liquidity management frameworks have been implemented in several countries and properly coordinated across borders. However, these frameworks should also feature incentives that support the improvement of credit quality of collateral deposited with central banks after the financial stress has dissipated. In this regard, the recent tightening of the ECB's collateral policy will be helpful. But the banking crisis has now also required solvency support for major financial institutions, including some cross-border banks, while leading to the adoption of different guarantees by national governments. To restore confidence, European leaders will need to make a decisive commitment to concerted and coordinated action to alleviate financial stresses and avoid the serious risk of backtracking on European financial integration. Addressing the concerns raised by cross-border spillovers of actions taken by national authorities will require movement toward more joint responsibility and accountability for financial stability in Europe.

Looking further ahead, to dampen the propensity of the financial sector to amplify business cycle fluctuations and the impact of monetary policy and asset price developments on real activity, banking regulation may have to play a role in mitigating the cyclical swings in credit conditions (see Chapter 3 for detailed analysis).

Fiscal policies can help cushion the downturn, but medium-term fiscal sustainability needs to be safeguarded. In the current context, automatic stabilizers can be allowed to play fully around the required consolidation path, except in those countries where this would breach their fiscal rules. The Stability and Growth Pact (SGP) has improved fiscal discipline, but many European countries still face persistent challenges in meeting their medium-term objectives; in some countries, fiscal deficits risk exceeding the Maastricht deficit limit in the near term (Table 2). Similarly, the United Kingdom needs to set policy consistent with meeting its fiscal rules. In the current circumstances, discretionary loosening is unlikely to be effective and countries should set fiscal policy so as to reach their medium-term objectives in line with commitments under the revised SGP and consistent with medium-term fiscal rules. Discretionary use of fiscal resources should primarily be focused on measures to directly alleviate stress in financial markets, if and when needed.

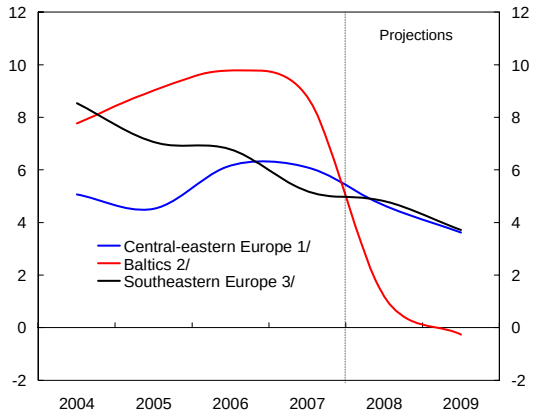
In reaction to higher commodity prices, the fiscal policy response should be limited to temporary, well-targeted income support to vulnerable households, while structural policies should promote supply and free trade. General fiscal support or a reduction in taxes on items most affected by the commodity price shocks would be counterproductive: both would boost demand, further aggravating wage and price pressures, and likely benefit the wealthy more. Instead, removing remaining supply-limiting distortions in the agricultural sector, including through a reform of the Common Agricultural Policy, and breaking the deadlock on the Doha Round of trade talks would provide clear benefits.

Table 2. European Countries: External and Fiscal Balances, 2006–09
(Percent)

	Current Account Balance to GDP				General Government Balance to GDP			
	2006	2007	2008	2009	2006	2007	2008	2009
Europe 1/	**0.6**	**0.2**	**-0.4**	**-0.6**	**-0.1**	**0.1**	**-0.4**	**-1.1**
Advanced European economies 1/	0.8	0.6	0.0	0.1	-0.9	-0.3	-1.2	-1.7
Emerging European economies 1/ 2/	0.0	-1.8	-1.8	-3.0	1.9	1.4	1.5	0.4
European Union 1/	-0.4	-0.7	-1.2	-1.2	-1.5	-0.9	-1.7	-2.2
Euro area	0.3	0.2	-0.5	-0.4	-1.3	-0.6	-1.5	-2.0
Austria	2.4	3.2	2.8	2.4	-1.6	-0.7	-0.7	-1.1
Belgium	2.7	2.1	0.0	-1.1	0.4	-0.1	-0.4	-1.3
Cyprus	-5.9	-9.7	-9.7	-7.8	-1.2	3.3	0.6	-0.3
Finland	4.6	4.6	3.4	2.9	4.0	5.2	4.9	3.7
France	-0.7	-1.2	-2.8	-2.7	-2.4	-2.7	-3.3	-3.9
Germany	6.1	7.6	7.3	6.8	-1.5	-0.2	-0.3	-0.8
Greece	-11.1	-14.1	-14.0	-14.1	-2.6	-2.8	-2.8	-2.3
Ireland	-3.6	-5.4	-5.0	-4.4	2.9	0.3	-4.0	-4.7
Italy	-2.6	-2.5	-2.8	-2.4	-3.4	-1.6	-2.6	-2.9
Luxembourg	10.5	9.9	8.6	8.2	1.3	3.0	1.7	1.0
Malta	-8.2	-5.4	-7.7	-6.4	-2.5	-1.8	-1.7	-1.0
Netherlands	8.2	6.8	5.6	5.1	0.6	0.6	1.1	1.7
Portugal	-10.1	-9.8	-12.0	-12.7	-3.9	-2.6	-2.2	-2.3
Slovenia	-2.8	-4.9	-4.7	-4.7	-0.8	-0.1	0.1	-0.3
Spain	-8.9	-10.1	-10.1	-7.7	2.0	2.2	-1.6	-2.5
Other EU advanced economies								
Denmark	2.9	1.1	1.3	1.8	4.9	4.8	3.2	3.0
Sweden	8.5	8.5	6.4	5.8	2.2	3.4	2.5	1.0
United Kingdom	-3.4	-3.8	-3.6	-3.4	-2.6	-2.7	-3.5	-4.4
New EU countries 1/	-5.9	-7.1	-7.3	-7.3	-3.1	-1.7	-1.9	-2.1
Bulgaria	-15.6	-21.4	-24.4	-21.5	3.5	3.5	4.2	2.7
Czech Republic	-2.6	-1.8	-2.2	-2.5	-2.7	-1.6	-1.9	-2.1
Hungary	-6.1	-5.0	-5.5	-6.1	-9.2	-5.5	-3.8	-3.3
Poland	-2.7	-3.8	-4.7	-5.7	-3.9	-1.5	-2.0	-2.3
Romania	-10.4	-14.0	-13.8	-13.3	-0.6	-2.3	-2.3	-2.8
Slovak Republic	-7.1	-5.4	-5.1	-4.7	-3.7	-2.2	-2.2	-1.7
Estonia	-16.7	-18.1	-10.8	-8.7	3.3	3.0	-1.3	-1.4
Latvia	-22.7	-22.9	-15.1	-8.3	-0.4	0.7	-1.4	-2.0
Lithuania	-10.7	-14.6	-14.9	-8.7	-1.5	-1.9	-1.6	-0.7
Non-EU advanced economies								
Iceland	-25.4	-14.6	-18.2	-13.7	6.3	5.5	2.0	-3.3
Israel	5.9	3.2	0.4	0.5	-1.4	-0.8	-1.9	-2.0
Norway	17.3	15.4	19.1	18.0	18.5	17.4	20.4	19.7
Switzerland	14.7	16.6	9.3	8.7	2.3	2.5	1.5	1.4
Other emerging economies								
Albania	-5.6	-9.2	-10.5	-7.1	-3.2	-3.8	-5.2	-3.0
Belarus	-3.9	-6.8	-5.9	-8.0	1.4	0.4	2.1	0.0
Bosnia and Herzegovina	-8.4	-12.7	-15.8	-13.5	2.2	-0.1	-1.9	-2.6
Croatia	-7.9	-8.6	-10.1	-10.2	-3.0	-2.3	-2.4	-1.5
Macedonia, FYR	-0.9	-3.0	-14.0	-13.8	-0.5	0.6	-1.5	-3.0
Moldova	-11.8	-17.0	-19.9	-19.1	0.2	-0.2	-0.5	-1.0
Montenegro	-24.7	-39.6	-39.6	-36.8	2.2	4.5	3.4	0.5
Russia	9.5	5.9	6.5	3.4	8.3	6.8	6.3	3.8
Serbia	-10.0	-15.9	-18.6	-19.3	-1.6	-1.9	-2.0	-4.9
Turkey	-6.0	-5.7	-6.5	-6.7	-1.6	-2.9	-2.0	-1.8
Ukraine	-1.5	-3.7	-7.2	-9.2	-1.4	-2.0	-0.9	-1.3

Source: IMF, *World Economic Outlook.*
1/ Weighted average. Government balance weighted by PPP GDP; external account balance, by U.S. dollar-weighted GDP.
2/ Montenegro is excluded from the aggregate calculations.

Figure 6. Growth in Emerging Europe, 2004–09
(Percent)



Source: IMF, *World Economic Outlook*.
1/ The Czech Republic, Hungary, Poland, and the Slovak Republic.
2/ Estonia, Latvia, and Lithuania.
3/ Albania, Bosnia and Herzegovina, Bulgaria, Croatia, FYR Macedonia, Moldova, Romania, Serbia, and Turkey.

Emerging Economies

Growth Is Slowing Significantly

Following a prolonged expansion, activity and domestic demand have started to moderate in emerging Europe, in most cases lowering growth rates toward more sustainable levels and beginning to reduce external imbalances (Figure 6 and Tables 1 and 2). In most countries, a slowdown was necessary to ease overheating pressures and bring growth rates in line with what could be justified by fundamentals (IMF, 2008c). The region has been relatively resilient to the global financial turmoil, but it is now increasingly facing tighter financial conditions and more discerning investors. Credit growth and capital inflows remain strong on average, but inflows have slowed noticeably and become more sensitive to individual countries' imbalances, the soundness of policy frameworks, and progress in structural reforms. For some countries, for example the Baltics, the pace of credit growth has come down markedly from earlier peaks. Slower growth in advanced economies has weighed on exports, while price shocks have dampened consumption. Risks to the growth outlook are tilted to the downside, stemming primarily from external demand and external financial conditions, while in some cases domestic asset price declines could have a significant impact on the balance sheets of households, enterprises, and financial institutions, further undermining growth.

The extent of the slowdown varies considerably across the region, depending on the speed of the earlier expansion, the resulting external imbalances, and the stance of macroeconomic policies. Growth in central-eastern Europe[5] is easing to rates just below trend. The moderation is more pronounced in southeastern Europe, though this region is expected to continue to grow at rates above or close to potential. Moreover, Romania, Moldova, FYR Macedonia, Bulgaria, and Albania have yet to show significant signs of slowing. The Baltic economies are experiencing a more abrupt adjustment, with recessions in Estonia and Latvia, correcting an unsustainable economic boom (Box 2). Turkey is also slowing, while Russia's oil-driven boom has started easing. Financial risks have risen appreciably, constituting a key downside risk to the outlook for most emerging economies.

Inflation Is Still a Concern . . .

Recent price shocks have affected emerging Europe substantially more than the rest of Europe, mainly due to the larger share of food and fuel in these countries' consumption baskets (see Chapter 2). Global energy and food price increases have had a significant impact on domestic prices of these items. However, domestic factors—such as weather conditions, convergence-related price pressures, and trade integration—have played a dominant role in determining food prices in recent years. Inflation in the region is projected to average about 11 percent in 2008–09 (Table 1). Half of the countries in the region have already hit double-digit inflation in 2008, with the highest rates observed in Ukraine, followed by Latvia, Belarus, and Russia.

[5] The Czech Republic, Hungary, Poland, and the Slovak Republic.

Box 2. The Baltics: Harder Times Ahead

Against a backdrop of wide economic imbalances, the Baltic economies are slowing sharply in response to a tightening of external financing conditions (figure). For years, domestic demand had grown too fast, driven by optimistic expectations about convergence, foreign-financed credit, and sharply rising real estate prices, amplified in some cases by procyclical fiscal policies. The resulting external and internal imbalances and financial risks eventually led the mainly Nordic-owned banks to tighten lending standards and slow credit growth, a move that has been reinforced by the global financial turbulence of the past year. As a result, growth has fallen. In Estonia, year-on-year growth fell close to zero in the first quarter of 2008; Latvia has experienced its slowest growth rate in a decade; and there has been some deceleration in Lithuania, albeit from a less elevated level.

While a correction of economic imbalances was needed, adjustment will not be easy. As demand continues to unwind, labor market pressures should dissipate and current account deficits narrow. But the resumption of balanced growth will involve reallocating resources from nontradables to tradables, and wage growth will need to move back into line with productivity growth. Even though the Baltic economies are relatively flexible, this could take some time, with competitiveness deteriorating in the interim. In the financial sector, slowing GDP growth will lead to a decline in credit quality, which will put pressure on bank capital; however, overall financial sector resilience will be supported by large foreign-owned banks with a long-term commitment to the region. The slowdown will also erode government revenue, pushing budgets into deficit, although low public indebtedness should mitigate concerns about fiscal solvency. The adjustment could be painful, but delaying would entail a longer and deeper growth slowdown.

While the burden of adjustment will fall primarily on the private sector—as described above—consistent and well-articulated policies will be needed to encourage smooth adjustment and maintain investor confidence:

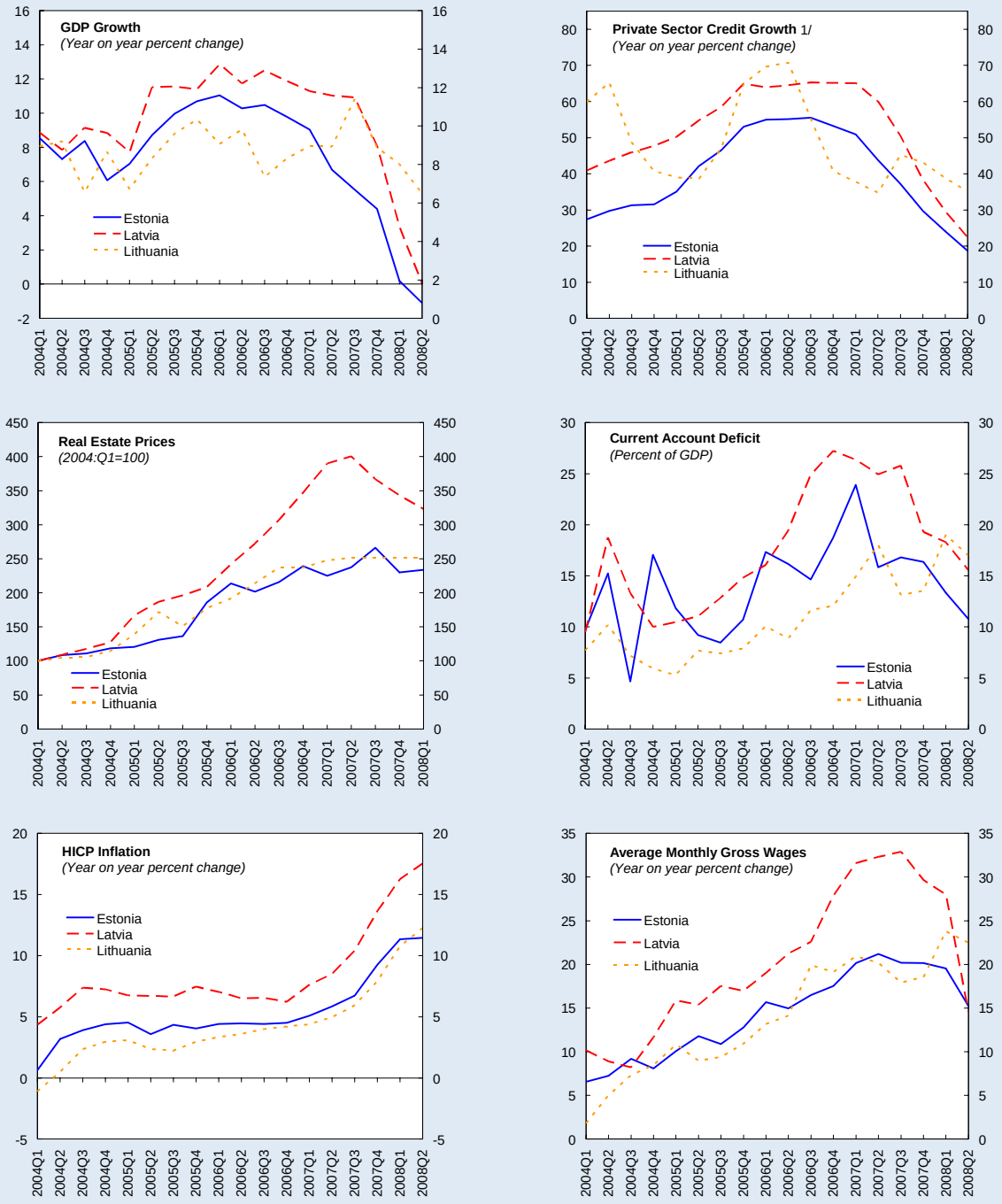
- Public communications should guide private sector expectations about a realistic adjustment path and emphasize the need for wage restraint.
- Adjustment can be facilitated by structural reforms to improve the flexibility of goods and factors markets.
- In the financial sector, the authorities should ensure that banks maintain adequate capital and liquidity, that high prudential standards are maintained, and that financial safety nets be upgraded where necessary.
- Automatic fiscal stabilizers should be allowed to operate, and discretionary easing of fiscal policy avoided.

. . . continued

Note: The main author of this box is Gavin Gray.

Box 2 *(concluded)*

Estonia, Latvia, and Lithuania: Economic Indicators



Sources: Haver Analytics; Emerging Markets Economic Data; Eesti Pank; Latvian authorities; and IMF staff estimates and calculations.

1/ For Estonia and Latvia, both banks and leasing companies' activities are included in the definition of private sector credit. For Lithuania, only bank lending is included.

Rising core inflation suggests that commodity price shocks have exacerbated existing overheating pressures (Figures 7 and 8 and Chapter 2). Continued strong demand (primarily in Bulgaria and Romania) and, in some cases, wages rising faster than productivity (primarily in central-eastern Europe) have been key factors. Core inflation so far in 2008 has increased the most in Russia and Bulgaria. It has fallen only in Hungary and Moldova.

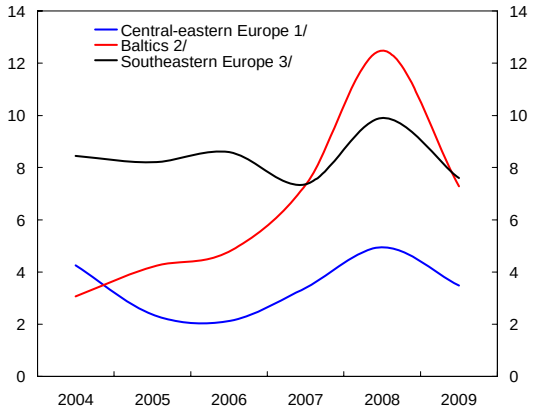
In contrast to advanced economies, several emerging economies in Europe have responded to the recent commodity price shocks with administrative measures to limit their impact on inflation and increase food supplies. Measures have included lower import tariffs and other trade barriers on selected food items (FYR Macedonia, Moldova, and Russia); selective food export taxes (Croatia and Russia); food export quotas (Ukraine); temporary export bans for wheat (Serbia); lower consumption taxes for food (Lithuania), public transportation (FYR Macedonia), and petroleum (Croatia); use of state commodity reserves to replenish domestic food supply (FYR Macedonia, Moldova, Montenegro, and Ukraine); subsidies and other support to agriculture (Belarus, Croatia, and Moldova); and a tax relief to oil refineries (Belarus). Attempts to limit food price inflation have also been undertaken through direct caps on price margins (Belarus) or by moral suasion (FYR Macedonia and Montenegro). These measures have not, on balance, substantially altered prevailing inflationary pressures.

. . . but External Imbalances Present the Major Risks

Risks of a hard landing remain elevated in parts of the region. Although external imbalances are expected to narrow as growth rates fall in most countries (Table 2), they remain high by historical standards and compared with other emerging economies. Moreover, about half of the countries in the region still have double-digit current account deficits as a share of GDP. Large external imbalances and a high dependence on foreign financing are exposing a number of countries in the region to external shocks and changes in international credit conditions and investors' sentiment. Decisions by foreign banks to limit their exposure to the region, following the recent increase in risk aversion and financial market volatility, could affect financial conditions more than domestic policies.

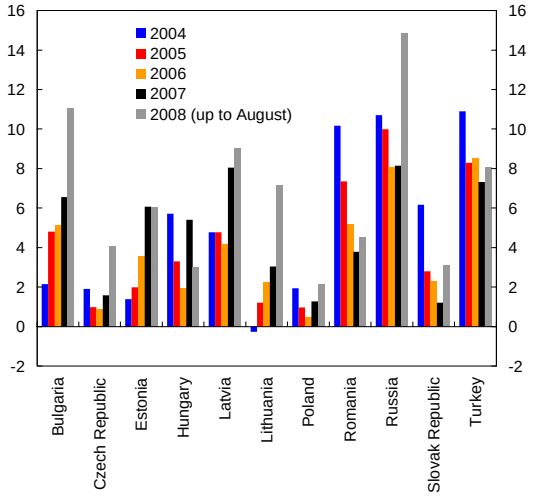
Indeed, market confidence has eroded recently. Risk premiums and borrowing costs have increased throughout the region since mid-2007,

Figure 7. Inflation in Emerging Europe, 2004–09
(Percent)



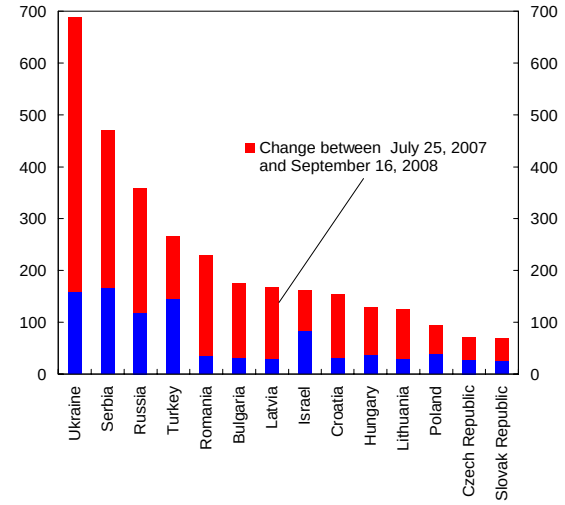
Source: IMF, *World Economic Outlook*.
1/ The Czech Republic, Hungary, Poland, and the Slovak Republic.
2/ Estonia, Latvia, and Lithuania.
3/ Albania, Bosnia and Herzegovina, Bulgaria, Croatia, FYR Macedonia, Moldova, Romania, Serbia, and Turkey.

Figure 8. Emerging Europe: Annual Inflation Excluding Energy, Food, Alcohol, and Tobacco 1/
(Percent)



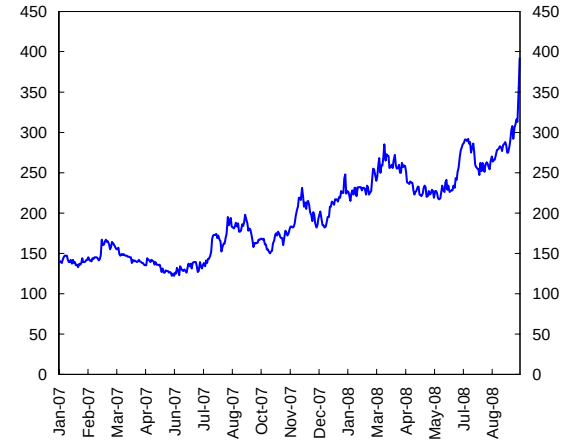
Sources: Eurostat; and Haver Analytics.
1/ Excluding food and gasoline for Russia.

Figure 9. Sovereign Spreads, July 25, 2007–September 16, 2008
(Basis points)



Sources: Bloomberg L.P.; and IMF staff calculations.

Figure 10. Emerging Europe EMBI+, January 2007–September 2008 1/
(Basis points)



Sources: Bloomberg L.P.; and IMF staff calculations.
1/ EMBI+ is the JPMorgan Emerging Markets Bond Index Plus.

although from historically low levels (Figures 9 and 10). Stock market indices have also dropped markedly in most countries so far in 2008; in the case of Russia triggering a temporary suspension of trading. Against the background of the seizure of U.S. financial markets in September, some emerging economies experienced capital outflows and/or a very sharp widening of spreads. Banks operating in emerging Europe are being affected by the widening turmoil in western Europe.

Policies Need to Engineer a Soft Landing

For nearly all of emerging Europe, tightening macroeconomic policies to reduce external imbalances and contain inflation, and putting in place contingency plans to deal with potential financial instability remain a priority. Where possible, monetary policy has been tightened (the Czech Republic, Poland, Romania, Russia, Serbia, and Turkey), and exchange rates have been allowed to appreciate to ease inflation pressures (particularly in central-eastern Europe). For central-eastern Europe, risks to inflation and growth now appear balanced, justifying keeping monetary policy on hold. Elsewhere, however, further tightening seems required to address concerns about second-round effects from recent price shocks and help reduce external imbalances. In south-eastern Europe, mindful of the more volatile external environment, reining in domestic demand, in particular by containing growth in public expenditure, is essential. Fiscal balances are projected to improve in one-third of the countries in 2008, and delivering on this intention will be essential (Table 2). In addition, with output still above potential in several countries and rising fiscal deficits in most, the pace of fiscal consolidation in the region needs to be stepped up. The challenge for Russia is to address the concerns about the stability of its financial system, while alleviating the impact of the commodity boom on domestic demand through a combination of monetary tightening, greater exchange rate flexibility, and a prudent fiscal stance (Box 3).

While fiscal consolidation remains key, some targeted and temporary income support for vulnerable households is needed and preferable to the use of administrative measures to attempt to curb inflationary pressures. Income support policies will need to be carefully designed to avoid adding to overall demand pressure. Administrative measures, which usually introduce further market distortions, preventing supply and demand from

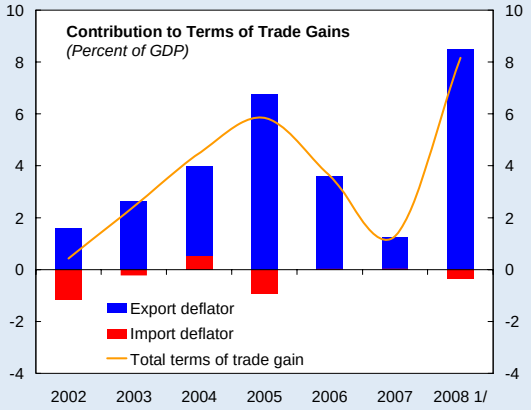
Box 3. Russia: Dealing with Surging Commodity Exports

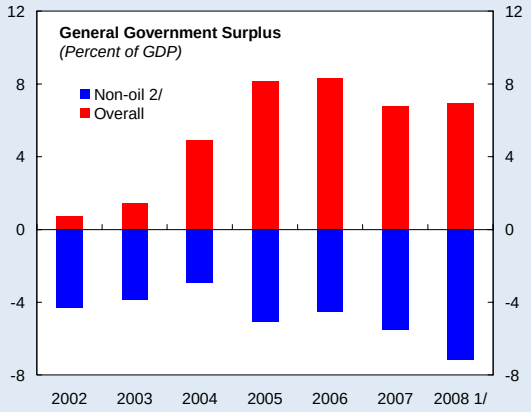
The worldwide surge in commodity prices is fueling Russia's already-booming economy. Like elsewhere, rising food and commodity prices have directly boosted domestic inflation, especially with food items representing over 40 percent of Russia's consumption basket. However, in contrast to most other European economies, Russian firms are benefiting from the commodity price boom. Oil and gas account for around 20 percent of GDP, and about 60 percent of export earnings (with coal, metals, and precious stones accounting for another 20 percent). Russia's terms of trade have increased by over 110 percent during 2000–08, representing a cumulative gain of about 25 percent of GDP. Almost one-third of this gain has accrued in 2008 alone.

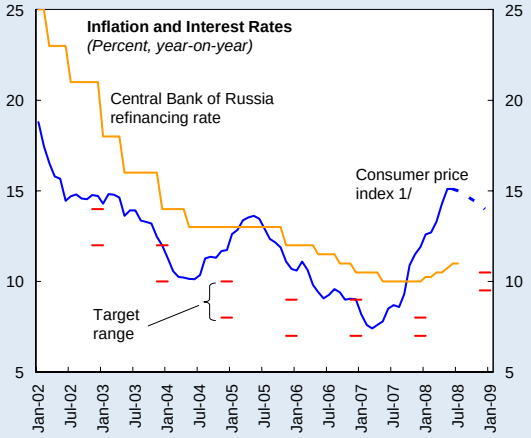
The effect on the domestic economy has been muted by the operation of Russia's Oil Stabilization Fund. Established in 2004, this fund has set aside 85 percent of all marginal windfall oil revenues in excess of $27 a barrel, and has been key in sterilizing the domestic impact of surging export revenues (figure).

Nonetheless, there has been significant leakage into domestic demand. With rising export prices adding to strong growth prospects, domestic demand has recently risen at a rate of about 15 percent a year, more than double most estimates of potential growth. As a result, inflation has moved up sharply, well beyond what can be justified by increases in food and energy prices. Temporary measures to calm select food prices in 2007, through export tariffs and strategic grain sales, were widely held to be ineffective, and have largely been allowed to lapse.

A gradual widening of the non-oil fiscal deficit has contributed to demand. This, in turn, stems from intense political pressure to spend more of Russia's windfall gains on the economy's critical social and infrastructure needs. Additionally, efforts to increase public savings through the stabilization fund have been offset by substantial private dissaving.







Sources: National authorities; and IMF staff calculations.
1/ Projections from July 2008.
2/ Excluding Yukos auction proceeds.

. . . continued

Note: The main author of this box is Andrew Tiffin.

Box 3 *(concluded)*

In this context, monetary policy has been largely accommodating, notwithstanding recent incremental increases in policy rates and reserve requirements. Concerned about Russia's external competitiveness, the central bank has been reluctant to allow nominal appreciation, and thus has heavily intervened in the foreign exchange market. With limited scope to sterilize these interventions, the result has been rapid money and credit growth and, ultimately, inflation. Deteriorating investor sentiment has recently added substantial volatility, with liquidity conditions tightening sharply and the exchange rate depreciating.

Against the background of this challenging environment, the IMF has advocated a different policy mix. Monetary policy will need to be refocused on inflation reduction in the context of more exchange rate flexibility. Moreover, fiscal policy will need to avoid any further stimulus until demand pressures ease. However, the recent disruption in domestic financial markets has complicated the policy response, requiring liquidity support and possibly use of fiscal resources to shore up the financial system.

adjusting to the new price signals, should be avoided. Instead, the current price shocks should be seized as an opportunity to remove existing distortions and unclog bottlenecks in domestic commodity markets, including by liberalizing commodity trade and eliminating production subsidies. Competition in the food and energy sectors could be enhanced to increase supply and ease price pressures. Land reform (for example, in Ukraine and Croatia) and public investment in energy efficiency would also pay off in the medium term.

In countries where the adjustment has been more abrupt—primarily in the Baltics—policies have to strike a balance among the needs to support the economy, control inflationary pressures, and sustain market confidence. The adjustment should be allowed to take its course, cushioned by the free operation of automatic fiscal stabilizers. Meanwhile, a strengthening of the financial system and its supervision, including the cross-border dimension, is paramount.

A reinvigorated commitment to structural reforms, including in the financial sector, could smooth the adjustment and improve the long-term prospects of the region. As previous IMF work has shown, parts of emerging Europe (primarily southeastern Europe, parts of central-eastern Europe, and the Commonwealth of Independent States countries) lag well behind progress achieved in the rest of Europe in liberalizing product and labor markets, creating a business-friendly environment, and tackling inefficient bureaucracies and corruption (IMF, 2008c). Continuing strengthening of financial sector supervision and progress in institutional reforms should ensure that financial development proceed without adding volatility, thus contributing to the region's convergence with the rest of Europe.

2. Europe: Coping with High Commodity Prices

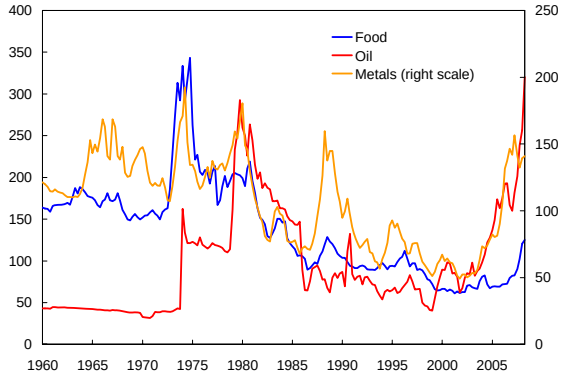
The surge in commodity prices has boosted headline inflation across Europe. Analysis in this chapter focuses on the risks to inflation. Though some rigidities remain, improved labor market flexibility, the weakening economy, and strong monetary policy credibility should help limit second-round effects in the advanced economies. The risks of spillovers of price pressures to a broad range of consumption goods are greater in the emerging economies, where food and fuel account for a substantial share of consumption.

Commodity prices have surged in recent years. Oil prices have doubled since the end of 2006. Global food and metals prices have also risen sharply (Figure 11). The current boom in commodities has also lasted longer than most historical episodes. With food and energy prices accounting for a significant share of consumption, the commodity price increases have boosted headline inflation across Europe (Figure 12). For some emerging economies, the rise in food and energy prices is adding to existing price pressures from overheating and convergence-related factors.

Large increases in commodity prices present a difficult challenge for policymakers. A major concern is that these increases have been so broad based and sizable that they may trigger a rise in inflation expectations and demands for higher wages, which would put upward pressure on all prices.[6] At the same time, commodity price rises depress real growth for the commodity-importing countries.

The commodity price boom raises the following key questions, which are addressed in this chapter:

Figure 11. Metals, Food, and Oil Prices in Real Terms, 1960:Q1–2008:Q2 1/
(Index, 1990=100)



Sources: Bloomberg L.P.; U.S. Department of Energy; U.S. Department of Agriculture; and IMF staff calculations.
1/ Prices in U.S. dollars, deflated by U.S.consumer price index. Metals comprise copper, lead, and zinc.

- What caused the increase in food and oil prices? How long will the boom last?
- What are the effects of the commodity price increase on core and headline inflation? Do these effects differ among countries in Europe? What are the risks to inflation?
- What factors do monetary policymakers need to take into account when judging the appropriate policy response? Are the fiscal actions taken by various European governments in response to the rise in commodity prices helpful?

Commodity Price Boom: Causes and Prospects[7]

The rise in oil prices is driven both by strong demand and by low spare capacity.[8] Strong global growth in recent years has pushed up demand for commodities. In particular, the growth acceleration in emerging and developing economies has played a

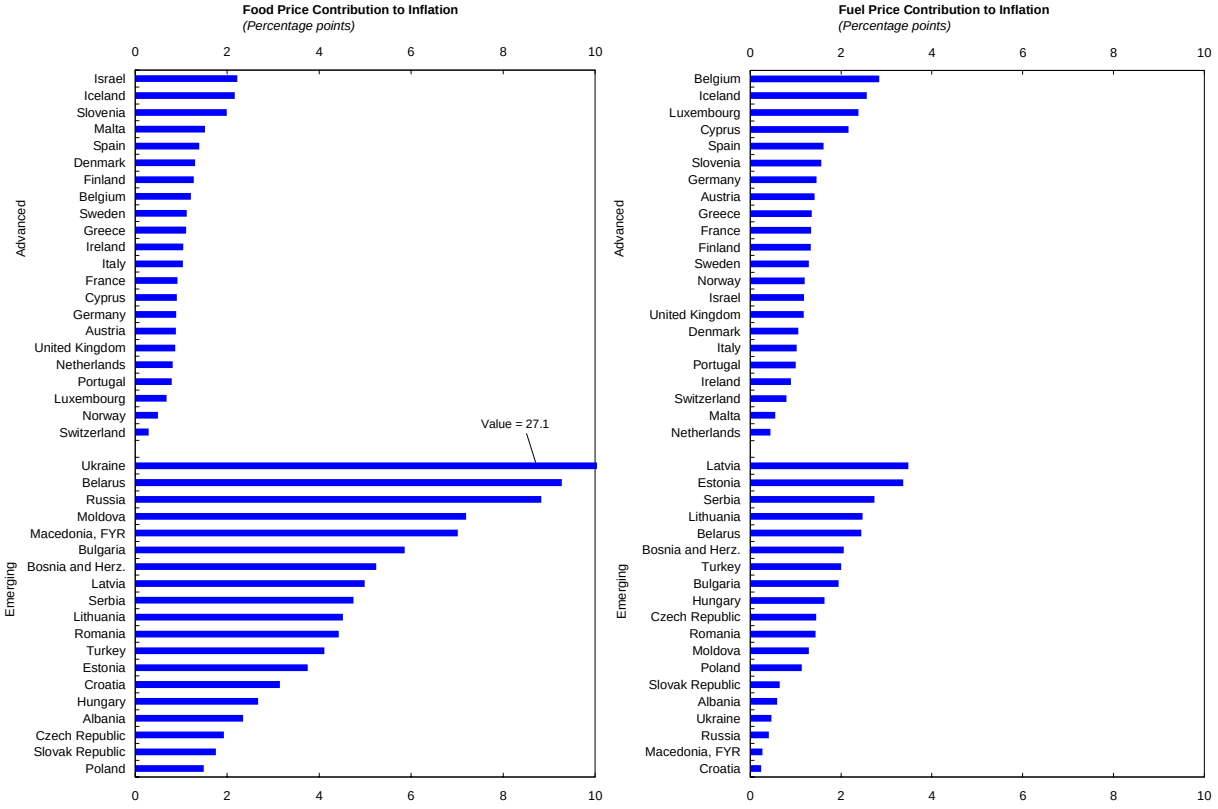
Note: The main authors of this chapter are Dora Iakova, Edda Zoli, Chadi Abdallah, Rodolfo Luzio, Emil Stavrev, Athanasios Vamvakidis, and Boriana Yontcheva.

[6] See Ball and Mankiw (1995) and Sims (2003) for a discussion of the possible effects of large relative price changes on inflation.

[7] This section is based on analysis presented in Chapter 3 of the October *World Economic Outlook* (IMF, 2008a).

[8] Financial speculation has been seen by some as an important factor driving up commodity prices. Analysis conducted by IMF staff does not find support for this view.

Figure 12. Advanced and Emerging Europe: Contribution of Food and Fuel Price Increases to Headline Inflation



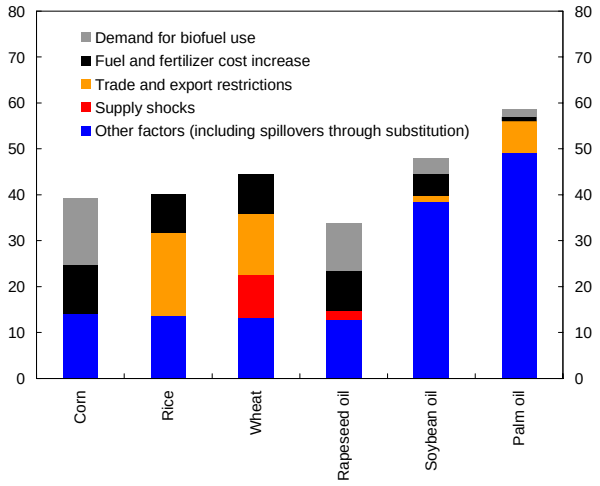
Source: IMF, *World Economic Outlook.*

key role since it has been commodity intensive. In addition, oil demand in many countries has been relatively insulated from rising prices through various policy measures, often at a significant fiscal cost.[9] On the supply side, markets have been vulnerable to disruptions, as spare capacity is at relatively low levels and the cost of developing new oil fields has risen. In the long term, oil price prospects will depend on how quickly capacity constraints ease and on the responsiveness of demand to high prices. However, in real terms, fuel prices will remain significantly above the low levels of the early 2000s. Futures markets suggest that oil prices in U.S. dollars are expected to remain around their current spot level.

Food prices have been pushed up by a combination of rising demand and weather-related supply shocks. Strong consumption growth, especially in the emerging economies, contributed to the increase in food prices. Soaring demand for corn and vegetable oils from biofuel producers has been an additional factor. On the supply side, droughts in 2006 and 2007 damaged grain crops. Higher energy costs and rising fertilizer prices have also boosted food production and distribution costs. Finally, the imposition of more restrictive food trade policies in a number of countries has caused a temporary overshooting of prices. The estimated contribution of each of these factors to the global rise in prices for some major foods varies considerably (Figure 13). Looking forward, the resolution of weather-related supply disruptions and the removal of trade restrictions will lead to some easing of prices. Nonetheless, price pressures from high energy prices and rising biofuel production will remain.

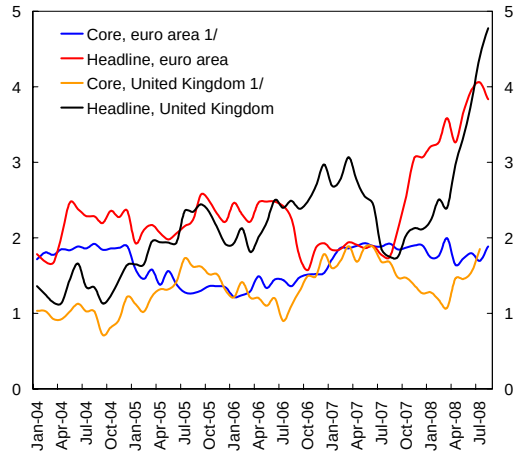
[9] See IMF (2008e).

Figure 13. Contributors to Price Increases of Major Foods
(12-month average percent change, 2006:H1–2008:H1)



Sources: U.S. Department of Agriculture; Food and Agriculture Organization; and IMF staff calculations.

Figure 14. Headline and Core Inflation, January 2004–August 2008
(Percent)



Source: Eurostat.
1/ Harmonized index of consumer price inflation (excluding energy, food, alcohol, and tobacco).

To summarize, prices of commodities relative to other goods are likely to stay at a higher level. The issue facing policymakers is how to facilitate a smooth adjustment of relative prices and ensure that the rise in headline inflation remains a temporary phenomenon. The following section looks at the implications of the commodity price boom for inflation prospects in Europe.

Effect of Commodity Price Increases on Inflation in the Advanced Economies

Higher international oil and food prices raise domestic inflation directly, by affecting the energy and food components of the consumer price index (CPI). Most of the increase in headline inflation in advanced Europe over the last year has been due to this "first-round" effect. Meanwhile, core inflation (a measure of inflation excluding food and energy) has remained subdued so far (Figure 14).

There could also be "second-round effects" on inflation, if workers demand higher wages to compensate for the loss in their purchasing power and if firms pass on the higher costs of production to the price of other goods. There are concerns that the current period of persistently high commodity price inflation may unhinge inflation expectations and trigger demands for higher wages, which would affect all prices.

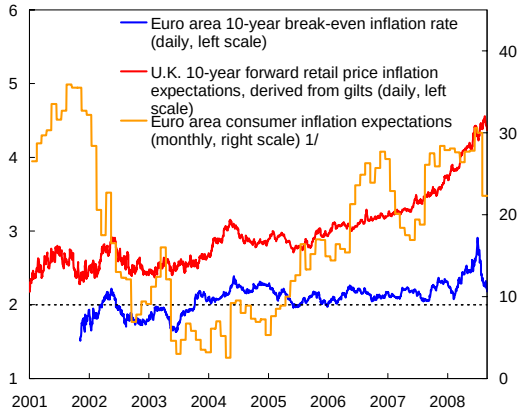
Turning to the data, inflation expectations have increased both in the United Kingdom and in the euro area, although the July rate hike in the euro area seems to have reversed the upward trend in inflation expectations (Figure 15).[10] Labor costs in the euro area have also edged up over the past year but remain relatively contained (Figure 16).

To assess the likelihood that rising commodity prices could cause broader price pressures, the historical pass-through of commodity prices to core inflation is analyzed, using a vector autoregression (VAR) model for a set of advanced economies (Box 4). The results of the analysis suggest the following:

- The pass-through from international fuel prices to domestic headline and core inflation has diminished considerably since the 1970s. As discussed in Blanchard and Gali (2007), the muted response to oil price shocks in recent years can be explained by a combination of

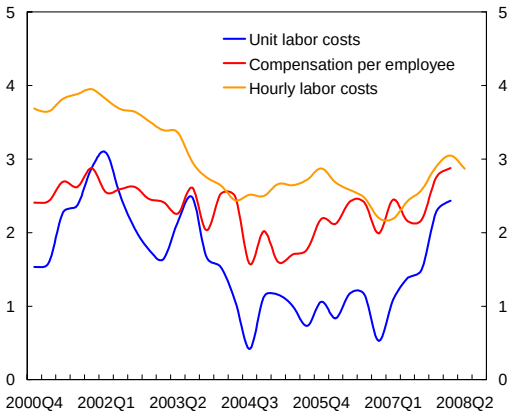
[10] The break-even expected inflation rates—derived from bond prices—for the United Kingdom have also stabilized since late August.

Figure 15. Inflation Expectations in the Euro Area and the United Kingdom, 2001–08
(Percent)



Sources: Bloomberg L.P.; European Central Bank; Haver Analytics; and IMF staff calculations and forecasts.
1/ European Commission survey of consumers; price trends over the next 12 months; balance statistic.

Figure 16. Labor Costs in the Euro Area, 2000:Q4–2008:Q2
(Year on year, percent)



Sources: Eurostat; European Central Bank; Haver Analytics; and IMF staff calculations.

better monetary policy, more flexible wages, and a lower oil intensity of production in the advanced economies.

- The pass-through from international to domestic food prices seems to have strengthened somewhat since the mid-1990s, following a number of reforms that increased competition in agricultural production. Nonetheless, the pass-through from food price shocks to core inflation remains relatively low for most countries.

To summarize, in contrast to the 1970s, energy price increases have not had a significant effect on core inflation over the last two decades for the advanced economies. The effect of food price rises on core inflation has also been relatively small. However, one should keep in mind that the cumulative commodity price increases over the last four years have been higher than anything experienced in the previous two decades, so the actual pass-through going forward may still surprise on the upside.

To complement this analysis, the inflation outlook for the euro area and the risks around it are evaluated using econometric analysis and model simulations based on more recent data (Box 5). The econometric forecasting models take into account recent developments in the domestic and global economy that can influence inflation. The forecasts suggest that inflation would start to fall gradually toward the inflation target as commodity price growth subsides and economic growth slows. However, the risks around the central forecast are substantial. A forward-looking structural model of the economy also implies that the combination of a relatively tight monetary policy stance, slowing economic growth, and deteriorating financial conditions will gradually dampen inflationary pressures.

Effect of Commodity Price Increases on Inflation in the Emerging Economies[11]

The rise in commodity prices has had an even larger impact on headline inflation in the emerging economies in Europe, due to the larger share of food and fuel in their consumption baskets. To assess the effect of international commodity price changes on domestic inflation, a VAR model is

[11] The underpinning analytical work for this section is presented in Zoli (forthcoming).

Box 4. Pass-Through of Commodity Price Shocks to Inflation in Some Advanced European Economies

To evaluate the impact on inflation of commodity price shocks and separate it from other potential inflationary pressures, such as economic growth and monetary policy, a five-variable structural vector autoregressive (SVAR) model is used. The domestic price response of commodity price shocks for 12 European countries is assessed, as well as the changes over time in the nature and size of those effects.[1] The baseline VAR includes the following variables: the nominal price of oil and food, different measures of domestic inflation (food, energy, core, and headline), a measure of economic activity, and a measure of the monetary stance.[2]

Fluctuations in crude oil prices are found to be no longer as important as they were 20 to 30 years ago. Estimates of the impact of a 10 percentage point oil price shock on domestic energy inflation, core inflation, and headline inflation are reported for two different sample periods, pre- and post-1986 (first table).[3] The break date chosen is one commonly identified in the literature, and each subperiod contains two large oil shock episodes (Blanchard and Gali, 2007). First-round effects persist, as part of the increase in oil prices is mechanically reflected in the energy component of the consumer price index (CPI). However, and more important, the impact on headline inflation is more subdued after 1986, and the shock does not last as long. This evidence is consistent with Blanchard and Gali's (2007) hypothesis that the macroeconomic effects of oil price shocks have become more negligible in advanced economies in recent years, owing to a combination of better monetary policies, more flexible wages, and lower oil dependency.

Inflation Response to an Oil Price Shock
(Peak response within the first six months, percentage points)

	Energy Inflation		Headline Inflation		Core Inflation	
	Pre-February 1986	Post-February 1986	Pre-February 1986	Post-February 1986	Pre-February 1986	Post-February 1986
Austria	0.32	0.91	n.s. 1/	0.03	n.s.	n.s.
Belgium	0.86	1.06	n.s.	n.s.	n.s.	n.s.
Denmark	0.84	0.98	n.s.	n.s.	0.10	0.08
Finland	0.93	0.92	0.17	0.05	0.24	n.s.
France	0.58	0.95	0.15	0.08	0.13	n.s.
Germany	0.84	0.73	n.s.	0.05	n.s.	n.s.
Sweden	0.68	0.41	0.06	n.s.	n.s.	n.s.
United Kingdom	0.35	0.81	0.24	0.09	0.16	0.01

Source: IMF staff estimates.
Note: Impulse responses to a 10 percentage point shock to oil price inflation. Results are reported only for countries for which responses were significant at the 90 percent level.
1/ "n.s." means not significant.

. . . *continued*

Note: The main authors of this box are Chadi Abdallah, Rodolfo Luzio, and Boriana Yontcheva. See Yontcheva, Abdallah, and Luzio (forthcoming) for a detailed description of the analytical work.

[1] Austria, Belgium, Denmark, Finland, France, Germany, Greece, Italy, Norway, Portugal, Sweden, and the United Kingdom.

[2] Data were stationary in first differences. The dollar price of oil was used rather than the real price of oil, to avoid dividing by an endogenous variable, the GDP deflator. Data come from the International Financial Statistics database and cover the period from January 1970 to December 2007.

[3] Oil shocks are identified by assuming that only oil price shocks can influence oil prices in the long run; only oil and food shocks are allowed to influence international food prices in the long run. A vertical, long-run Philips curve is assumed to give two restrictions, which state that monetary policy shocks and aggregate demand shocks have no long-run impact on industrial production. Additionally, monetary policy shocks are not allowed to have a contemporaneous effect on real economic activity.

Box 4 *(concluded)*

Contrary to the findings on oil price shocks, the impact of international food price shocks has been more pronounced in recent years. Domestic food inflation shifted up more and remained positive for a protracted period after 1996.[4] The impact on headline inflation follows mechanically, though it is less than proportional, while core inflation remains relatively unaffected, except for Germany and Sweden (second table).

A possible explanation for the more intense pass-through of food prices in the past decade lies in the major institutional and policy changes experienced by European countries in the 1990s. The MacSharry reform—the first major reform of the Common Agricultural policy (CAP), launched in 1992[5] and implemented over the subsequent four years—replaced market support by direct income support. This reform, accompanied by compulsory set-asides of arable land, led to a rapid decline in supply and in stocks. In addition, following negotiations for the Uruguay Round and the creation of the World Trade Organization in 1995, market support from the CAP (the intervention price and the associated border measures that determined import tariffs and export refunds) was significantly reduced, thus curtailing incentives for supply surpluses and reducing the space for buffering future shocks.

Inflation Response to a World Food Price Shock
(Peak response within the first six months, percentage points)

	Food Inflation		Headline Inflation		Core Inflation	
	Pre-May 1996	Post-May 1996	Pre-May 1996	Post-May 1996	Pre-May 1996	Post-May 1996
Austria	n.s. 1/	1.58	n.s.	0.19	n.s.	0.16
Belgium	0.50	0.57	n.s.	n.s.	n.s.	n.s.
Finland	n.s.	0.99	n.s.	n.s.	n.s.	n.s.
France	n.s.	0.86	n.s.	0.40	n.s.	0.19
Germany	n.s.	1.28	n.s.	0.44	n.s.	0.50
Greece	n.s.	2.10	0.48	0.62	n.s.	n.s.
Italy	n.s.	0.52	n.s.	0.12	n.s.	0.08
Sweden	0.28	0.58	n.s.	0.26	n.s.	0.46
United Kingdom	0.22	0.96	n.s.	0.24	n.s.	0.27

Source: IMF staff estimates.
Notes: Impulse responses to a 10 percentage point increase shock to world food price inflation. Results are reported only for countries for which responses were significant at the 90 percent level.
1/ "n.s." means not significant.

[4] A structural break in the international food price series seems to have occurred in 1996, coinciding with a rise in U.S. demand for ethanol and increased corn imports by developing countries, in particular China and Mexico (European Commission, 2008).

[5] The pre-1992 CAP guaranteed a minimum price to producers and imposed a system of variable tariffs, as well as a system of storage and disposal of surplus domestic production. This system was extremely "successful" in expanding agricultural production, leading to sizable supply surpluses and consequent costly budget expenditures.

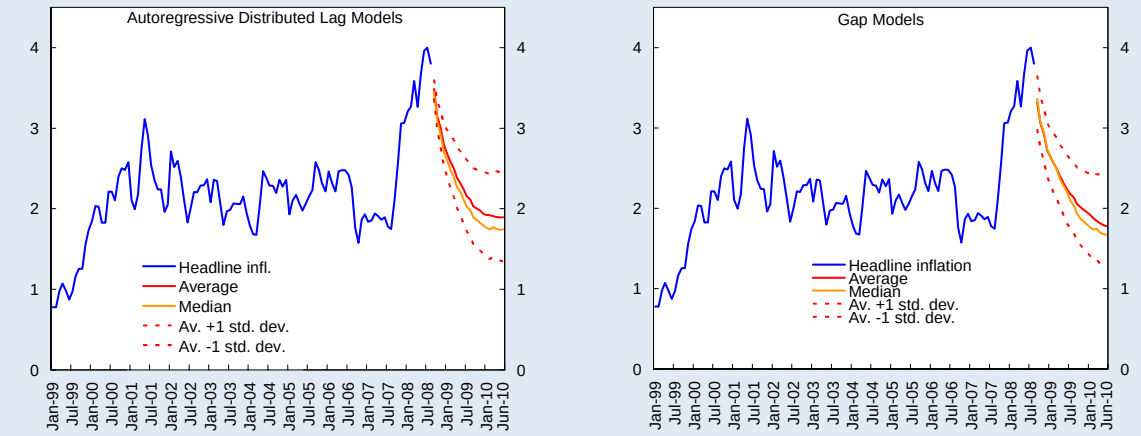
Box 5. Inflation Outlook in the Euro Area

This box uses two approaches to form a view about the inflation outlook and the risks around it. First, a set of inflation forecasts is produced from a large number of empirical forecasting models.[1] The advantage of this approach is that it captures the effects of numerous macroeconomic variables on the inflation process; the disadvantage is that it is backward looking. Second, a small structural model of the euro area is used to project inflation.[2] This approach has the advantages of being forward looking, accounting for simultaneity of the shocks, and incorporating the ECB's policy response.

The results from the set of inflation-forecasting models suggest that inflation will decline over the next two years to the ECB's target of "below but close to 2 percent" (first figure). The distribution of the inflation forecasts implies substantial risks around the central forecast. In that regard, the interaction between wages and inflation expectations is key, as Granger causality tests suggest they do affect each other.

The results from the structural model also portray a benign inflation outlook. Because of the tight financial conditions and the expected weakening of aggregate demand, inflation is projected to decline below 2 percent by the end of 2009 (second figure). The model results therefore support the ECB's view that, following the increase in the policy rate by 25 basis points to 4.25 percent in July, "the monetary policy stance ... will contribute to achieving our objective" (see ECB, 2008c).

Euro Area: Econometric Model Forecasts of Inflation (Starting June 2008)
(Year on year, percent)



Sources: Eurostat; and IMF staff estimates.

. . . *continued*

Note: The main author of this box is Emil Stavrev.

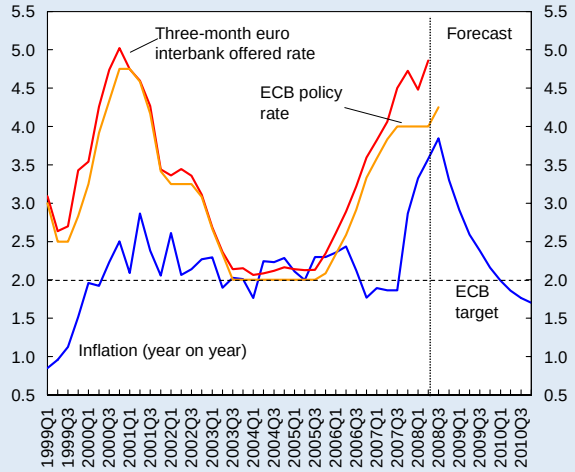
[1] For the methodology and further details on the forecasting framework, see Stavrev (2006).

[2] The model has three behavioral equations—aggregate demand, aggregate supply (inflation equation), and a monetary policy reaction function. Important elements of the model are the central bank's credibility and forward-looking nature of market participants. Additional features are the estimation of model-consistent potential output and natural interest rates. The model is estimated using Bayesian techniques, with quarterly data from the first quarter of 1993 to the second quarter of 2008.

Box 5 *(concluded)*

On balance, the results suggest that the combination of a tighter monetary stance, slowing growth, and tighter overall financial conditions is gradually dampening the inflationary forces. However, there are risks to the inflation outlook. On the downside, the real economy may slow even more sharply than currently envisaged. On the upside, with the labor market sill somewhat tight, there are some risks of second-round effects. Going forward, economic and labor market developments will be of particular importance.

Euro Area: Inflation Forecast with Structural Model
(Percent)



Sources: ECB; and IMF staff estimates.
1/ Based on the harmonized index of consumer prices.

used.[12] The results suggest that increases in world fuel prices have a significant impact on domestic energy inflation in most countries (Table 3). The pass-through is very rapid—the peak effect is typically reached in six months (or less) after the increase in world prices.

Shocks to international food price inflation also have a significant impact on domestic food inflation for many emerging economies (Table 3). However, variance decompositions suggest that, while 30 percent of the variability of domestic fuel prices can be attributed to global price shocks, only 10 percent of the volatility in domestic food prices can be attributed to changes in global food prices. Therefore, domestic factors—such as local weather conditions, rising wages and transportation costs, increasing local demand for higher-value-added food items driven by income convergence, and continuing trade integration—are key drivers of local food prices.[13]

Table 3. Response of Domestic Food and Energy Inflation to International Commodity Price Inflation Shocks 1/
(Percentage points)

	Response of Domestic Food Inflation to International Food Price Inflation Shocks 2/	Response of Domestic Energy Inflation to International Oil Price Inflation Shocks 2/
Bulgaria	n.s. 3/	1.2
Croatia	n.s.	0.1
Czech Republic	n.s.	1.0
Estonia	3.6	1.9
Hungary	2.6	n.s.
Latvia	2.2	1.0
Lithuania	3.6	1.2
Macedonia, FYR	n.s.	1.6
Poland	2.5	0.6
Serbia	n.s.	1.6
Slovenia	n.s.	1.4
Slovak Republic	1.1	1.8
Turkey	4.0	1.8
Ukraine	6.0	n.s.
Average	3.2	1.3

Source: IMF staff calculations.
1/ Results are reported only for countries for which responses are significant at 95 percent level. Size of the shocks: 10 percentage point increase in international food and oil price inflation.
2/ Maximum response within 12 months.
3/ "n.s." means not significant.

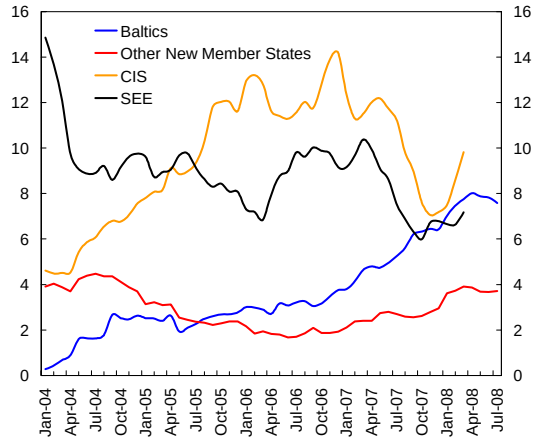
[12] The model includes the following variables: world fuel and food inflation, the 12-month change in the industrial production index as a measure of economic activity, domestic energy inflation, domestic food inflation, core inflation, the 3-month money market rate, and the 12-month change in the nominal effective exchange rate. The model is a "near" VAR as international food and fuel prices depend only on their lagged values, and not on domestic variables. Block-exogeneity tests confirm the validity of this assumption. The model is estimated on monthly data from the late 1990s to March 2008. Impulse responses are obtained using the Cholesky decomposition, with the variables ordered as listed above. For Ukraine, a dummy is included among the explanatory variables to account for the spike in energy import prices from Russia in 2006–07.

[13] For net food exporters, surging international food prices increase domestic demand, which adds to inflation pressures.

Complementing this analysis, a panel regression was estimated to examine the contribution of various factors to changes in domestic food inflation.[14] The results show that, over the past year, three factors explain most of the increase in domestic food price inflation: the international food price shocks, disruptions in local agricultural production due to bad weather, and inflation inertia. Real effective exchange rate appreciations had a moderating effect on inflation in a number of countries.

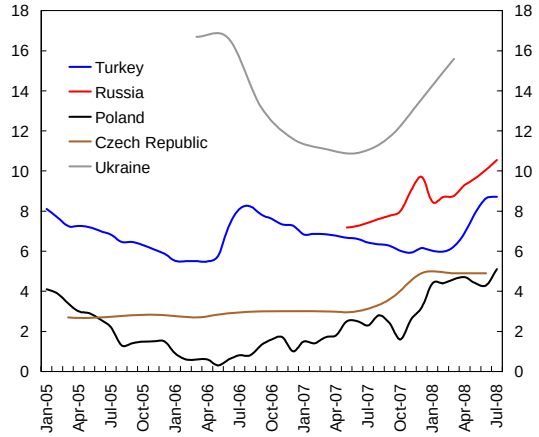
There are tentative signs that rising commodity prices are causing broader price pressures in emerging Europe. Over the last year, core inflation has edged up, inflation expectations have risen, and unit labor costs have increased in a number of economies (Figures 17–19).[15] Of course, these developments may also be caused by overheating pressures and tight labor markets. To isolate the effect of commodity price changes on core inflation from other factors, the responses of core inflation to changes in domestic food and fuel prices are examined in the VAR framework.[16] The results imply that some emerging economies are susceptible to second-round effects. The spillover from domestic food inflation shocks to domestic core inflation is positive and significant in eight countries, while the spillover from fuel price increases to core inflation is significant in five countries (Table 4).

Figure 17. Core Inflation 1/
(12-month percent change)



Sources: Eurostat; and national authorities.
1/ Baltics: Estonia, Latvia, and Lithuania; other New Member States: the Czech Republic, Hungary, Poland, the Slovak Republic, Bulgaria, Romania, and Slovenia; CIS: Moldova and Ukraine; SEE: Albania, Croatia, FYR Macedonia, Serbia, and Turkey.

Figure 18. Inflation Expectations 12 Months Ahead, 2005–08
(Percent)



Sources: National authorities; and Consensus Economics.

Panel estimates also suggest possible spillovers from commodity price developments to core inflation.[17] Over the past year, domestic food

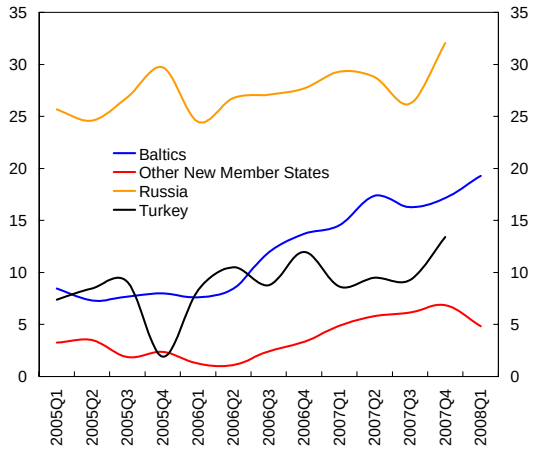
[14] The panel regression, estimated with quarterly data, is the following: Annual domestic food price inflation = 5.9 + 0.18 * Annual domestic food price inflation$_{t-4}$ – 0.10 * Deviation of agriculture value added from a trend$_{t-1}$ –0.09 * Price level relative to EU-15 price level$_{t-1}$ + 0.14 * International food price inflation + 0.14 * Annual change in the VAT rate – 0.34 * Annual change in nominal effective exchange rate$_{t-1}$ – 0.09 * Money market rate$_{t-6}$ + 0.3 * Annual percent change in per capita income.

[15] Core inflation is defined as headline inflation excluding the food and energy components. Admittedly, in some emerging economies, these excluded items make up a large portion of the consumption basket.

[16] Since domestic factors have a significant effect on domestic food and fuel prices for the emerging economies (with international factors playing only a partial role), the focus is on the impact of domestic food and fuel prices on core inflation, while accounting for common driving factors such as demand pressures and exchange rate changes.

[17] Annual core inflation = 4.8 + 0.44 * Annual core inflation$_{t-4}$ + 0.28 * GDP gap$_{t-1}$ – 0.07 * Price level relative to EU-15 price level$_{t-1}$ + 0.21 * Annual domestic food price inflation$_{t-1}$ + 0.07 * Annual domestic energy price inflation$_{t-1}$ + 0.25 * Annual change in the VAT rate – 0.11 * Annual change in nominal effective exchange rate$_{t-1}$– 0.08 * Money market rate$_{t-6}$.

Figure 19. Changes in Unit Labor Costs, 2005–07 1/
(Percent)



Source: OECD; and Haver Analytics.
1/ Baltics: Estonia, Latvia, and Lithuania. Other New Member States: Bulgaria, the Czech Republic, Hungary, Poland, Romania, the Slovak Republic, and Slovenia. Excludes Bulgaria and Slovenia in the fourth quarter of 2007 and Poland, Romania, and Slovenia in the first quarter of 2008.

Table 4. Response of Core Inflation to Shocks to Domestic Food and Energy Price Inflation 1/
(Percentage points)

	Domestic Food Price Inflation Shock 2/	Domestic Energy Price Inflation Shock 2/
Bulgaria	0.6	n.s. 3/
Czech Republic	1.4	n.s.
Estonia	1.3	n.s.
Latvia	1.2	n.s.
Lithuania	2.4	1.2
Macedonia, FYR	1.2	0.5
Romania	3.0	n.s.
Serbia	n.s.	0.7
Slovenia	2.5	n.s.
Turkey	n.s.	2.7
Ukraine	n.s.	1.0

Source: IMF staff calculations.
1/ Results are reported only for countries for which responses are significant at 95 percent level. Size of the shock: 10 percentage point increase in domestic food and energy price inflation.
2/ Maximum response within 12 months.
3/ "n.s." means not significant.

inflation has been the most important contributing factor to the rise in core inflation in emerging Europe. Other factors, such as inflation inertia, real effective exchange rate changes, and price convergence, have played a smaller role.

Policy Responses

Policymakers have taken various actions to mitigate the negative impact of high food and fuel prices on consumers (Table 5). A number of countries have tightened monetary policy, while

Table 5. Emerging and Developing Europe: Policy Responses to Inflation Pressures 1/

	Policy Rate Hike/ Sterilization	Direct Measures 2/	Prudential Measures for Credit	Inflation Target Adjusted	Exchange Rate Appreciation	Tight Fiscal Policy	Other Policies 3/
Bulgaria	√	√ (1, 3)	√			√	10
Croatia		√ (1, 2, 3)	√		√		2, 3, 5
Czech Republic	√				√		4
Estonia			√			√	
Hungary	√		√		√	√	6, 7
Israel	√				√		3
Latvia		√ (1 lowered)	√			√	3
Lithuania			√				3 (food), 4 (fuel)
Poland	√				√	√	4, 10 (gradual)
Romania	√		√				
Russia	√	√ (1,2)					2, 5, 8, 9
Serbia	√		√				2
Slovak Republic	√				√		9
Turkey	√			√ 4/			4 (de facto)
Ukraine	√	√ (2)	√	√ 5/	√	√ only recently	2, 5, 6 (expected), 7

Sources: IMF Country Reports and Selected Issues; area department desks; national central bank inflation reports and websites; Economy Watch; and news articles.
1/ This table was contributed by Inci Otker-Robe.
2/ 1 = Reserve requirements, 2 = capital control, 3 = credit controls.
3/ 1 = Higher tax on energy; 2 = higher tax or restrictions on exports; 3 = lower value-added tax, sales taxes on selected items (food, energy, etc); 4 = higher value-added tax, other taxes on selected items; 5 = increased subsidies (explicit or implicit) on agriculture/energy items; 6 = social safety nets; 7 = increase in minimum wage; 8 = lower import tariffs; 9 = price controls or moral suasion to keep prices low; 10 = increase in administered prices.
4/ Initially the target horizon and inflation forecast; subsequently, the target level adjusted upward.
5/ Government inflation forecast adjusted upward.

others have changed their tax and tariff policies. In response to public pressure, some governments have considered cutting gasoline taxes. Model simulations suggest, however, that such measures would be counterproductive (Box 6). Generally, fiscal and structural policies should focus on easing supply bottlenecks, providing the right incentives to producers and consumers, and ensuring a well-functioning social safety net for the most vulnerable. The following sections discuss some factors that monetary policymakers need to consider when faced with commodity price shocks.

The Appropriate Monetary Policy Response to Commodity Price Increases . . .

Sharp increases in commodity prices present a difficult challenge for monetary policymakers in the commodity-importing countries. Higher input costs reduce real growth, while putting upward pressure on inflation. Setting an interest rate path that helps the economy adjust smoothly is a delicate balancing act. As the experience of the 1970s shows, policy mistakes can have serious

Box 6. The Effects of Cutting Taxes on Gasoline

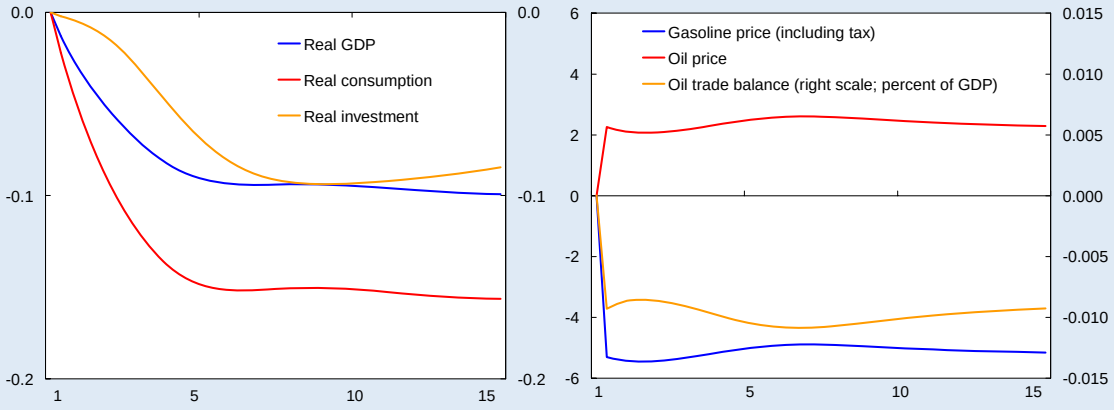
Some governments have considered cutting taxes on gasoline to mitigate the impact of the oil price increase on consumers. While there is a case for using social policy to protect the most vulnerable from the rise in commodity prices, an across-the-board cut in gasoline taxes is not a good policy proposal for three reasons. First, it is not targeted. Second, demand for oil will be higher than it would have been in the absence of policy intervention, and thus the price of oil will be higher. Finally, a cut in gasoline taxes may have to be financed by raising other taxes, likely with negative effects on economic growth.

The economic impact of a gasoline tax reduction is assessed using an extended version of the IMF Global Economy Model (GEM) that explicitly incorporates production and trade in oil (Elekdag and others, 2008; and Lalonde and Muir, 2008).

The response of oil prices, output, consumption, and investment in the euro area to a 10 percentage point reduction in ad valorem gasoline taxes is shown in the figure. The reduction of gasoline taxes is assumed to be financed by an increase in taxes on labor income, which have significant disincentive effects on labor supply. The gasoline tax cut slows the process of substitution away from energy consumption. Oil prices rise relative to the baseline, offsetting some of the effect of the lower gasoline taxes for the consumer. The oil trade balance deteriorates, and the real exchange rate depreciates to stimulate exports and crowd out imports. The increase in labor taxes reduces aggregate employment and investment. Consumption declines, owing both to the negative wealth effect of higher oil prices and to the reduction in productive capacity and real income.

Instead of reducing gasoline or food taxes, a better approach is to develop a well-targeted social safety net. From an efficiency standpoint, it is better to pass on the full commodity price increase to consumers since that will encourage producers to raise supply and consumers to adjust demand. From a fairness standpoint, the benefits of reducing consumption tax rates accrue disproportionately to the higher-income households, since they consume a larger absolute amount of all goods (including energy and food). At the same time, it is the poorest households that are least able to cope with the price increases, given the large share of food in their consumption baskets. A policy of targeted transfers would ameliorate the impact of higher commodity prices on the most vulnerable without creating distortions or imposing an undue burden on the budget.

Euro Area: Ten Percent Reduction in Gasoline Tax Rates
(Deviation from baseline, in percent)



Source: Simulation based on the model in Elekdag and others (2008).

Note: The main authors of this box are Dora Iakova, Douglas Laxton, and Dirk Muir.

negative economic consequences.[18] The magnitude of the economic effects and the appropriate monetary policy response will depend, among other factors, on the presence of nominal and real rigidities in the economy, on the drivers of the oil price increase, and on the degree of policy credibility.

. . . Depends on the Flexibility of Labor Markets, . . .

How can producers respond to rising nonwage costs? In the short run, they can accept a reduction in profits. However, capital markets reward firms with higher rates of return, so lowering profit margins could be only a temporary solution. In the medium term, firms should either raise productivity or reduce real wages.[19] In case of a downward rigidity of wages, the monetary authorities have to raise interest rates to prevent a wage-price spiral.

Model simulations illustrate the effects of temporary real wage resistance after a rise in the price of oil (Figure 20).[20] In the baseline scenario (the solid line), wages adjust promptly in response to higher oil prices triggered by a disruption in oil supply. In the second scenario (the dotted line), real wages are assumed to remain unchanged for two years before gradually coming down to the new equilibrium. In the latter case, there is a secondary spike in inflation (a second-round effect) as firms increase prices to be able to pay the higher wages. Interest rates need to rise by more and stay higher longer to bring inflation back to target. The tight monetary policy will result in greater output loss than in the scenario of flexible labor markets. In summary, if real wages adjust quickly, monetary policymakers can accommodate the commodity price increase, minimizing the impact on the real economy. If not, monetary policy will need to remain tight to prevent second-round effects.

Structural reforms have improved the flexibility of labor markets in Europe over the past two decades. Employment rates have been on a trend rise in a number of countries. In addition, the globalization of the labor markets, and especially the greater mobility of labor within the European Union, has helped keep wage growth broadly in line with productivity. Therefore, wage adjustment should be smoother than in the 1970s. However, based on various measures of labor market rigidities, many advanced European countries still rank among the economies with less flexible labor markets, and some still have wage indexation. This fact explains the close watch that policymakers are keeping on wage developments in Europe.

. . . on the Credibility and Experience of Monetary Policymakers, . . .

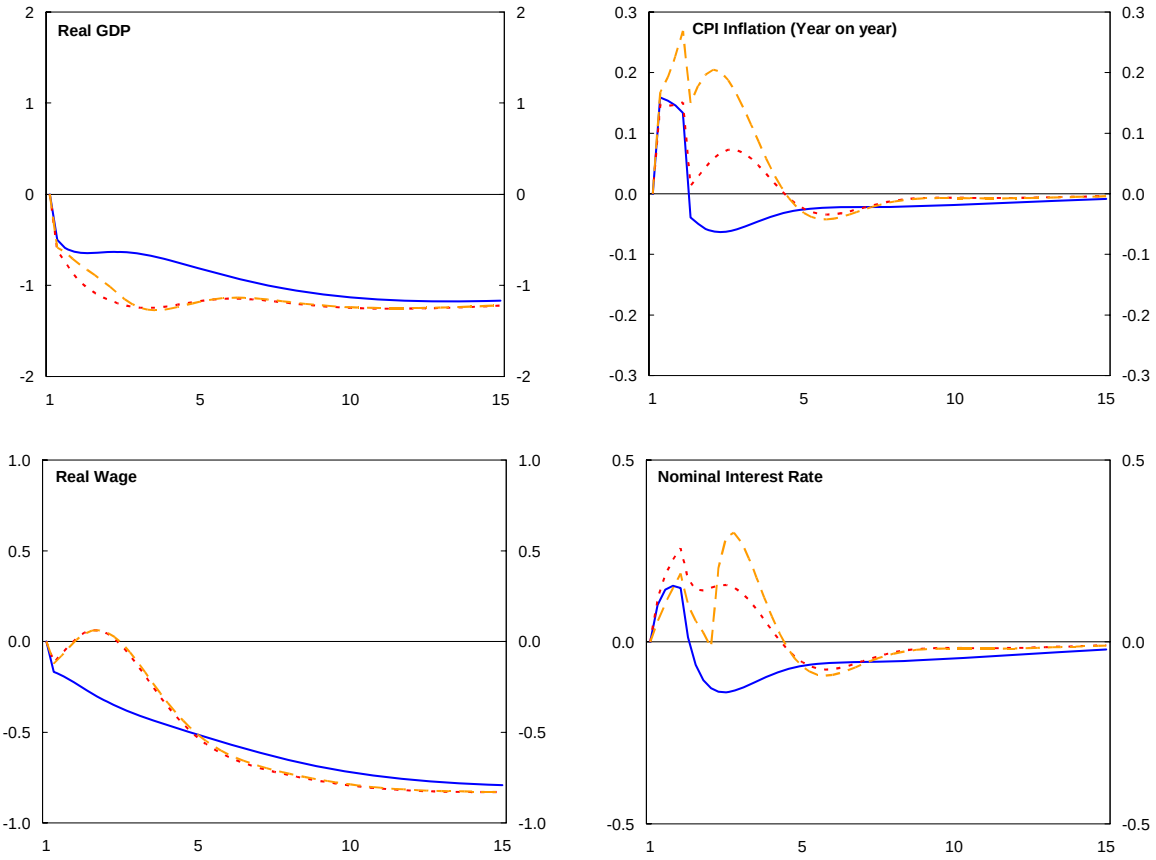
The appropriate monetary policy response would also depend on the degree of policy credibility. The higher the inflation-fighting credibility of the central bank, the more likely it is that inflation expectations will remain contained, and the easier it will be to bring inflation down. Several central banks in Europe, including the European Central Bank, have tightened policy over the last year to signal commitment to their inflation targets. For some emerging economies,

[18] Commodity prices rose steeply in the 1970s against a background of already-rising inflation and low interest rates. Wage earners, organized in powerful unions, tried to preserve their purchasing power and demanded higher wages, which led to second-round effects on inflation. In response to the commodity price shock, initially monetary policymakers focused on maintaining high growth rates and continued easing monetary policy, further increasing inflation. High inflation became entrenched in many countries. Eventually, inflation was brought down by substantial, sustained monetary policy tightening, at the cost of a significant output loss and high unemployment.

[19] Theoretically, when the price of an input in the production function (energy) increases, the marginal product of labor declines, implying that real wages will need to adjust accordingly. Energy-intensive capital becomes obsolete; therefore, the capital stock also declines. Overall, an increase in commodity prices is equivalent to a negative productivity shock, and, therefore, potential output declines.

[20] The model is the IMF's Global Economy Model, augmented with energy prices, and calibrated for the euro area. Details on the model calibration and simulations are available from Dora Iakova.

Figure 20. Wage Resistance and a Policy Error
(Percentage point deviation from baseline)



Source: IMF, Global Economy Model simulations.
Notes: Solid line = energy sector supply shock; dotted line = supply shock with temporary wage resistance; and dashed line = temporary wage resistance and a policy error.

which are showing signs of overheating and where policymakers' credibility is still being established, monetary policy may have to tighten further.

After the experience of the 1970s, monetary policymakers have come to realize that a rise in commodity prices driven by a reduction in supply reduces the productive capacity of the economy. This leads to a temporary moderation of real growth rates, and attempts to stimulate the economy to maintain high growth rates only intensify the upward pressure on inflation. The effect of such a policy error is illustrated in Figure 20 (the dashed line). In this simulation, policymakers continue to target a high growth rate, without realizing that the level of potential output has declined. In this case, the initial monetary policy stance is overly expansionary, and the spike in inflation is higher and more persistent than in the baseline case.[21]

In practice, estimating the reduction in potential output associated with the energy price shock is subject to methodological challenges and data problems. IMF staff analysis suggests that the 2007–08 increase in oil prices could reduce the level of potential output in the European economies by about ½ to ¾ percentage point

[21] In the simulation, policymakers understand their mistake after two years and correct their policy response. Since the model assumes rational expectations, anchored on the inflation target, there is no substantial cost in terms of lost output. In the real world, there is an added complication—once inflation expectations move above the target and the central bank credibility diminishes, it becomes very costly to reduce inflation.

(Box 7). To avoid overheating, policymakers, especially in some emerging economies, should resist the temptation to maintain the exceptionally high growth rates seen in recent years. This is of particular importance at present because the current commodity price boom, unlike the 1970s boom, is driven by a combination of oil supply constraints and excess demand. The following section explains why the source of the energy imbalance matters.

. . . and on the Source of Oil Price Pressures

Does the source of the energy market imbalance—excess global demand or limited supply—matter for the effects of the oil price shock on inflation and the real economy? To answer this question, two simulations are conducted using the IMF's Global Economy Model, calibrated on the euro area. In the first one, the increase in oil prices is driven by a reduction in oil supply capacity. In the second, productivity increases in emerging economies raise global demand and the price of oil. The results illustrate the difference in economic outcomes, depending on the source of the imbalance, and the appropriate policy responses (Box 8).

If energy prices rise because of a reduction in oil supply, there is an unambiguous reduction in the productive potential of the world economy. As long as labor markets are flexible and workers accept a one-off reduction in their real wages to match the decline in labor productivity, relative prices will adjust quickly and the rise in inflation will be temporary. However, if the energy price increase is driven by rising productivity in emerging markets, the long-run effects will be different. The euro area will experience rising demand for exports and an increase in the relative price of its exports, which would offset, at least to some extent, the negative output effects of the oil price increase. Rising global demand will trigger a rise in domestic wages and exert upward pressure on inflation. In the second scenario, interest rates need to remain elevated for an extended period to bring inflation down.

During the current boom, both supply and demand factors have contributed to the rise in energy prices. The above analysis suggests that monetary policy authorities in Europe need to be even more vigilant about the inflationary consequences of commodity price increases if higher productivity in the emerging economies is an important cause of the rise in energy prices. If policymakers treat the commodity price surge as driven only by a reduction in oil supply capacity, they will amplify inflationary pressures.

Policy Conclusions

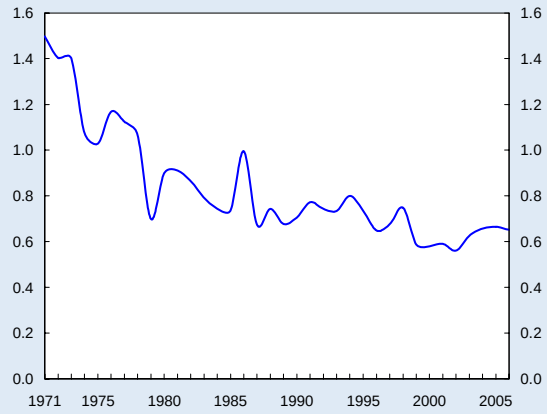
Will the boom in commodity prices lead to a sustained increase in inflation in Europe? For advanced economies, the empirical findings of this chapter give ground for cautious optimism. In contrast to the 1970s, energy price shocks over the last two decades have not had a significant effect on core inflation. Though rigidities remain, improved labor market flexibility, strong monetary policy credibility, and the weakening economy should help limit second-round effects. However, the pass-through to core inflation may still surprise on the upside. When choosing the optimal monetary policy stance, policymakers in advanced economies will have to continue to balance carefully the upside risks to the inflation outlook against the disinflationary impact of decelerating activity.

In emerging economies, where food accounts for up to half of the consumption basket, concurrent large increases in food prices have a greater potential to affect inflation perceptions and feed into core inflation. Therefore, in the countries where the commodity price shocks are coming on top of existing price pressures from overheating, and where monetary policy credibility is still being established, a tighter monetary policy stance may be justified. In the countries where economic activity is decelerating, but inflation

Box 7. Impact of High Oil Prices on Potential Output in Europe

A key consideration for policymakers in their response to oil price shocks is the extent to which such shocks affect the supply capacity of the economy. Even though oil intensity of production has fallen in Europe in recent decades (first figure), a panel VAR, production function estimates, and simulations of an empirical growth model for net oil-importing European countries indicate that the 2007–08 increase in oil prices could reduce the level of potential output by about ½ to ¾ percent.

Advanced European Oil-Importing Economies: Oil Intensity of Production, 1971–2005
(Net imports of oil barrels per thousand of real U.S. dollar GDP)

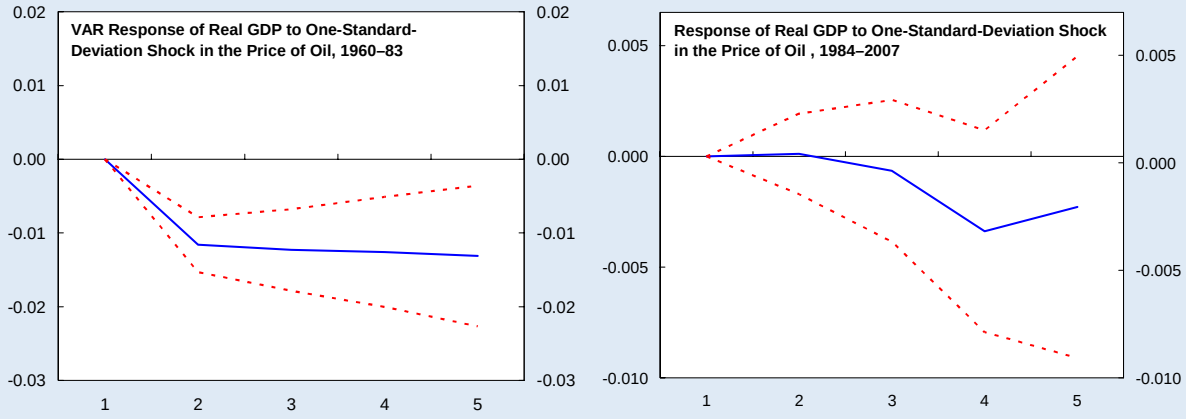


Sources: IMF, *World Economic Outlook;* and IMF staff calculations.

Time-Series Evidence

The medium-term impact of oil prices changes on real output in advanced economies is estimated through a panel VAR.[1] The model is estimated separately for the periods 1960–83 and 1984–2007, following Blanchard and Gali (2007), who find the impact of oil price on U.S. output to be considerably larger in the first period. The results for the period 1960–83 show that an increase in the oil price of one standard deviation ($12.20) leads to a decline in real GDP of 1.3 percent in the medium term. However, an increase in the oil price of one standard deviation in the period 1984–2007 ($15.40) leads to a decline in real GDP of only about 0.25 percent (second figure). Therefore, the negative impact of oil on output has been considerably smaller in recent decades (and is not statistically significant). These estimates suggest that the 2007–08 oil price increase could reduce real GDP by 0.8 percent in the medium term, in the worst case scenario.

Advanced European Oil-Importing Economies: Impulse Response Functions and Response of Real GDP to Changes in the Oil Price, 1960–83 and 1984–2007



Source: IMF staff calculations.

. . . . *continued*

Note: The main author of this box is Athanasios Vamvakidis.

[1] The sample includes advanced European economies with positive net imports of oil for the period 1960–2007. Emerging European economies are excluded because their available GDP time series are relatively short for this type of analysis.

Box 7 *(concluded)*

Evidence from a Production Function and a Cross-Country Panel

Estimates from a production function for all European economies with positive net imports of oil suggest that the recent increase in the price of oil ($36 a barrel in 2008) could reduce real GDP growth by an annual average of 0.2 percentage point in the next four years, equally in advanced and emerging economies (first column of table).[2] The results are sensitive to the assumption for the oil price elasticity. The table includes the midpoint of a range of possible estimates.[3]

Impact of Oil Price on Potential Real GDP Growth in Oil-Importing European Economies
(Based on the WEO assumption for oil prices during 2008–10)

	Impact on Potential Growth Based on Estimates from a Cobb-Douglas Production Function	Impact on Potential Growth Based on Estimates from a Panel Growth Regression with Fixed Country Effects and Controlling for Other Growth Determinants
Average, Europe	-0.2	-0.3
Of which		
Advanced Europe	-0.2	-0.2
Emerging Europe	-0.2	-0.4

Source: IMF staff calculations.

Estimates from an econometric growth model suggest that the recent oil price increase will reduce growth in oil-importing European economies by an annual average of 0.3 percentage point over the medium term. More specifically, the higher oil price projected for 2006–10[4] could slow annual growth during this period by 0.2 percentage point in advanced oil-importing European economies and by 0.4 percentage point in emerging economies.[5] These estimates are derived from a panel regression model, with fixed country effects, covering 77 oil-importing economies (European and non-European) from 1965 to 2005. The dependent variable is the average per capita real GDP growth. The list of independent variables includes the standard growth determinants found in the literature. In addition, the regression includes the price of oil, deflated by the U.S. consumer price index, and its interaction with the lagged net imports of oil barrels per thousands of real dollar GDP. The results are presented in the second column of the table.[6]

[2] Technology is assumed to be Cobb-Douglas with three factors, capital, labor, and oil—and with constant returns to scale. The capital stock for advanced European economies is estimated using the perpetual inventory method. For emerging economies, the capital stock estimates are taken from the April 2008 *Regional Economic Outlook: Europe*, Chapter 3. The oil input in production is assumed to be equal to each country's oil trade deficit in barrels. The income share of labor is as in the April 2008 *Regional Economic Outlook: Europe*, Chapter 3, or from Barro and Sala-i-Martin (2004). The oil income share is calculated as the ratio of each country's oil trade deficit in U.S. dollars divided by GDP in U.S. dollars. Based on the constant-returns-to-scale assumption, the capital income share is one minus the income shares of labor and oil.

[3] The estimates are the midpoint of two extreme scenarios: at one extreme, the country does not change its net imports of oil barrels in response to the increase in the price of oil, in which case its net oil import–to-GDP ratio increases proportionally to the oil price increase; at the other extreme, the country keeps its GDP share of net oil imports constant, in which case its imports of oil barrels adjust fully to the oil price increase over the medium term.

[4] The oil price is assumed to average $89 during 2006–10, based on the latest WEO global assumptions—an increase of $55 in nominal terms, or 129 percent in real terms, compared with the previous five-year period.

[5] The estimates should be considered as the upper limit of a possible range, which will be falling as countries adjust to the price shock by reducing the oil intensity of their production.

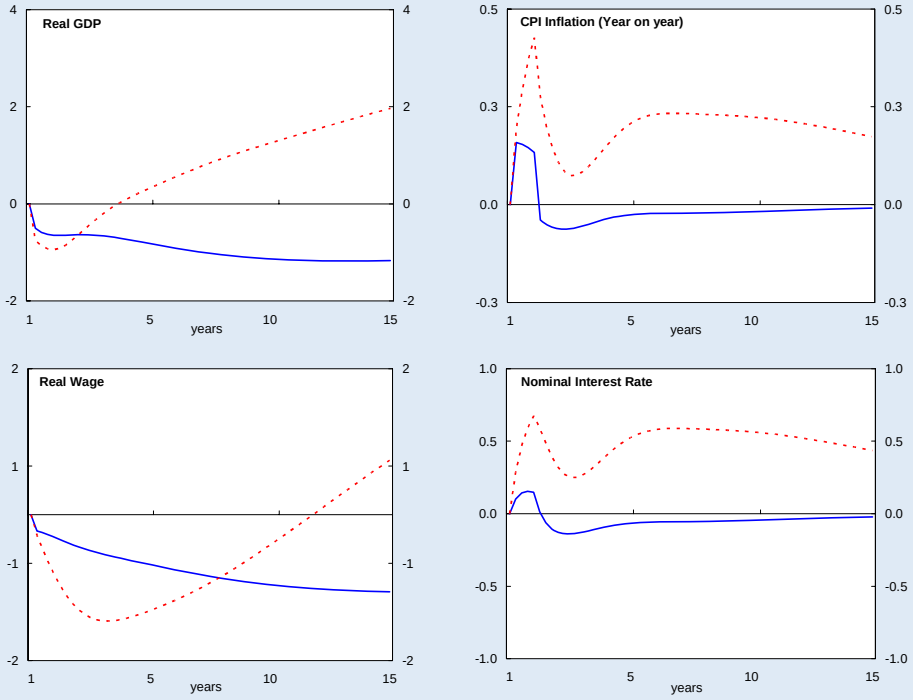
[6] The estimated model is the following (heteroscedasticity-consistent *t*-statistics in parentheses): –3.69(–4.89) per capita GDP – 4.74 (–2.96) age dependency ratio + 0.16 (4.64) investment / GDP + 0.03 (4.60) trade / GDP + 0.29(3.27) net imports of oil barrels per thousand of real dollar GDP – 0.004 (–0.27) real price of oil – 0.006(–3.82) net imports of oil barrels per thousand of real dollar GDP * real price of oil + 0.73 (3.96) time trend; adj. R^2 0.49. The inclusion of fixed country effects is justified by the Hausman test. The price of oil is statistically significant only as an interaction with the oil intensity of production.

Box 8. Does the Driver of the Energy Imbalance Matter?

To evaluate the role of different drivers of the energy imbalance, this box conducts two simulations using the IMF's Global Economy Model (GEM).[1] In the first one, the increase in oil prices is driven by a reduction in oil supply capacity. In the second, productivity increases in emerging economies raise global demand and the price of oil.

In the first simulation, a permanent increase in the price of energy of about 50 percent is generated by restricting the supply of oil. The increase in the price of energy (an input in production) causes a permanent decline in real output of 1 percentage point, a reduction in the capital stock, a decline in the marginal product of labor, and, therefore, a reduction in the real wage (the solid line in the figure). Consumer price inflation increases modestly on impact and then returns to target within two years. Here, it is assumed that households accept without resistance the decline in the real wage. Therefore, the increase in energy costs is offset by lower real wages, and there are no second-round effects affecting consumer price inflation. Under these assumptions, the monetary authorities can afford to accommodate the temporary increase in headline inflation, and real interest rates remain broadly unchanged.

Alternative Drivers of Energy Price Increases
(Percentage point deviation from baseline)



Source: IMF, Global Economy Model simulations.
Note: Solid line: energy sector supply shock; dotted line: rest-of-the-world tradable sector productivity shock.

…continued

Note: The main author of this box is Dora Iakova.

[1] The GEM is a large macroeconomic model, augmented with an energy sector. A two-country version of the model is constructed, representing the euro area and the rest of the world. The euro area is a net importer of energy. Energy is produced with a fixed factor (land), labor, and capital, and can be used both as an intermediate input in production and as a final consumption good. For a general description of the GEM, see Laxton and Pesenti (2003). Hunt (2006) describes the incorporation of energy into the GEM. This simulation is based on the euro area calibration of the model used in Bebee and Hunt (2008).

Box 8 *(concluded)*

In the second simulation, a similar increase in the price of energy is achieved by assuming rising tradable sector productivity growth in the rest of the world. This captures the idea that fast growth in emerging Asia has been important in driving up energy demand and energy prices. Rising productivity in the tradable sector abroad will lower prices of tradable goods imported by the euro area. The positive terms of trade effect of falling non-energy prices will offset the negative impact of higher energy prices on domestic output growth. In addition, rising incomes abroad will increase demand for euro area exports. The euro area exchange rate will depreciate (a Balassa-Samuelson effect), further stimulating exports. In this case, the decline in real GDP is only temporary. As exports pick up and the terms of trade improve, GDP recovers, rising above the baseline in the long run.[2]

In contrast to the first simulation, the rise of inflation is very persistent in the second simulation. This phenomenon reflects the recovery in real wages and increased demand pressures, driven by rising export demand and the wealth effect from an improvement in the terms of trade. In this scenario, interest rates must remain elevated for an extended period to contain the inflationary pressures.

[2] The precise magnitude of the positive effect will depend on the direct trade linkages between the euro area and the fast-growing emerging economies. A number of other factors will also affect the economic outcome in reality. The policy of energy price controls in some large emerging markets does not allow the higher international price of energy to mitigate demand in these economies. This situation would keep oil prices higher than in the absence of such a policy. The policy of fixing the exchange rate to the dollar that some emerging markets and oil exporters follow could also delay economic adjustment and reduce the magnitude of the effects described above.

remains high, policymakers should resist pressure to maintain the recent high growth rates. In some emerging economies with fixed exchange rates, maintaining a tight fiscal policy stance may be warranted to prevent second-round effects.

In both advanced and emerging economies, fiscal and structural policies should aim to ease supply bottlenecks and provide the right incentives to producers and consumers. Universal subsidies and commodity tax reductions may entail fiscal costs—with the benefits accruing primarily to the higher-income households—and provide distorted price signals, which could ultimately reinforce global price pressures. Recognizing the drawbacks of this type of measures, last June EU member countries confirmed the 2005 Manchester agreement—which called for avoiding the use of distorting fiscal and other policies—and expressed support for temporary and well-targeted actions.

Some countries have imposed export restrictions or price caps to keep food prices low. Such policies should be avoided as they discourage farmers from expanding agricultural production in response to rising world prices. In contrast, tariff reductions can help by reducing trade distortions and mitigating price increases. Also, countries with restrictions on the use of land for agriculture should consider taking measures to ease them. Finally, domestic competition could be promoted to increase supply and ease price pressures.

3. The European Credit Cycle: Diverging Patterns

Differences in country-specific financing conditions may account for a dispersion of responses to a turnaround in the credit cycle across Europe. Moreover, by reinforcing the role of financial assets as borrowing collaterals, developments in national housing and corporate finance systems have the potential to make bank lending procyclical. In this way, the financial sector can amplify business cycle fluctuations as well as the impact of monetary policy shocks and asset price movements on real activity. Cross-border ownership of assets further bolsters this mechanism. By affecting the behavior of banks' capital buffers over the cycle, banking regulation might have some role to play in mitigating procyclical swings in domestic credit conditions and, thereby, in lessening macroeconomic volatility.

Overview

The ongoing financial market turmoil has drawn considerable attention to the impact of a tightening in financial conditions on real activity in European economies and on cross-border financial linkages.[22] From a theoretical perspective, two stylized facts appear to be widely recognized. First, financial systems are inherently subject to cycles—with growth in lending, leverage, and asset prices often magnifying underlying economic dynamics—leading, at times, to a buildup of financial imbalances followed by sharp corrections. Second, financial cycles can, in turn, have an impact on the macroeconomy both by affecting lenders' capital adequacy—and, hence, their ability to extend loans—and by altering asset prices and value of collaterals, thereby impinging on borrowers' creditworthiness and their ability to borrow.[23] From a policy viewpoint, the recent distress in the financial system has required regulators and policymakers to devise new ways of containing systemic risks and lessening the likelihood of boom-bust episodes in the future.[24]

Against such a background, this chapter evaluates the responses of individual (advanced and emerging) European economies to changes in asset prices and credit supply and examines how differences in national financing conditions may account for the dispersion in their responses. Specifically, answers are sought to the following questions: (1) to what extent have financing conditions affected growth in European countries over the latest credit cycle? (2) what drives divergences in the strength and in the timing of macrofinancial linkages across European countries? (3) which European countries are more susceptible to a turnaround in the credit cycle and asset prices? (4) how can policy contribute to mitigating the effects of boom-bust dynamics? (5) in which European economies are such stabilization policies most needed? and (6) how—and to what extent—do cross-country spillovers complicate this picture?

The evolution of financial positions in European Union (EU) countries over the latest credit expansion and the macroeconomic impact of financial conditions among selected European economies since 1999 offer a broad view of the mechanisms through which financial shocks affect Europe's macroeconomic stability—the so-called macrofinancial linkages. In the process, the chapter

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Note: The main author of this chapter is Silvia Sgherri. Analytical underpinnings are provided in Gruss and Sgherri (forthcoming) and Galesi and Sgherri (forthcoming).

[22] For recent studies on the impact of a "credit squeeze" on European economies, see IMF (2008c), Čihák and Koeva Brooks (forthcoming), and references therein. An analysis of the scope for cross-border spillovers among major EU banks is provided in Čihák and Ong (2007).

[23] The role of balance sheet effects and collateral in credit cycles was first singled out by Bernanke and Gertler (1989), and later developed by Kiyotaki and Moore (1997) and Bernanke, Gertler, and Gilchrist (1999). A well-known exposition of the procyclical feature of financial systems is Minsky's financial instability hypothesis (Minsky, 1992).

[24] For policy recommendations addressing recent weaknesses in the financial sector, see IMF (2008b).

provides an overview of the state of household and firm balance sheets, the dynamics of credit and asset prices over the business cycle, and the importance of financial spillovers across Europe. Calibrated simulations provide a first gauge of the effectiveness of policies aimed at smoothing the cyclical pattern of lending standards. The key findings are as follows:

- First, the latest credit expansion had a very limited impact on the growth of the advanced economies of Europe as a whole, while contributing substantially to the growth of emerging European economies. Within these country groups, the dispersion of performance was considerable, both across countries and across sectors. With the economic effects of a downturn in the credit cycle still playing out, such a dispersion is expected to remain wide, if not widen further.
- Second, cross-country divergences in households' borrowing/saving decisions over the cycle appear to be strictly related to domestic mortgage market characteristics: in countries where the loan-to-value (LTV) ratios are high, the level of mortgage debt relative to GDP also tends to be high, while consumption is likely to be more volatile and more sensitive to underlying financial shocks.
- Third, the stringency of collateral constraints in bank lending seems to have a bearing on cross-country dissimilarities in debt and investment dynamics in the corporate sector. In this context, in economies with more rationed access to credit, equity prices are found to be more sensitive to underlying changes in fundamentals. This greater sensitivity is likely to induce higher volatility to investment, debt, and the current account balance.
- Fourth, country-specific financial condition indices for the corporate sector reveal important divergences in the timing and the strength of macrofinancial linkages across European countries. Possibly more interestingly, country-specific financial condition indices provide a clear picture of the extent to which bank lending to the corporate sector tends to be procyclical.
- Fifth, a cross-country scrutiny shows that the responsiveness of credit growth to changes in asset prices is positively related to the degree of procyclicality in corporate leverage. In turn, procyclicality in lending tends to increase the volatility of capital accumulation. This relationship implies that, wherever credit conditions are more likely to co-move with the cycle, credit availability becomes more sensitive to variations in equity prices—and boom-bust dynamics are thereby magnified.
- Sixth, a reduction in the procyclicality of bank lending following, for example, the introduction of a countercyclical element into banks' regulatory provisions, is found to substantially reduce the volatility of investment of financially integrated economies. In particular, stability gains appear to become more important in economies that are more financially constrained.
- Finally, greater financial integration and the increasing prevalence of cross-border ownership of assets are found to be associated with better growth opportunities, with the link stronger in countries where integration is faster. At the same time, though, these developments in international financial markets have the potential to further amplify business cycle fluctuations and the impact of asset price movements on real activity by increasing the strength of cross-border financial spillovers.

All in all, this chapter points to the perils of procyclicality in bank lending in a number of European countries, while suggesting that banking regulation might have some role to play in mitigating procyclical swings in credit conditions by affecting the behavior of banks' capital buffers over the cycle, particularly in financially integrated economies with tighter borrowing limits. The analysis also suggests that financial integration and adequate coordination of financial policies across Europe, and especially within the European Monetary Union, are essential to foster smooth and growth-oriented adjustment. It

also underscores the need for supervision to keep pace with increasingly complex linkages across borders.

Vulnerability to Changes in Financial Conditions

According to the so-called financial accelerator mechanism, a credit cycle is set in motion by any shock—from monetary policy, financial liberalization, or technology—that pushes asset prices up. This financial cycle then tends to get amplified over time: as asset price gains drive the value of borrowers' collateral up and as banks' capital positions improve (with fewer defaults and delinquencies), banks are willing to supply more credit and households and corporates are willing to borrow more (as rising asset prices and improving business conditions increase their perception of net worth). The recent credit cycle—in Europe as elsewhere—was mainly driven by a low interest rate environment and by developments in mortgage market securitization, although these effects were probably magnified by investor complacency (see Box 9).

Although bank balance sheets have continued to expand over recent months and bank lending to euro area nonfinancial corporations has so far remained strong—reaching a record nominal annual growth rate of 15 percent in March 2008 (see Chapter 1, Figure 5)—the credit cycle seems to have turned in most advanced and emerging European economies. Higher borrowing costs, tighter bank lending standards, and the effective closing of some credit market segments are all evidence of this turn.[25]

Data also confirm a gradual moderation in house price inflation that is broadly based, notwithstanding a certain degree of heterogeneity across countries.[26]

As a result of these developments, lending growth is expected to slow across the board over the coming months, with due allowance for some lags owing to the average maturity of precommitted credit agreements.

To what extent have financing conditions affected growth in European countries over the latest credit cycle? Which economies are more susceptible to a turnaround in the credit cycle and asset prices? An economy's vulnerability to a turn in the credit cycle largely depends on the degree of overextension of household and corporate balance sheets, the stock of outstanding debt, and the extent of overvaluation in asset prices.[27] If corporates or households are running large financial deficits, when corrections in asset prices start—and banks begin to respond to collateral valuations and to their own capital positions by rationing the availability of credit—then there is no alternative to a cutback in private sector spending. As a result, absolute declines in asset prices, in the stock of outstanding debt, and in real activity are likely to ensue.

A simple (and admittedly imprecise) way to gauge the impact of credit conditions on individual European economies would thus be to look at the evolution of their household and corporate financial positions over the latest credit expansion.[28] Indeed, if saving rates were mean reverting and initial financial positions were at equilibrium, then the

[25] On these points see, among others, IMF (2008c), IMF (2008a), and European Central Bank (2008).

[26] In particular, in the United Kingdom and in Ireland house prices have dropped quite sharply over the past few months. In Belgium, Spain, France, and Italy, property prices have *(continued)* continued on a path of gradual deceleration, while in the Netherlands and Austria house price increases in the first half of 2007 were roughly unchanged compared with the increases recorded in 2006 (European Central Bank, 2008).

[27] For an assessment of house price developments across Europe, see also Box 1.2 in IMF (2008a) and Hilbers and others (forthcoming).

[28] This approach is based on some simplifying assumptions. By deriving the impact of credit expansion on growth as the sum of changes in the financial positions of households and nonfinancial corporates, this assessment implicitly rules out any accelerator mechanism in the economy, thereby underestimating the actual impact of credit growth. On the other hand, this approach also implies that the total flow of dividends (which are deducted from corporate income before the financial position is calculated) is paid out to the households—an assumption that might exaggerate the impact of credit growth if, instead, not all dividends have boosted household incomes.

Box 9. European Securitization and the Possible Revival of Financial Innovation

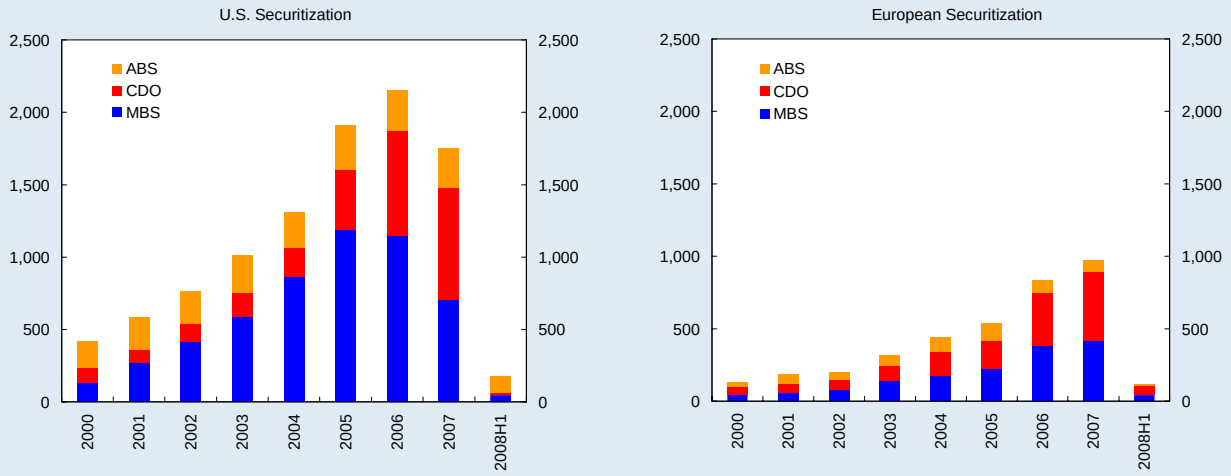
Collapsing global securitization volumes in the wake of the subprime crisis have raised fundamental questions over the viability of the originate-to-distribute (O2D) business model.[1] Issuance has dropped precipitously in both Europe and the United States, with banks keeping more loans on their balance sheets and tightening lending standards as a result (first figure). The decline has been particularly sharp for mortgage-backed securities (MBSs) and MBS-backed collateralized debt obligations (CDOs). The O2D model was thought to have made the financial system more resilient by dispersing credit risk to a broad range of investors. Ironically, however, the O2D model itself became the source of financial instability.

Mortgages constituted the vast majority of loans securitized in Europe in 2006–07. Of these, about 54 percent were originated in the United Kingdom; Spain (14 percent) and the Netherlands (11 percent) followed. Total European MBS issuance dropped from €307 billion in 2007 to €28 billion in the first quarter of 2008. During the same period, CDO issuance plummeted from €471 billion to €63 billion, and asset-backed securities (ABS) issuance[2] dropped from about €124 billion in 2007 to €9 billion in the first half of 2008.

What Went Wrong?

In many cases, the risk transfer from securitization proved to be less complete than believed, and investors to whom risks were transferred were too complacent. The adoption of new international financial accounting standards in Europe forced the recognition on the balance sheet of substantial securitization volumes (IMF, 2008b, Box 1.3). Also, the efficacy of some risk transfers (e.g., to asset-backed commercial paper conduits and structured investment vehicles) relied on market liquidity, which broke down in 2007. As a result, banks have had to take back onto their balance sheets assets they had earlier securitized. Some banks also retained supposedly lower-risk CDO and MBS tranches, but have been forced to drastically write down these holdings as their market values have fallen and bond insurers have been downgraded.

Issuance of Securitized Products
(Billions of U.S. dollars)



Sources: JPMorgan Chase; Inside Mortgage Finance; European Securitization Forum; and IMF staff estimates and calculations.

Note: The main authors of this box are John Kiff and Paul Mills, with assistance from Carolyne Spackman.

[1] Securitization involves the transformation of pools of loans and other types of assets into marketable securities.

[2] European ABS issuance is primarily of business loans and vehicle leases.

Investor complacency resulted in overreliance on credit ratings. Furthermore, the rating agencies' key assumptions on some risks (e.g., subprime mortgage delinquencies and recovery rates) turned out to be overly optimistic. As credit fundamentals deteriorated, many of the more complex and multilayered securities became nearly impossible to value, and market liquidity disappeared as leveraged investors (primarily hedge funds) reduced their exposures. The disappearance of market liquidity and the reliance on models for valuations triggered uncertainty about losses and loss exposures. The interaction of credit and liquidity risk drove market valuations into downward spirals of mark-to-market losses and forced liquidations.

Road to Recovery

Reviving securitization requires structural change. Investor confidence in the instruments, the originators, and the rating agencies needs to be restored. Originators will have to simplify security structures and improve the disclosure of their underlying assets in a timely and comprehensive manner. Rating agencies will need to provide more information on the models and inputs that underpin their ratings and on the potential for rating volatility.

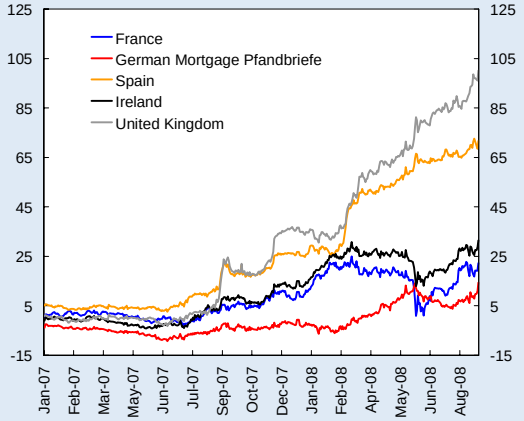
The American and European Securitization Forums are engaged in coordinating standardized reporting and originator principles. This process will take many years. Also, the major rating agencies are consulting over whether to supplement rating letter grades with rating volatility and loss sensitivity metrics. However, they have been slow to address the conflict of interest that arises because of their parallel activities as consultancy services.

It has been proposed that originators in Europe retain some meaningful economic interest in the underlying securities, so that their incentives can be more closely aligned with those of investors. A European Commission proposal regarding implementation of the Capital Requirements Directive suggests requiring minimum levels of originator risk retention. However, this proposal could easily make securitization uneconomic for originators and faces considerable monitoring and enforcement difficulties. It is, therefore, unlikely to restart the market.

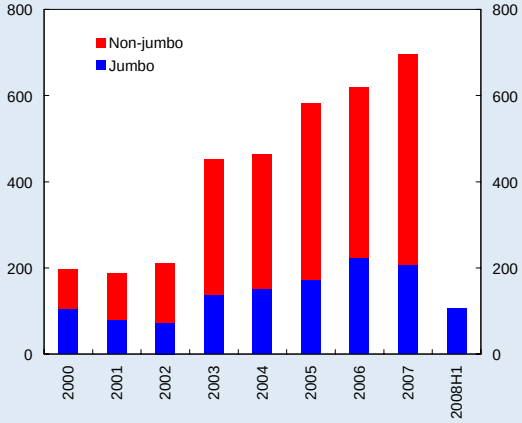
Covered Bonds

In Europe, covered bonds have provided banks with cost-efficient secured financing for over 200 years, and U.S. authorities recently launched an initiative to encourage their use by U.S. banks. Covered bonds are backed by identifiable and legally "ring-fenced" pools of loans. They remain on the balance sheet, however, so that the bank retains the ultimate credit risk and is encouraged to maintain loan quality. Nevertheless, yield spreads on U.K. and Spanish covered bonds have widened sharply during the crisis owing to declining housing markets.

Covered Bond Market Spreads
(Basis points)



European Covered Bond Issuance
(Billions of U.S. dollars)



Sources: Datastream; and IMF staff estimates and calculations.

. . . continued

Box. 9 *(concluded)*

Meanwhile, German and French spreads have remained relatively low (second figure). Although secondary market liquidity has dried up, issuance of "jumbo" bonds is continuing; however, these are mostly German Pfandbriefe.

Covered bond issuance is expected to remain below trend for some time, but the market is likely to continue broadening. The first Greek covered bond issue is expected in 2008, and the four largest U.S. banks have committed to issuing covered bonds, while an electronic trading platform in Europe is planned. The covered bond market has not been immune from recent turbulence, but it does provide a less complex alternative to outright securitization.

Conclusion

The risk transfer and capital saving benefits of securitization, combined with underlying investor demand for securities, should eventually revive issuance. But the products are likely to be simpler and more transparent, and trade at significantly wider spreads.

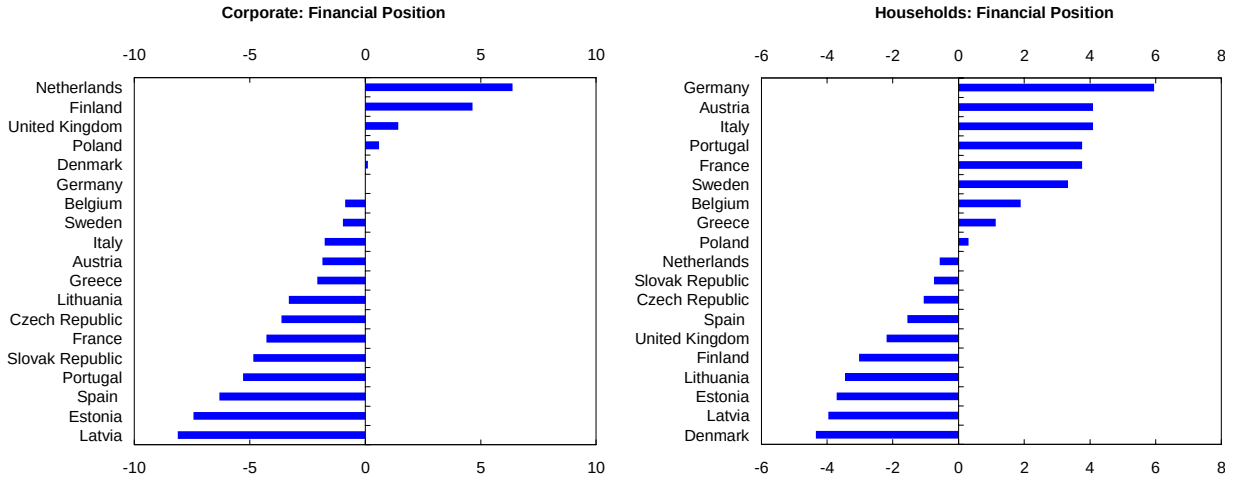
ultimate dampening effect of a turn in the credit cycle might be the reverse of what happened in the upswing. However, in the current environment—with the ongoing sharp repricing in credit risk—the downturn of the credit cycle is likely to be much more abrupt than the upswing.

Recent balance sheet data for EU countries indicate that, for advanced economies as a whole, the credit expansion had virtually no impact on growth over the latest cycle.[29] However, it contributed substantially to the (nominal) growth of emerging economies, where corporates and households were running large financial deficits, averaging—on aggregate—around 7 and 4 percent of nominal GDP, respectively. Such a general picture masks a significant dispersion of performance across countries (Figure 21). For example, credit expansion had essentially no impact in Germany and Poland—where household and corporate savings actually increased over the period—but it had a much larger impact, say, on the Spanish and Baltic economies, where the overextension of both household and corporate balance sheets was considerable. More generally, euro area household savings actually increased during the credit expansion (by almost 3 percent), more than offsetting the surge in the financial deficit of the euro area corporate sector (about 2 percent).[30] In non–euro area advanced economies, the impact of the credit expansion was largely neutral, with small (about 1 percent) corporate financial surpluses compensating for household financial deficits of similar magnitude. Overall, more developed credit markets (like the Netherlands, Finland, the United Kingdom, and Denmark) were featuring significant deficits in household financial positions, while exhibiting strong corporate balance sheet positions.

[29] Calculations rely on balance sheet Eurostat data from 2003 to 2006. The sample includes the following countries: Austria, Belgium, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Italy, Latvia, Lithuania, Netherlands, Poland, Portugal, the Slovak Republic, Spain, Sweden, and the United Kingdom. Aggregation has been carried out using PPP-weighted GDP.

[30] Although euro area household sector indebtedness has continued to increase over recent years, the overall assessment of household sector balance sheets as a potential source of risk from a financial stability perspective is still one of ongoing strength. Vulnerabilities may be growing for households in those parts of the euro area where the debt buildup has been most pronounced, where the majority of debt is financed at variable interest rates, and where housing valuations appear tight. On the other hand, euro area firms' leverage has increased since 2005, fueled by improved investment opportunities and favorable financing conditions. Firms' reliance on bank lending accounted for around 85 percent of the total debt of euro area firms in 2006 and is likely to have further increased as a result of ongoing stress in corporate bond markets. The gradual move of firms toward holding more debt has certainly made them more vulnerable to adverse shocks (European Central Bank, 2008).

Figure 21. Flow of Borrowing in Selected EU Countries: Corporate and Household Sectors, 2002–06
(Percent of nominal GDP)



Sources: Eurostat; and IMF staff calculations.

Altogether, the impact for advanced economies in Europe is likely to be more contained than in previous credit downturns—even with nonnegligible asymmetries within the region. Although asset prices have risen, the cumulative gain over recent years looks modest, especially if compared with the experiences of those countries in the second half of the 1980s.[31] Meanwhile, households are still running sizable financial surpluses in the euro area and modest deficits in non–euro area advanced economies, with the opposite holding true for the corporate sector. Hence, while the credit cycle will no doubt be a dampening factor—and severely so in some countries—it is unlikely to weigh substantially on growth in the aggregate of advanced European economies, partly because Germany did not participate in the upswing of the credit cycle.

However, the same benign conclusion cannot be reached for emerging Europe, even if dispersion in performance remains wide in this region too. Recent flows of borrowing by households and corporates (Figure 21), recent debt accumulation (Figure 22), and recent gains in asset prices (Figure 23) in some of the emerging European economies—such as the Baltics—recall the imbalances characterizing the Nordic countries in the early 1990s, before the onset of their financial crises.

Borrowing against Collateral: How Do Financial Cycles Get Amplified?

In the Household Sector . . .

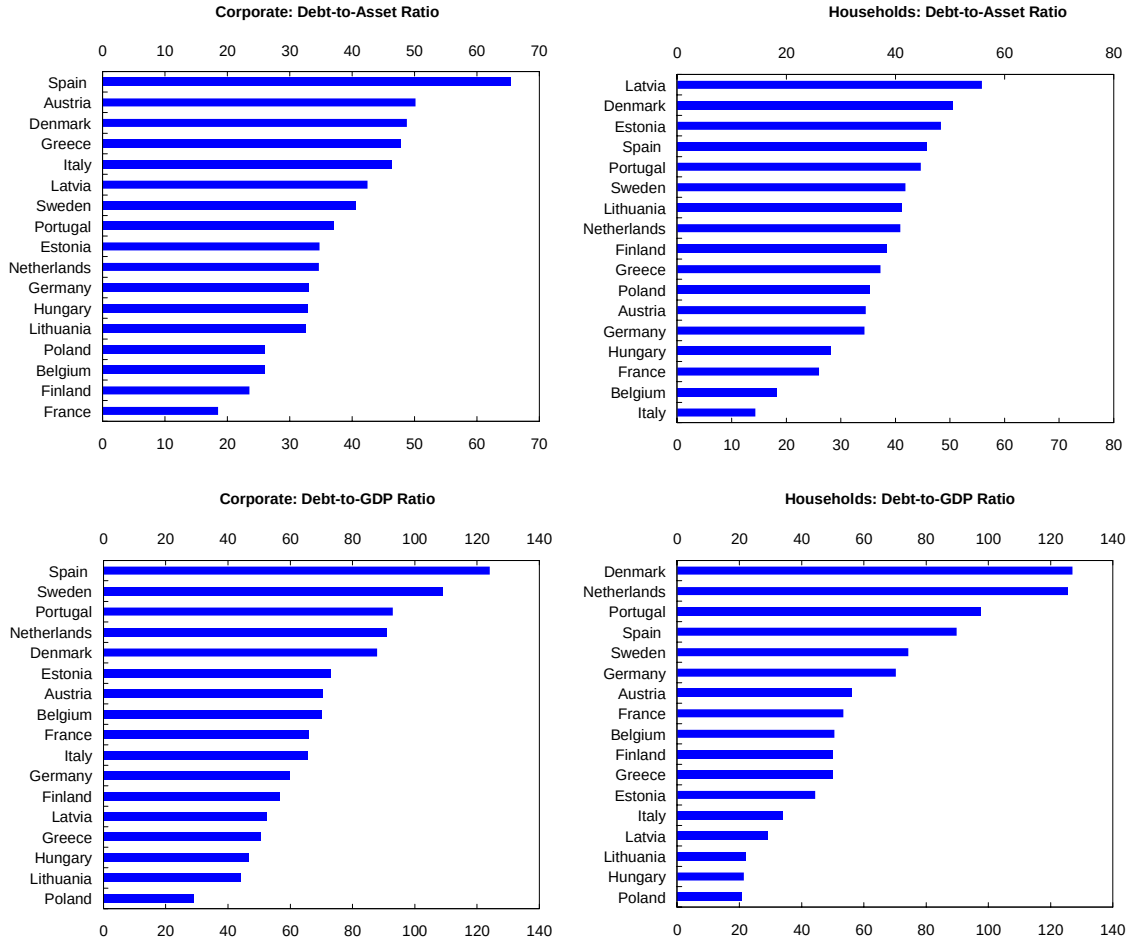
European housing finance systems share a number of common features that have strengthened the resilience of the region to the recent subprime crisis.[32] The satisfactory debt-servicing capacity of European borrowers has played a key role in sheltering homegrown mortgage loans from downturns in the real estate market. Although European covered bonds have not been immune from investors' recent dislike for securitized instruments, they have proved to be a cost-efficient and less complex alternative to outright securitization.[33] Indeed, prudent property

[31] IMF (2008a) draws interesting lessons from these episodes.

[32] See also IMF (2008c).

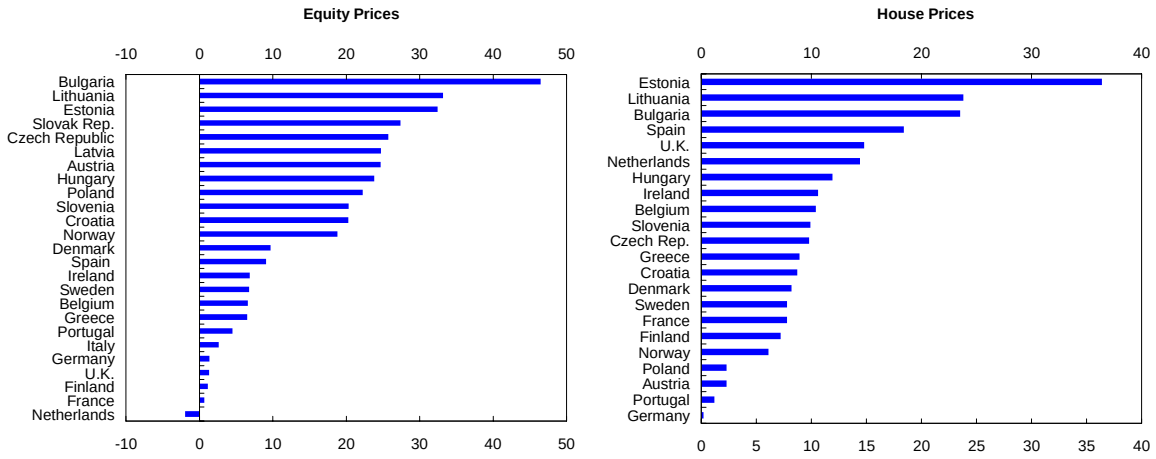
[33] European securitization in mortgage markets mainly relies on covered bonds—debt instruments regulated by EU legislation and secured against a pool of mortgages that remains on the balance sheet of the issuer. Box 9 provides an account of recent developments in European covered bond markets.

Figure 22. Corporate and Household Debt in Selected EU Countries, 2002–06
(Percent)



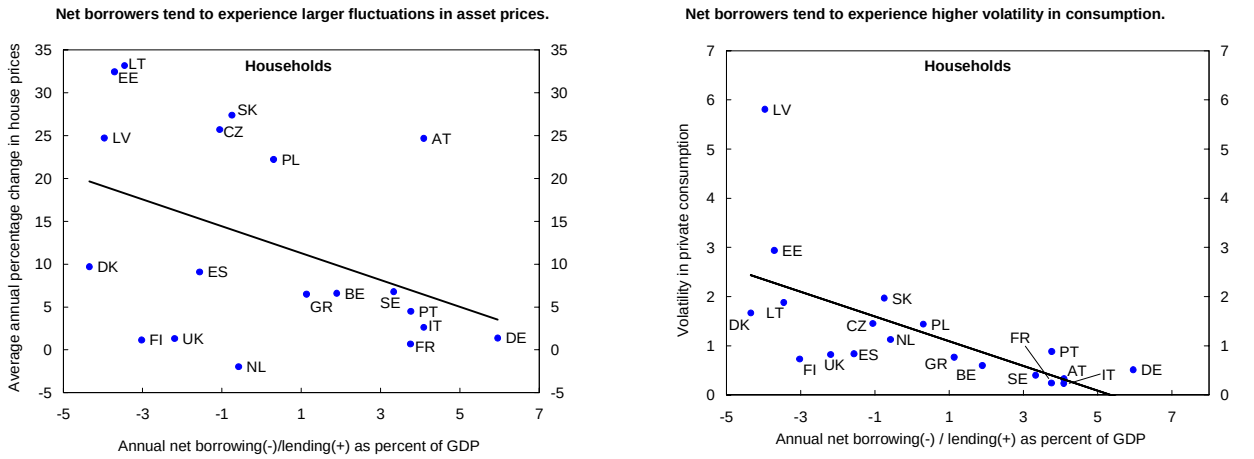
Source: Eurostat; and IMF staff calculations.

Figure 23. Average Changes in Asset Prices, 2002–06
(Annual percentage change over 2002–06)



Sources: Bloomberg L.P.; Bank for International Settlements; and IMF staff calculations.

Figure 24. Borrowing Against Collateral in the Mortgage Market, 2002–06



Sources: Bloomberg L.P.; Bank for International Settlements; and IMF staff calculations.
Note: Country names are abbreviated according to the ISO standard codes.

valuation rules and special investor protection diminish the risks of European mortgage-covered bond markets, while allowing lenders to obtain comparatively cheap funds in capital markets and to benefit from lower regulatory risk weightings.

However, this general picture masks significant heterogeneity in the institutional characteristics of national mortgage markets across (both advanced and emerging) European economies (Box 10). With the intention of identifying clusters of countries on the basis of shared characteristics of their mortgage markets, a number of empirical studies tend to concur that, in economies where LTV ratios are high, the level of mortgage debt relative to GDP also tends to be high. In countries where households are able to borrow more easily against their housing wealth, elevated LTV ratios and relatively large mortgage debts are generally accompanied by longer contract durations and more widespread home equity release.[34]

The correlation between private consumption and house price fluctuations over the cycle is found to be related to mortgage market characteristics, with that correlation larger in those countries where mortgage refinancing is feasible and variable rate contracts are more common. In addition, the size of the peak effect of a monetary policy shock on consumption and real house prices appears to be positively related to the mortgage debt–to-GDP ratio, the LTV ratio, and the existence of equity release products. The evidence that private consumption is more responsive to monetary impulses in economies with *more* developed mortgage markets is due to the presence of collateralized borrowing, as private borrowing is constrained by the value of the collateral. That value is endogenously tied to the evolution of the nominal price of housing. Thus, in a context where housing credit markets can more easily convert asset values into borrowing and, therefore, spending, consumption is likely to be more sensitive to underlying financial shocks (Figure 24).

. . . and in the Corporate Sector

Do similar conclusions hold true with respect to the relationship between private investment and equity price fluctuations over the cycle? Does the responsiveness of capital accumulation to shifts in credit conditions and asset prices differ on a country-by-country basis, depending on the level of development of each country's corporate finance market? Given the remarkable importance

[34] For an extensive survey of the literature on housing financing and its business cycle implications, see IMF (2008f) and references therein.

Box 10. Institutional Features of Mortgage Markets in Europe

Mortgage markets differ significantly across European countries in terms of both size and key institutional characteristics, such as the prevailing contractual arrangements and the available product range; these differences largely reflect national traditions and cultural factors, as well as the institutional settings of the local banking sector. The table summarizes some of the institutional indicators that have been identified in the literature as most likely to have a bearing on the relationship between housing wealth and consumption, as well as on the channels of monetary policy transmission.[1]

The indicators included in the table are (1) average cost and time of mortgage enforcement procedures; (2) maximum LTV ratio; (3) typical mortgage contract duration; (4) type of interest rate structure; (5) diffusion of home equity release products; and (6) securitization.

Cross-country heterogeneity is pervasive in all indicators considered. In particular, LTV ratios vary significantly across countries, ranging between 50 percent in Italy and over 110 percent in the Netherlands. Overall, it is now typical for borrowers to have available loans worth 70–80 percent of the house value. Cross-country variations in these ratios partly reflect differences in legal and regulatory frameworks. The heterogeneity in terms of interest rate adjustment is also substantial across countries. Among the EU countries, the United Kingdom, Spain, and Ireland mainly have variable or adjustable rate mortgages. In contrast, Germany, France, Austria, Belgium, Denmark, and the Netherlands are mainly characterized by fixed rate mortgages.

Many of the mortgages offered in eastern Europe are foreign currency loans, and their increasing popularity—because their interest rates are lower than domestic currency mortgages—has brought even more dramatic convergence in the nominal interest rate on debt between eastern and western Europe. For example, Latvian and Polish mortgage rates are just over 1 percent above their German equivalent. In Poland, mortgage lending denominated in foreign currency accounted for approximately 60 percent of the stock of mortgages by mid-2005. Lending in foreign currency has also been rising very rapidly in Hungary, and reached almost 30 percent of the stock of lending by early 2006, up from only 1 percent in 2003. The overwhelming majority of new mortgages in Hungary have recently been in foreign currency—often denominated in Swiss francs.

Finally, an important element of divergence among national mortgage markets is the extent of recourse to home equity release. Following changes in house prices and mortgage interest rates, collateral-constrained agents can adjust their net borrowing positions or refinance the terms of their existing mortgages according to the changed conditions. For instance, following rises in house prices, borrowers may increase the amount of their mortgage loans or apply for a second mortgage against the increased value of their collateral. The released mortgage equity may subsequently be used for a variety of purposes, such as debt refinancing, acquisition of durable goods, purchase of financial assets, or home improvements. When mortgage interest rates decrease, agents may be willing to refinance their mortgages to take advantage of lower interest payments, to free liquidity for other expenditures; alternatively, they may want to increase their borrowing to reflect their increased debt-servicing capacity.

Overall, the use of home equity release remains limited in most countries, though mortgage equity extraction and refinancing have become significant at the aggregate level in a few (e.g., the United Kingdom and the Netherlands). In some cases, the limited recourse to home equity release may reflect scarce availability of suitable mortgage contracts (e.g., owing to regulatory constraints). However, in most countries borrowers are deterred from refinancing their contracts by administrative obstacles and prohibitive transaction costs. In such countries, mortgage lending is likely to interact with interest rate and house price developments only to a very limited extent (namely, for the new mortgage contracts only and not for the existing ones, which mostly reflect the market conditions prevailing at the time they were signed rather than current conditions).

Note: The main author of this box is Silvia Sgherri.

[1] See, among others, recent analyses by Miles and Pillonca (2008) and Calza, Monacelli, and Stracca (2007).

Characteristics of National Mortgage Markets

	Mortgage Enforcement Procedures		Financial Sector Indicators		Mortgage Products			
	Administrative costs (percent)	Usual time required (months)	Maximum LTV (percent)	Typical mortgage maturity (years)	Typical rate structure (fixed/variable)	Equity withdrawal (yes/no)	Restriction on early repayment fees	Securitization (yes/no)
Albania	...	...	70-75	20	Variable	Possible, but rarely used.	Commission of 2-5%.	No
Austria	...	6	60-80	20-30	Fixed	…	...	...
Belgium	18.7	18	80-85	20	Fixed	No	Max. 3-month interest on remaining loan.	Limited
Bosnia and Herzegovina	1-1.7	18-60	75-100	10-20	Variable	No	Fee set on bank-by-bank cases.	No
Bulgaria	...	...	75-90	5-25	Both	...	No	Yes
Croatia	...	...	75	20	Variable	...	...	No
Czech Republic	Limited	10-12	70-100	20-25	Fixed	No	Yes	No
Denmark	...	6	80	30	Fixed	Yes	No	Covered bonds.
Estonia	...	...	90	20-30	Variable	Yes	...	No
Finland	2.5	2-3	75-80	15-20	Variable	Yes	Creditor compensated for interest rate difference.	Limited
France	7	15-25	80	15	Fixed	Not used.	Fees limited to 6 month interest and 3% of balance.	Limited
Germany	4.2	12	60-80; 60 for loans backed by mortgage bonds.	25-30	Fixed	Not used.	Lender can seek compensation for forgone earnings within first 10 years.	Pfandbriefe
Greece	16	3	70-80	15-20	Variable	Yes, but limited use.	Usual fee equals 2.5% of remaining loan.	Limited
Hungary	…	…	100	15	Variable	Yes	No	No
Ireland	8.6-10.6	11-14	90	20	Variable	Yes, but limited use.	...	Limited
Israel	...	...	60	...	...	...	...	...
Italy	...	60-84	50	10-25	Mostly fixed for 1-5 years.	Not used.	No	No
Latvia	3-15	24-36	100 since June 2008.	20-40	Variable	Yes	No explicit regulations.	Limited
Lithuania	4-20	4-7	100	20-25	Variable	Yes	No	No
Luxembourg	…	…	80-100	20-25	Variable	Not used.	…	Limited
Macedonia, FYR	Costs for auction fixed.	Approx. 6 months.	65-100	20	Varies. But variable rates are more prevalent.	…	No	No
Malta	...	...	90	<40	Variable	Yes	No	No
Netherlands	3	6	110-115	30	Fixed	Yes	No	Yes
Norway	...	...	80	15-20	Variable	Yes	...	No
Poland	...	...	>100	20	Variable	Possible, but rarely used.	Fees are allowed, but rarely used.	Yes, but used marginally.
Portugal	8	18-30	90	15-30	Variable	Not used.	Only for older contracts.	…
Romania	...	...	Central bank approves banks' credit policies.	5-25	Both	...	...	Yes

. . . continued

Box 10 *(concluded)*

Characteristics of Mortgage Markets *(concluded)*

	Mortgage Enforcement Procedures		Financial Sector Indicators		Mortgage Products			
	Administrative costs (percent)	Usual time required (months)	Maximum LTV (percent)	Typical mortgage maturity (years)	Typical rate structure (fixed/variable)	Equity withdrawal (yes/no)	Restriction on early repayment fees	Securitization (yes/no)
Russia	...	...	85	10-30	Both	...	...	Yes
Slovak Republic	…	…	70	15	Variable	Yes, but not used.	No	No
Spain	17	7-9	80-100	15-25	Variable	Yes, but limited use.	Max. 1% and 2.5% cancellation commission.	Yes
Sweden	5	4-6	60-80	<30	Variable	Yes	None	Limited
Switzerland	7-10	8-12	80	15	Mixed	Yes	Yes	Yes
Turkey	...	...	75	5-10 (longer maturities available but very rare).	Fixed	No	2 percent maximum penalty.	Being developed.
Ukraine	...	6-10	100	>25	Variable	...	...	Very limited
United Kingdom	2.6-7	8-12	100	25	variable	Yes	...	Yes

Sources: European Mortgage Federation (2006); Bank for International Settlements, *Quarterly Review*, March 2004; European Central Bank (2003); Catte and others (2004); Calza, Monacelli, and Stracca (2007); country authorities; and IMF staff estimates.

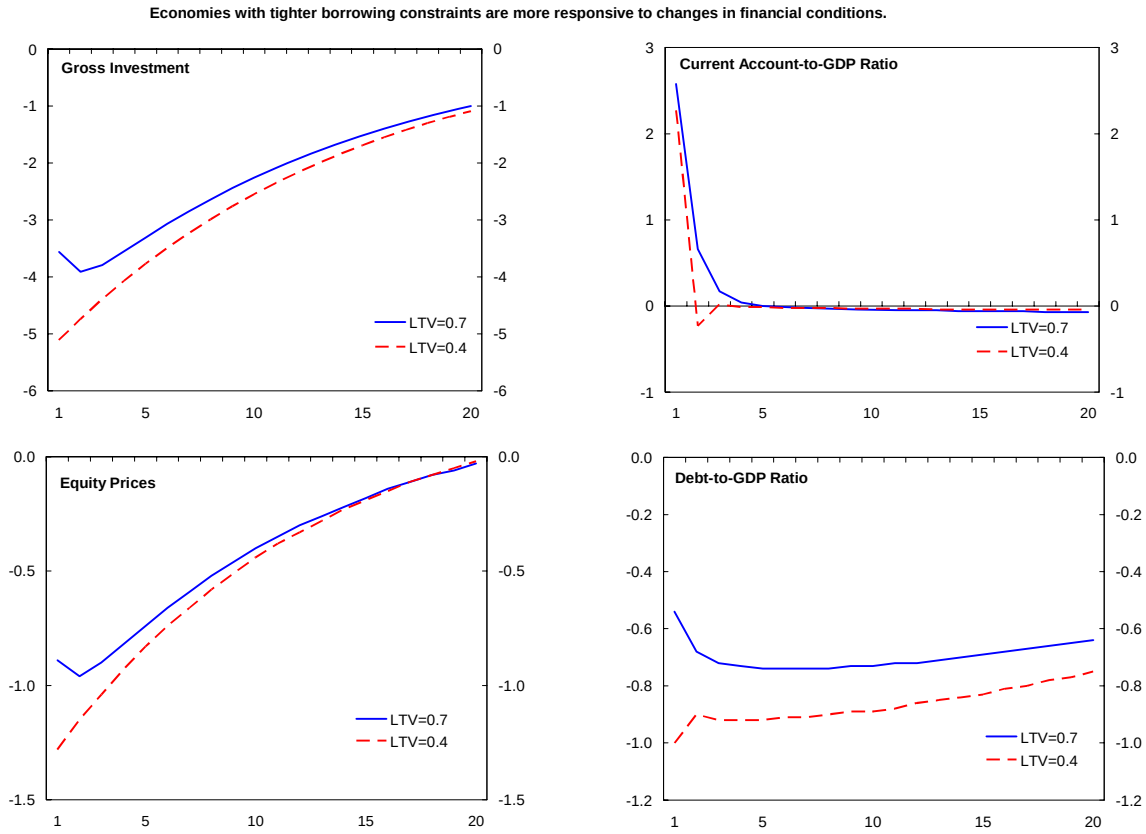
Note: Recent changes in the characteristics of mortgage markets may not be reflected here. Numbers may have been rounded off or may be averages, where relevant.

of bank lending for European corporate financing (see footnote 30) and the extent of cross-country divergences in corporate financial positions, these questions are of considerable relevance. In order to address these issues, a macroeconomic model of a stylized two-country economy is developed to illustrate how the double role of equities—as collateral in the (international) lending process and as value of the capital used for production—may affect the volatility of investment, corporate debt, and the current account.[35] This model captures the idea that observed cross-country differences in investment and current account dynamics may be consistent with the fact that lending conditions and discount factors are not symmetric across countries. This is achieved by assuming that in one of the two economies agents are credit constrained and "impatient": that is, they do not smooth consumption based on permanent income, but have preferences tilted toward current consumption. Their access to credit on international financial markets is constrained by the value of their collateral, which is endogenously tied to the evolution of equity prices.[36] A more developed financial market is represented by a higher borrowing limit (LTV = 0.7)—a parameter that determines the extent to which capital can be used as collateral for borrowing to invest and to produce goods. Despite its stylized nature, this structural model is consistent with the empirical findings that investment and current account dynamics are more responsive to changes in financial conditions in economies with *less* developed corporate financing. In economies with

[35] The analytical underpinnings of the model, details of its calibration, and relevant policy and sensitivity analysis are provided in Gruss and Sgherri (forthcoming).

[36] Thus, firms can borrow up to a fraction of the market value of their capital. This constraint resembles a debt contract with a margin clause (on this point, see also Mendoza, 2006). Margin clauses typically require borrowers to surrender the control of collateral assets when the debt contract is entered and give creditors the right to sell the assets when their market value falls below the contract value. There are also other arrangements that operate in a similar way. These include value-at-risk strategies of portfolio risk management used by investment banks and capital requirements imposed by regulators on financial institutions. In both cases, if an aggregate shock hits the asset value, banks are required to reduce their corresponding exposure; however, since the shock is aggregate, the resulting sale of assets increases price volatility, thereby requiring further portfolio adjustments.

Figure 25. The Financial Accelerator in Economies Characterized by Different Borrowing Limits: Impulse Response Functions to an Adverse Shock to Underlying Productivity
(Percent deviations from baseline)



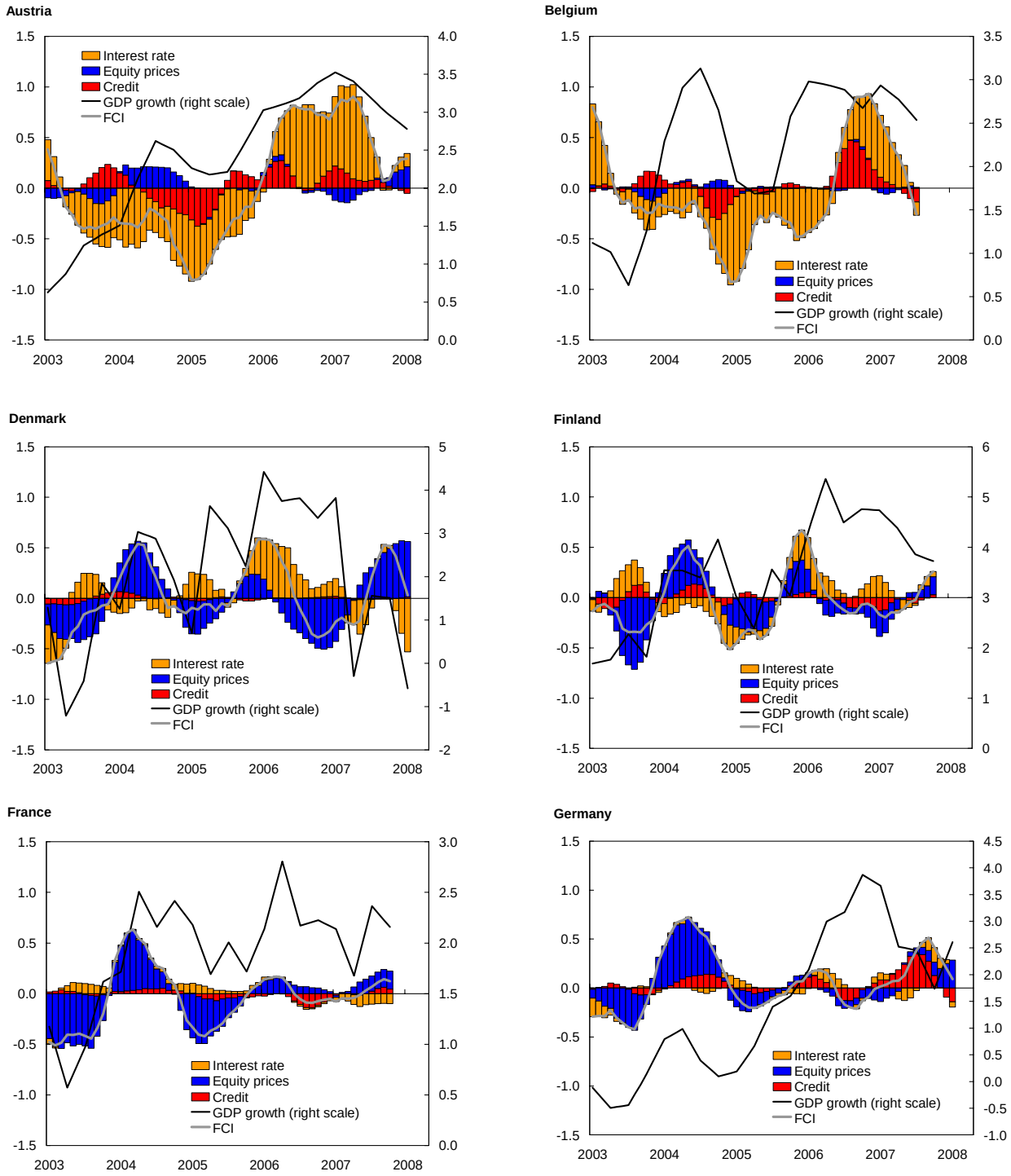
Source: Gruss and Sgherri (forthcoming).

lower borrowing limits (LTV = 0.4)—as equity prices have fallen following either a technology shock or an exogenous tightening to the lending standard—impatient agents see their borrowing curtailed more against the declining value of their collateral, and are thus able to borrow less against collateral for any given value of their capital, compared with those in economies with higher borrowing limits (Figure 25). Although the model is highly stylized—abstracting from many factors affecting monetary policy decisions—the exercise is nevertheless instructive: it provides some insight into how macroeconomic volatility varies according to the characteristics of financial markets in economies where firms' borrowing limits are tied to collateral values and where agents do not behave in the farsighted way that is more traditionally supposed.

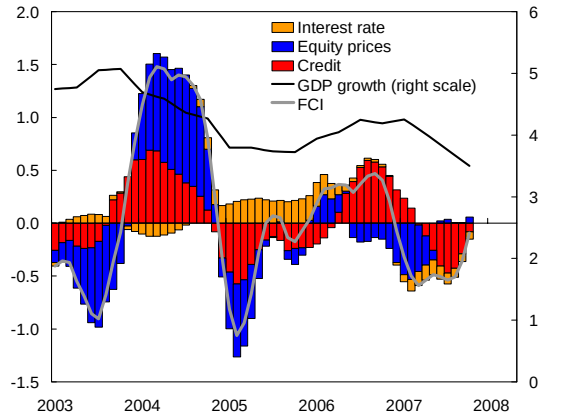
From Financial Conditions to the Macroeconomy

To examine more closely the dynamic relationship between corporate financial conditions and real activity and to understand what drives divergences in the strength and in the timing of macrofinancial linkages across European countries, financial conditions indices (FCIs) for the corporate sector of 16 advanced and 12 emerging European economies have been constructed by means of vector autoregression and impulse response functions (Figure 26 and Table 6). National FCIs are meant to account for the timing of transmission from financial markets to real activity and to incorporate the endogenous response of financial variables to the business

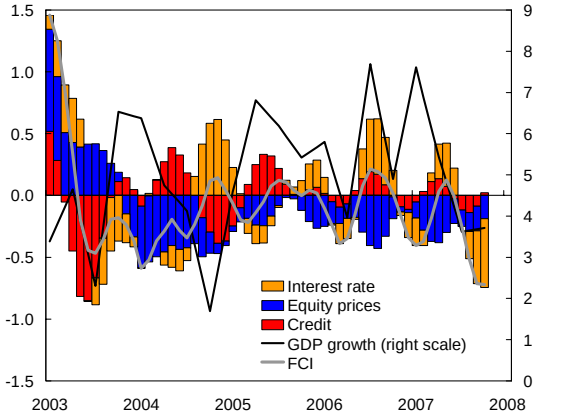
Figure 26. Financial Conditions Indices for the Corporate Sector: Dynamics and Contributions, 2003–08
(Percentage points of year-on-year real GDP growth, unless otherwise noted)



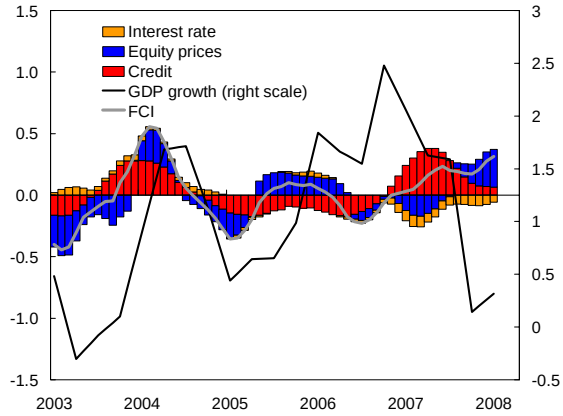
Greece



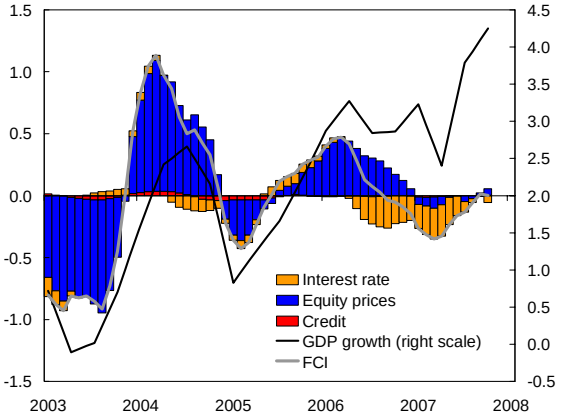
Ireland



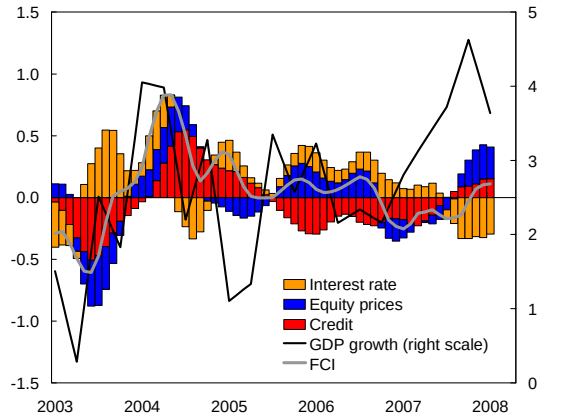
Italy



Netherlands



Norway



Portugal

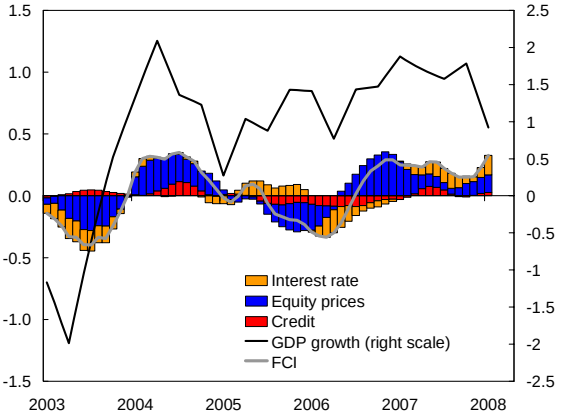
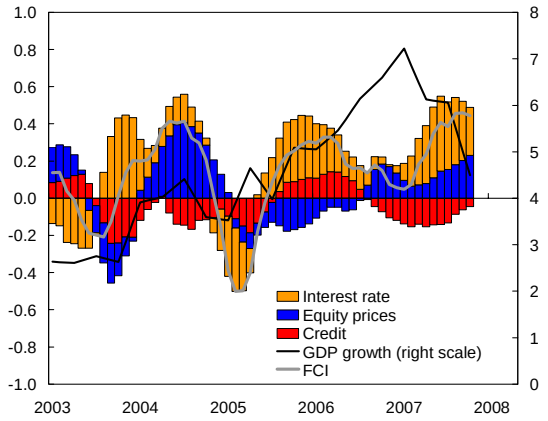
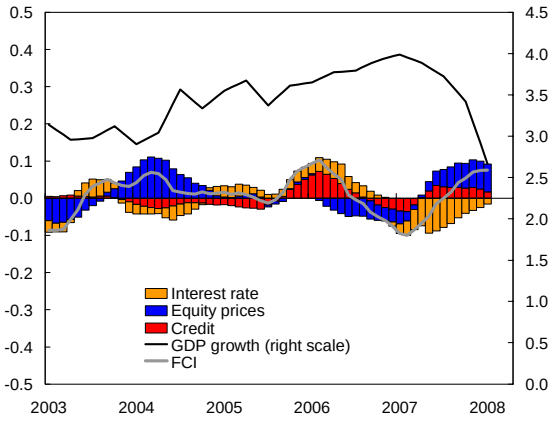


Figure 26 ***(continued)***

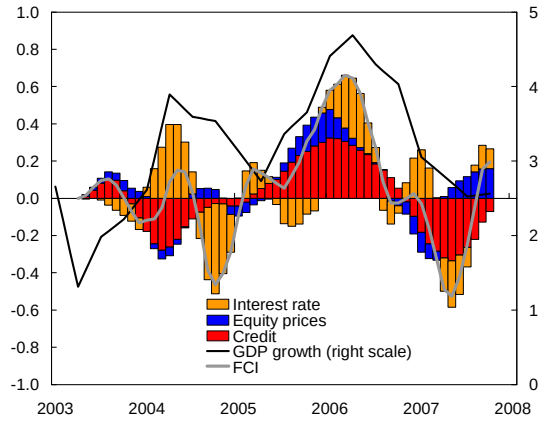
Slovenia



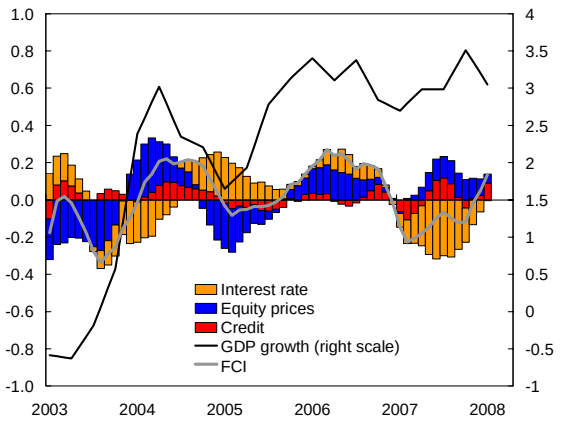
Spain



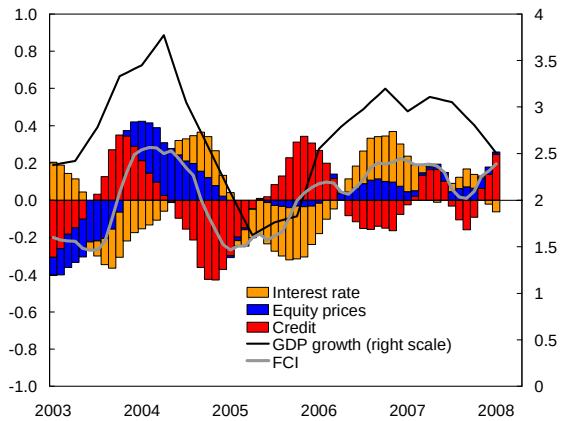
Sweden



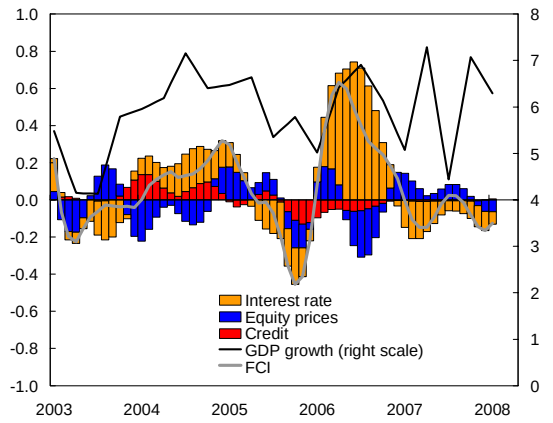
Switzerland



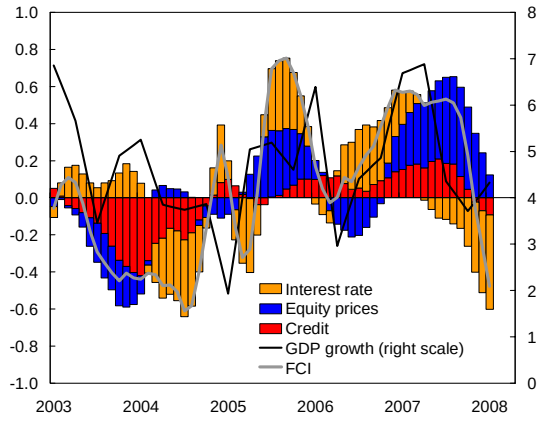
United Kingdom



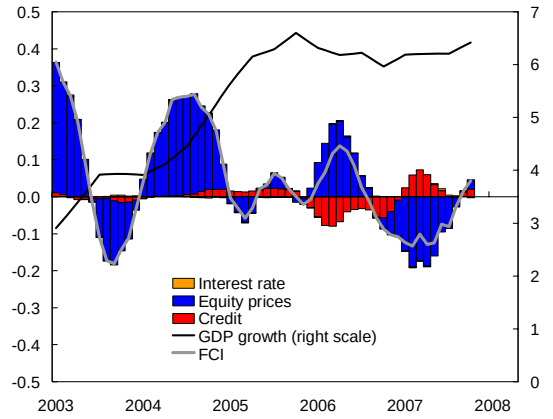
Bulgaria



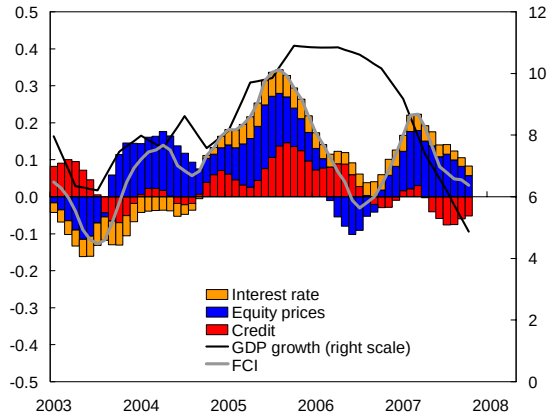
Croatia



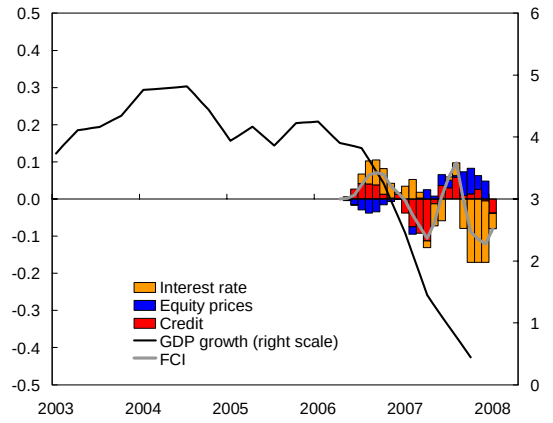
Czech Republic



Estonia



Hungary



Latvia

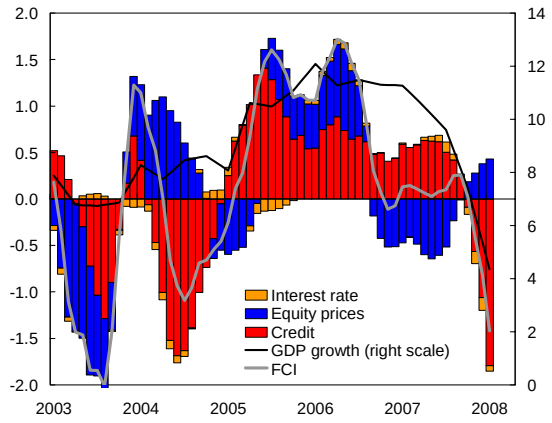
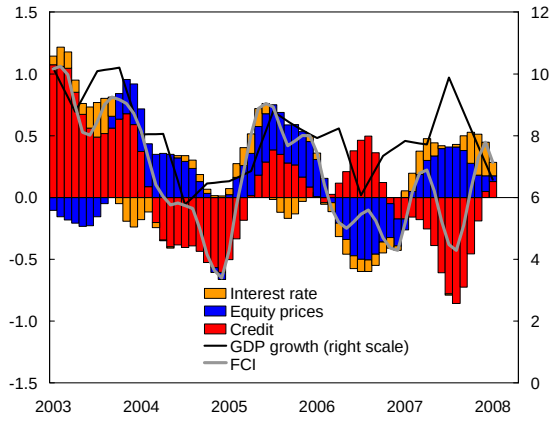
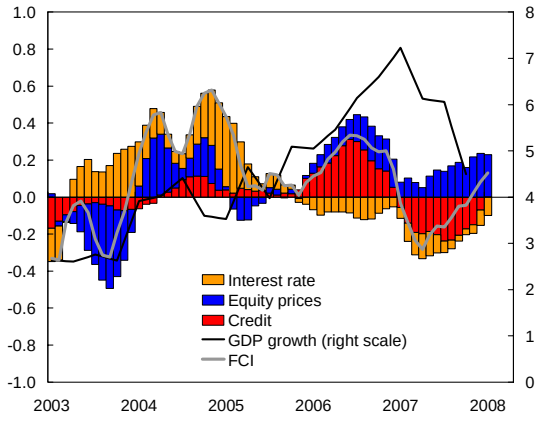


Figure 26 ***(concluded)***

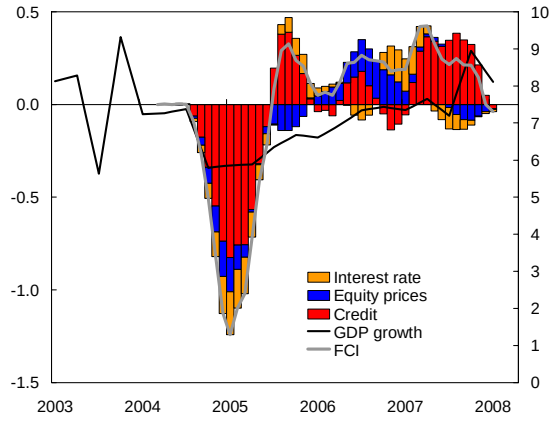
Lithuania



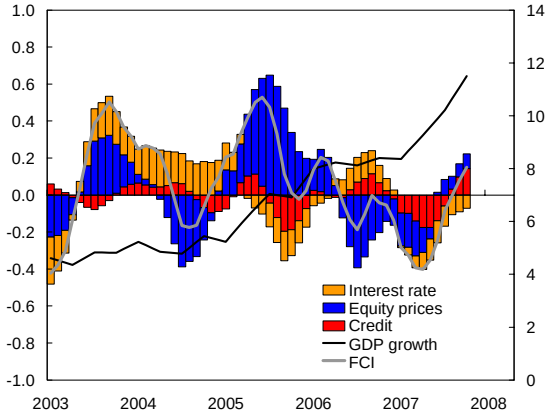
Poland



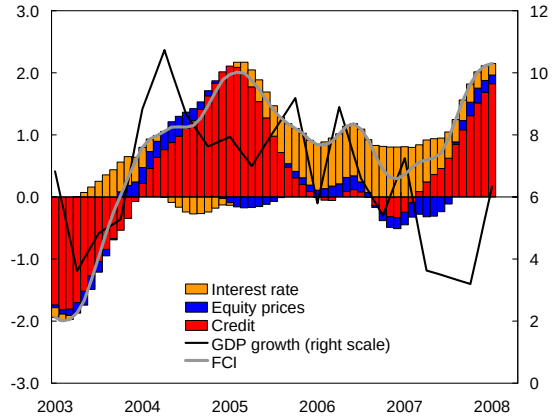
Russia



Slovak Republic



Turkey



Sources: IMF, *International Financial Statistics* ; Haver Analytics; national authorities; and IMF staff calculations.

Table 6. Selected European Countries: Financial Conditions and Real Activity: Correlations and Variance Decompositions

Financial Variable (Contribution to FCI)	Correlation with Overall FCI (Latest cycle)	Correlation with Output Growth (Latest cycle)	Variance Decomposition Output Growth (One year ahead)
Austria			
Overall/leading FCI	1	0.70/0.73	51
Credit	0.56	0.16	39.5
Equity prices	-0.31	0.05	9.3
Interest rate	0.82	0.76	2.2
Belgium			
Overall/leading FCI	1	0.11/0.27	11.4
Credit	0.95	0.11	1.7
Equity prices	-0.38	0.27	0.1
Interest rate	0.57	0.24	9.6
Denmark			
Overall/leading FCI	1	-0.24/0.41	22.2
Credit	0.41	0.3	0.2
Equity prices	0.66	-0.09	6.9
Interest rate	-0.47	0.53	15.1
Finland			
Overall/leading FCI	1	0.00/0.33	45.7
Credit	0.56	-0.36	1.8
Equity prices	0.56	0.33	37.5
Interest rate	-0.09	0.1	6.5
France			
Overall/leading FCI	1	0.27/0.55	38.9
Credit	0.18	-0.01	0.9
Equity prices	0.65	0.61	37.9
Interest rate	-0.35	-0.38	0.1
Germany			
Overall/leading FCI	1	0.09/0.02	21.4
Credit	0.36	0.08	4.8
Equity prices	0.73	-0.04	10
Interest rate	-0.19	0.16	6.6
Greece			
Overall/leading FCI	1	0.24/0.23	25.3
Credit	0.58	0.54	9.7
Equity prices	0.59	0.03	14.4
Interest rate	-0.14	-0.33	1.2
Ireland			
Overall/leading FCI	1	0.09/-0.10	10.3
Credit	0.2	0.58	2.2
Equity prices	-0.17	-0.31	2.2
Interest rate	0.73	-0.14	5.9
Italy			
Overall/leading FCI	1	-0.15/0.19	21.6
Credit	0.75	0.13	0.2
Equity prices	0.04	0.1	21.1
Interest rate	-0.1	-0.28	0.2
Netherlands			
Overall/leading FCI	1	0.21/0.48	40
Credit	0.57	0.43	0.2
Equity prices	0.54	0.56	37.3
Interest rate	0.37	-0.43	2.5
Norway			
Overall/leading FCI	1	0.58/0.04	27.1
Credit	0.66	0.22	2.6
Equity prices	0.84	0.52	19.8
Interest rate	-0.34	-0.37	4.7

Table 6 *(concluded)*

Financial Variable (Contribution to FCI)	Correlation with Overall FCI (Latest cycle)	Correlation with Output Growth (Latest cycle)	Variance Decomposition Output Growth (One year ahead)
Portugal			
Overall/leading FCI	1	0.39/0.68	17.5
Credit	0.54	-0.12	0.4
Equity prices	0.66	0.62	10.3
Interest rate	0.21	0.61	6.8
Slovenia			
Overall/leading FCI	1	0.40/0.35	43
Credit	-0.13	0.07	12.4
Equity prices	0.62	0.17	8.2
Interest rate	0.51	0.25	22.5
Spain			
Overall/leading FCI	1	-0.34/-0.44	10.7
Credit	0.32	0.09	3.4
Equity prices	0.55	-0.51	3.8
Interest rate	-0.33	-0.05	3.5
Sweden			
Overall/leading FCI	1	0.31/0.50	55.6
Credit	0.83	0.45	23.1
Equity prices	0.66	0.04	8
Interest rate	0.03	0.26	24.4
Switzerland			
Overall/leading FCI	1	0.57/0.50	21.1
Credit	0.18	-0.09	5.1
Equity prices	0.47	0.76	5.5
Interest rate	0.23	-0.15	10.6
United Kingdom			
Overall/leading FCI	1	0.68/0.70	30.1
Credit	0.31	0.09	11.4
Equity prices	0.6	0.5	18
Interest rate	0.04	0.34	0.7
Bulgaria			
Overall/leading FCI	1	0.14/0.43	49.4
Credit	0	0.13	1.2
Equity prices	0.23	-0.25	4.3
Interest rate	0.52	0.43	44
Croatia			
Overall/leading FCI	1	0.47/0.40	23.4
Credit	0.53	0.2	6.3
Equity prices	0.77	0.38	4.8
Interest rate	0.11	0.25	12.3
Czech Republic			
Overall/leading FCI	1	-0.1/-0.24	20.9
Credit	0.32	0	0.7
Equity prices	0.34	-0.24	19.6
Interest rate	-0.05	-0.24	0.6
Estonia			
Overall/leading FCI	1	0.27/0.47	72.9
Credit	0.08	0.6	15.5
Equity prices	0.83	-0.08	41.2
Interest rate	0.47	0.58	16.2
Hungary			
Overall/leading FCI	1	0.26/0.04	80.9
Credit	-0.21	0.17	8.4
Equity prices	-0.49	-0.79	7.5
Interest rate	0.44	0.6	64.9

Financial Variable (Contribution to FCI)	Correlation with Overall FCI (Latest cycle)	Correlation with Output Growth (Latest cycle)	Variance Decomposition Output Growth (One year ahead)
Latvia			
Overall/leading FCI	1	0.66/0.67	72.4
Credit	0.63	0.74	35.7
Equity prices	0.05	0.14	35
Interest rate	0.21	0.29	1.7
Lithuania			
Overall/leading FCI	1	0.37/0.46	55.3
Credit	0.29	0.36	30.9
Equity prices	0.36	0.21	20.5
Interest rate	0.43	0.07	3.9
Poland			
Overall/leading FCI	1	-0.25/0.01	35.5
Credit	0.56	0.13	0.7
Equity prices	0.12	0.56	12.8
Interest rate	0.23	-0.81	22
Russia			
Overall/leading FCI	1	0.42/0.57	78.1
Credit	0.55	0.67	39.3
Equity prices	0.57	0.35	1.2
Interest rate	0.51	0.4	37.6
Slovak Republic			
Overall/leading FCI	1	-0.59/-0.40	16
Credit	0.39	-0.06	9.3
Equity prices	0.1	-0.1	3.3
Interest rate	0.34	-0.66	3.4
Turkey			
Overall/leading FCI	1	0.32/0.37	32.9
Credit	0.9	0.31	23.3
Equity prices	0.45	0.53	0.7
Interest rate	-0.34	-0.21	8.9

Sources: IMF, *International Financial Statistics;* Bloomberg L.P.; national authorities; and IMF staff calculations.

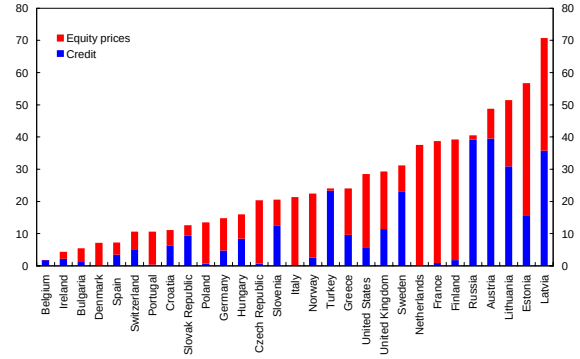
cycle, as well as to each other.[37] Allowing for these dynamic interrelations is important when attempting to disentangle the impact of multiple variables that are highly correlated.

For each economy, the estimated FCI contains statistically significant effects on GDP growth from shocks to domestic (real) credit growth, (real) equity prices, and (real) interest rates.[38] Specifically, impulse responses from these financial variables are combined with estimates of the shocks to each of these variables to calculate the total impulse to growth in a given month. As the FCI contains information from three financial shocks over a period of 12 months preceding the month in which GDP is measured, it also appears to be an important leading indicator of real GDP growth. Measurement of the FCI in terms of its contribution to growth means that both the level of the index and the direction of its changes have implications for economic activity. For example, a value of 1 means that the total impulse of financial conditions to GDP in a given quarter is 1 percentage point, annualized. A decline from 1 to ½ implies that financial conditions are expected

[37] The construction of FCIs follows the methodology developed in Swiston (2008).

[38] By ruling out both direct and indirect effects of house price shocks on the corporate sector's growth, the estimated FCIs are likely to forgo the impact of construction-driven booms—such as those recently experienced in Spain or Ireland.

Figure 27. Share of Output Variation Explained by Credit and Asset Price Shocks
(Percent)



Sources: IMF, *International Financial Statistics* ; Haver Analytics; national authorities; and IMF staff calculations.

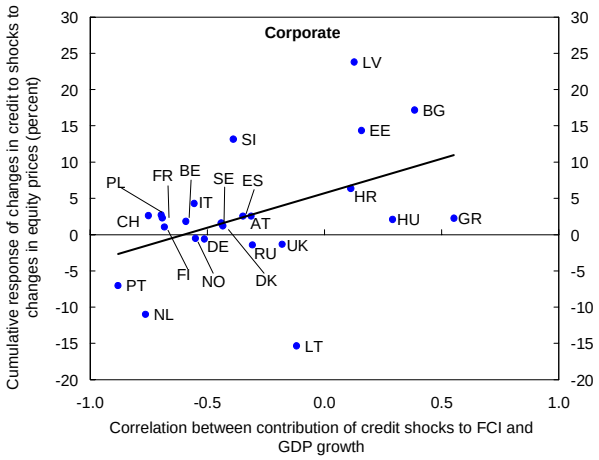
to erode ½ percentage point from growth, although the total contribution to growth remains positive. In this way, it is possible to distinguish between *tight* financial conditions and a *tightening* in financial conditions that are, however, still accommodative.

Estimated FCIs appear to account for a substantial portion of the variation in real GDP growth over the business cycle of almost all European countries in the sample (Figure 27). Turning to the role of individual financial variables, credit is found—among the advanced economies—to have contributed substantially to annual growth in Austria (40 percent), Sweden (25 percent), and, to a lesser extent, the United Kingdom and Greece (10 percent). Changes in equity prices explain 40 percent of growth variation in Finland, France, and the Netherlands, while interest rate variations play an important role in Sweden and Denmark. Among emerging economies, financial conditions play—overall—a much greater role. They account for over 70 percent of growth variation in Hungary, Russia, Latvia, and Estonia, underscoring, once again, the vulnerability of these economies' corporate sector to downswings in financing conditions.

Looking at the path of FCIs over time corroborates the view that, by end-2007, the financial cycle had already turned in most advanced European economies. However, financial conditions appear to be generally still accommodative in the region, with few exceptions (Figure 26). In emerging Europe, the tightening in credit conditions seems—on balance—to have started earlier, over the course of 2006, and to have already begun crunching into growth in a few countries. On the other hand—and in contrast to the prevailing trend in international credit markets—Turkey, Poland, and the Slovak Republic appear to enjoy rather favorable financing conditions, sustaining growth in these economies.

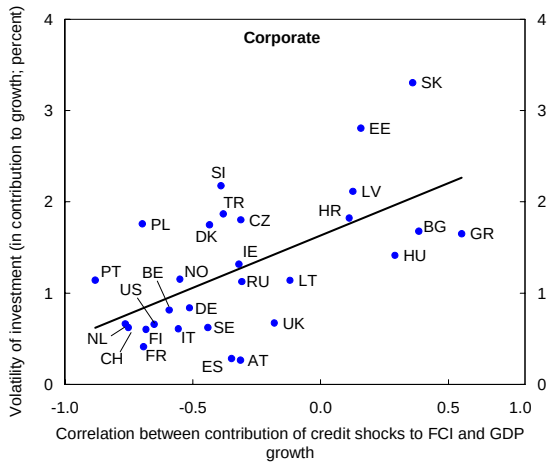
Are country-specific financial conditions co-moving with the cycle? In which countries are lending conditions more responsive to underlying shocks to asset prices? Once again, the answers vary on a country-by-country basis (Table 6). Some empirical regularities can, however, be identified. First, credit growth tends to be more sensitive to changes in asset prices in those economies where the firms' leverage tend to co-move more closely with the business cycle (Figure 28). Second, a higher degree of procyclicality in firms' leverage seems to be associated with higher volatility in private investment (Figure 29). Remarkably—and in line with the findings of the theoretical model economy described above—oversensitivity of credit availability to asset price changes, greater procyclicality in firms' leverage, and higher investment volatility appear to be features mostly

Figure 28. Cyclicality of Lending and Sensitivity of Credit Growth to Changes in Asset Prices, 2003–08



Sources: IMF, *International Financial Statistics* ; Haver Analytics; national authorities; and IMF staff calculations.
Note: Country names are abbreviated according to the ISO standard codes.

Figure 29. Cyclicality of Lending and Macroeconomic Volatility, 2003–08



Sources: IMF, *International Financial Statistics*; Haver Analytics; national authorities; and IMF staff calculations.
Note: Country names are abbreviated according to the ISO standard codes.

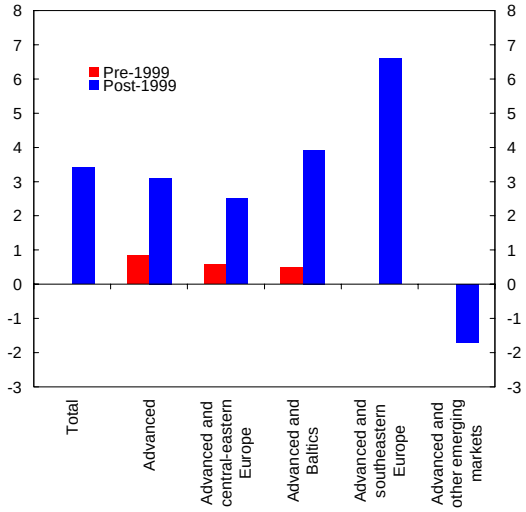
characterizing the least advanced financial markets in the sample. This finding corroborates the idea that, in a context in which firms' financing conditions are more stringent, capital accumulation—and, therefore, production—appears to be more responsive to the underlying financial shocks, which may affect the value of collaterals.

Cross-Border Lending: Further Benefits and Risks

Financial systems in advanced and emerging economies of Europe have undergone remarkable changes over the past decade. Cross-border ownership of assets has increased, revealing not only important benefits associated with financial integration, but also new risks.

Greater financial integration has clearly shown its ability to disperse claims to a broader range of portfolios, so that risks are better spread. In particular, financial integration holds great potential to smooth incomes through cross-border asset diversification, and thus stabilize the economy in the face of asymmetric shocks. Empirical work on the United States estimates that two-fifths of the income effect from local shocks is smoothed away through asset holdings

Figure 30. Measuring Risk Sharing across European Countries
(Percent)



Sources: Eurostat; IMF, *World Economic Outlook;* and IMF staff calculations.
Note: Advanced = Austria, Belgium, Denmark, Greece, Finland, France, Germany, Ireland, Italy, Netherlands, Norway, Portugal, Slovenia, Spain, Sweden, Switzerland, and the United Kingdom; central-eastern Europe = the Czech Republic, Hungary, Poland, and the Slovak Republic; Baltics = Estonia, Latvia, and Lithuania; southeastern Europe = Albania, Bosnia and Herzegovina, Bulgaria, Croatia, FYR Macedonia, Moldova, Romania, and Serbia; other emerging markets = Russia, Turkey, and Ukraine.

across state lines. A similar analysis for European countries shows that, since 1999, risk sharing has also begun to emerge across these economies, although the extent to which financial integration is able to insure incomes against country-specific shocks is still limited (with estimates below 10 percent in all regions) and uneven across regions (Figure 30).[39]

Adjusting well to shocks means having a system that is not only resilient but also reallocates

[39] Following Kalemli-Ozcan, Sorensen, and Yosha (2004), the following panel regression is estimated over the years 1993–2006 for each group of countries indexed by subscript *i* and reported in Figure 30:

$$\Delta \log GNP_{it} - \Delta \log GNP_t = const + \beta\left(\Delta \log GDP_{it} - \Delta \log GDP_t\right) + \varepsilon_{it}.$$

Since GNP equals GDP plus net factor income flows, this regression provides a measure of the extent to which net factor income flows provide income insurance—the lower the β, the higher is income insurance within the group. In other words, $1 - \beta$ provides a measure of risk sharing through international factor income flows. Figure 30 reports point estimates for $1 - \beta$ for the different country groups, before and after 1999.

resources more efficiently across sectors and across firms, thereby fostering growth. Also, improved, risk-adjusted growth opportunities appear to be related to future advances in integration. This empirical regularity indicates that the countries whose integration has been faster benefit most from a virtuous dynamic in which financial integration and improved real prospects are mutually reinforcing. Europe is found to be the region that has benefited the most from such dynamics (see Box 11).

At the same time, though, financial integration poses new challenges to market investors and policymakers. Cross-border ownership of assets exposes financial institutions such as banks to macroeconomic, financial, and asset price fluctuations in the countries where they hold positions. Increasingly complex linkages across market segments and borders make the transmission of shocks in the international economy and the pattern of risk dispersion more opaque, creating uncertainty for agents and policymakers about where the ultimate risks lie.

In order to shed light on potential international spillovers and the feedback between the real and the financial sectors, it is crucial to look into the time profile of the cross-country transmission of financial shocks, while explicitly accounting for regional interdependencies.[40] In this perspective, country-specific vector error-correction models are estimated, where the domestic macroeconomic variables are related to the corresponding foreign variables constructed exclusively to match the international financial flows of the country under consideration. The individual country models are then combined consistently and cohesively to generate predictions for all the variables in the world economy simultaneously. The resulting global vector autoregressive (GVAR) model is estimated for 28 European countries, grouped into 6 regions plus the United States, using monthly data on real GDP growth, real growth in credit to the corporate sector, real equity prices, and real interest rates from January 1999 to March 2008.

Looking at generalized impulse response functions for an exogenous one-standard-error negative shock to U.S. equity prices (equivalent to a fall of around 4¼ percent in U.S. real equity prices, annualized) confirms the significant interdependence of international equity markets (with the exception of southeastern European markets) and strong financial co-movements between credit conditions in Baltic countries and non euro–area advanced economies (namely, Sweden). Interestingly—and consistent with results in previous sections—empirical evidence from the GVAR seems to support the view of a decoupling between credit conditions in advanced economies and those in selected emerging European markets (e.g., Turkey and Russia) and central-eastern Europe, in the face of a common adverse shock stemming from U.S. financial markets (Figure 31).

How does the evidence of significant financial spillovers affect conclusions on macrofinancial linkages? Ultimately, does financial integration weaken or reinforce the relationship between the procyclicality of firms' leverage and macroeconomic volatility? Using GVAR estimates for calibration purposes shows that significant financial cross-border spillovers have the potential to amplify the macroeconomic effects of leverage procyclicality, though only marginally. In other words, all else being equal, an increase in the procyclicality of lending behavior might boost investment (and output) volatility even further in the presence of financial cross-border spillovers than it would do in their absence (Table 7).

[40] Model and estimation details underlying the assessment of regional financial spillovers across Europe are provided in Galesi and Sgherri (forthcoming). The GVAR methodology was originally developed by Pesaran, Schuermann, and Weiner (2004) and extended by Dees and others (2007).

Box 11. Financial Integration and Growth: Are They Related, and How?

Theory predicts that financial integration should bring about beneficial real effects resulting from a more efficient resource allocation. A recent IMF study finds that advances in financial integration are indeed associated with better growth opportunities, and the effect is stronger in countries where the process of integration is faster.[1] Europe is the region that appears to have integrated the fastest, reaping the largest real gains in the process. The study also finds that some of the channels through which financial integration affects growth include faster globalization and financial market development, and higher liquidity.

Measuring the advances in financial integration as a degree of cross-country convergence in equity premiums (following Adjaouté and Danthine, 2004), the analysis indicates the following:

- Financial integration has increased worldwide, but especially so in emerging markets. Regional integration has proceeded faster in Europe, including in emerging Europe.
- The faster rate of financial integration has been associated with higher subsequent risk-adjusted growth.[2] At the same time, improved risk-adjusted growth opportunities have been related to future advances in integration. This indicates that the countries whose integration has been faster benefit most from a virtuous dynamics, in which financial integration and improved real prospects are mutually reinforcing. Europe is the region that has benefited the most from such dynamics.

In addition, the investigation of possible channels through which advances in financial integration might affect growth finds the following:

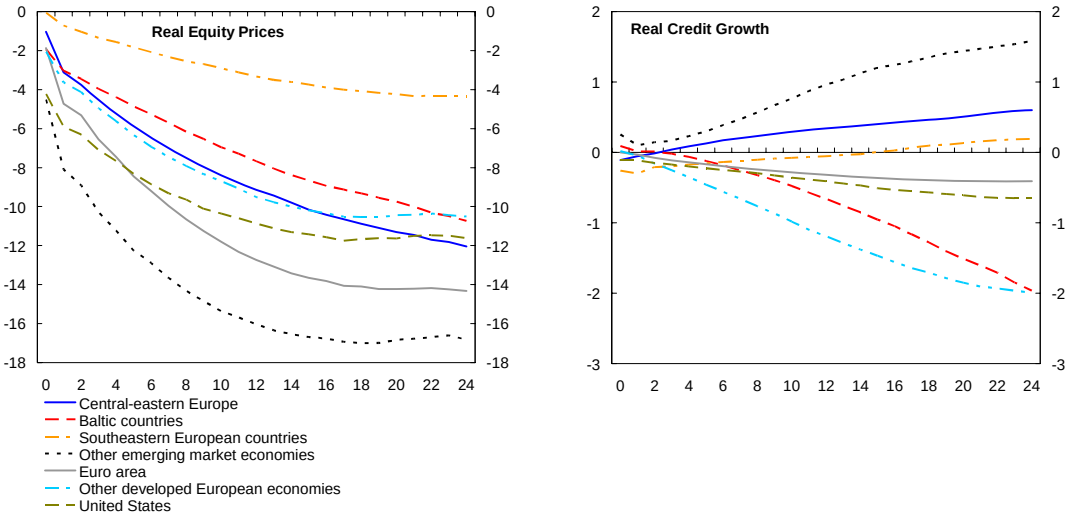
- Financial integration fosters globalization and financial development, and boosts market liquidity.
- Coupled with findings in other studies that relate globalization and growth (Bekaert, Harvey, and Lundblad, 2005) and liquidity and growth (De Nicolò and Ivaschenko, 2008), these results suggest that globalization and liquidity are two of the channels through which the benefits of integration translate into higher real growth.

Note: The main author of this box is Iryna Ivaschenko.

[1] De Nicolò and Ivaschenko (2008).

[2] The speed of integration for each country is measured as the distance of a country's cost of capital from the regional (or other group) average. The growth opportunities are adjusted for risk and are proxied by the ratio of market price–to-earnings ratios to their volatility.

Figure 31. Measuring Cross-Border Financial Spillovers: Response of Financial Variable to a One-Standard-Error Reduction in U.S. Equity Prices
(Percent)



Sources: IMF, *International Financial Statistics* ; Haver Analytics; national authorities; and IMF staff calculations. See Galesi and Sgherri (forthcoming) for detail.
Note: Central-eastern Europe = the Czech Republic, Hungary, Poland, and the Slovak Republic; Baltic countries = Estonia, Latvia, and Lithuania; southeastern European countries = Albania, Bosnia and Herzegovina, Bulgaria, Croatia, FYR Macedonia, Moldova, Romania, and Serbia; other emerging market economies = Russia, Turkey, and Ukraine; Euro area = Austria, Belgium, Greece, Finland, France, Germany, Ireland, Italy, Netherlands, Portugal, Slovenia, and Spain; other developed European economies = Denmark, Norway, Sweden, Switzerland, and the United Kingdom.

Table 7. Increase in Volatility Due to a Rise in the Procyclicality of Lending with and without Financial Cross-Border Spillovers
(Percent)

Percentage Increase in Volatility 1/	Real GDP	Consumption 2/	Investment 2/	Trade Balance 3/	Current Account 3/	Debt-to-GDP Ratio	Real Exchange Rate
Without spillovers	3.2	20.9	20.2	20.8	20.7	22.7	18.5
With spillovers	3.5	20.7	20.3	20.9	20.5	22.4	18.0

Source: Gruss and Sgherri (forthcoming).
1/ Percent increase in the volatility of each aggregate following a rise in the degree of correlation between lending and asset prices from 0 to 0.5.
2/ As contribution to growth.
3/ As a ratio to GDP.

What Are the Implications for Policy?

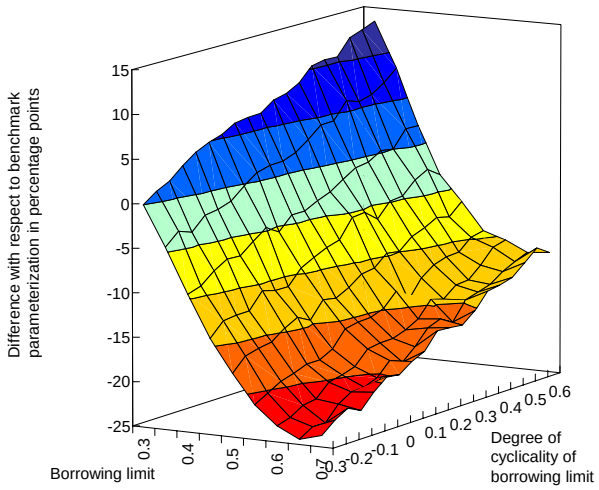
The empirical analysis carried out in this chapter suggests that domestic asset price dynamics are likely to reinforce economic boom-bust dynamics. Specifically, the rapid growth of asset prices, particularly stocks and real estate prices, during booms raises the value of collateral, thus stimulating credit growth. Speculation on price swings will also become an additional source of demand for credit. In turn, the resulting wealth effects accentuate the spending boom. This process is further reinforced by the greater liquidity that characterizes fixed assets during periods of financial euphoria. However, this behavior also increases the vulnerability of the financial system during the subsequent downswing, when it becomes clear that the loans did not have adequate backing. Asset price deflation will be reinforced as debtors strive to cover their financial obligations and creditors seek to liquidate the assets received in payment for outstanding debts, in conditions of reduced asset liquidity.

The basic problem in this regard is the inability of individual financial intermediaries to internalize the collective risks assumed during boom periods. This is because these risks are essentially of a macroeconomic character and therefore entail coordination problems that exceed the capabilities of any one agent. Moreover, risk assessment and traditional regulatory tools tend to have a potential

procyclical bias in the way they operate.[41] The traditional focus on microeconomic risk assessment, with inadequate attention paid to the effects of external financial cycles on domestic financial markets, and on exchange and interest rates, further reinforces this bias. In fact, it is during crises that the excess of risk assumed during economic booms becomes evident and ultimately makes it necessary to write off loan portfolios. In a system where loan loss provisions are tied to loan delinquency, the sharp increase in such delinquency during crises reduces financial institutions' capital and, hence, their lending capacity. This, in conjunction with the greater perceived level of risk, triggers the credit squeeze that characterizes such periods, further reinforcing the downswing in economic activity and asset prices, and thus the quality of the portfolios of financial intermediaries.

To mitigate these cyclical effects, some supervisors (for example, in Spain) have advocated (and implemented) the use of countercyclical provisioning methodologies (sometimes referred to as "dynamic" or "statistical"), which require banks to provision more (than evidenced by losses) in good times, when the identified need for provisioning is smaller, and draw against these reserves in bad times, when the need for provisions is larger. Given the interaction between provisions and capital, it is argued that such forward-looking provisioning methods could reduce the procyclicality of regulatory requirements (see Box 12).

Figure 32. Stability Gains from Reducing Cyclicality in Lending 1/



Source: Gruss and Sgherri (forthcoming).
1/ Percentage changes in the standard deviation of investment under alternative model parameterizations. Benchmark: borrowing limit = 40 percent and degree of cyclicality = 0.5.

Indeed, model simulations of a decrease in procyclicality of bank lending—following, for example, the introduction of a countercyclical element into prudential banks' capital regulation—suggest substantial reductions in the volatility of investment in financially integrated economies. Not surprisingly, stability gains appear to become more significant in those economies exhibiting tighter financial borrowing constraints (Figure 32).

Improved prudential regulation, including the introduction of countercyclical components that take into account the macroeconomics of boom-bust cycles, is a complement to but not a substitute for appropriate policies in other areas. Two types of policies are crucial in this regard: countercyclical macroeconomic policies that reduce the intensity of boom-bust cycles, and policies aimed at deepening domestic financial development. In general, having sufficient room for maneuver on the policy side substantially reduces the pressures that are likely to be felt on the real economy as financial conditions deteriorate.

Last but not least, the empirical evidence presented above argues in favor of greater financial integration supported by adequate coordination of national financial policies. Indeed,

[41] There is a growing literature on the potential procyclicality of the new risk-sensitive bank capital regulation—known as Basel II—mirroring the concern that the increase in capital requirements during downturns might severely contract the supply of credit. On this point, see, among others, Jokipii and Milne (2006), Taylor and Goodhart (2006), Jiménez and Saurina (2006), Saurina and Trucharte (2007), and Repullo and Suarez (2008). For recent policy discussions, see also Caruana and Narain (2008) and Goodhart and Persaud (2008).

Box 12. Countercyclical Credit Risk Provisioning: The Spanish Experience

Conceptually, the framework for bank credit risk management views provisions as covering "expected losses," and capital as covering "unexpected losses." These provisions can either be "specific" or "general" (depending on whether they are related or unrelated to any specific loans or impairments). Risk-based bank capital regulations can have a procyclical propensity—in a downturn, as credit risks are heightened, capital requirements increase and banks may resort to reduced lending, accentuating the downturn. Provisioning requirements for credit risk may also be similarly procyclical—as credit losses mount in a downturn, banks may be required to provision more. This in turn reduces the earnings, thus affecting banks' ability to bolster their capital. To mitigate these cyclical effects, some supervisors have advocated (and implemented) the use of countercyclical provisioning methodologies (sometimes referred to as "dynamic" or "statistical"), which require banks to provision more (than evidenced by losses) in good times, when the identified need for provisioning is small, and draw against these reserves in bad times, when the need for provisions is larger. Given the interaction between provisions and capital, such forward-looking provisioning methods could reduce the procyclicality of regulatory requirements.

In practice, while the use of ad hoc countercyclical methods is not uncommon—for instance, through a temporary increase of provisioning or risk-weight requirements in the face of rapid credit growth—few countries use full-fledged countercyclical provisioning systems. Spain has been the leading practitioner of countercyclical provisioning, requiring banks to make statistical provisions based on either a supervisory formula or own internal estimates of historical expected loss, which form part of the general provisions. Specific provisions in the accounting period are compared with this statistical provision. If the former are less than the latter, then the difference is charged to income for the period; otherwise, the accumulated statistical provisions can be drawn down to meet any increase in required specific provisions. This reduces the volatility of earnings as well as the associated procyclical effects. This system appears to have served Spain well. Although several Spanish banks have been faced with more nonperforming loans in recent periods on account of their exposure to real estate, investor sentiment has not faltered, as reflected in the resilience of these banks' share prices.

If countercyclical provisions are the way to go, why have they not been adopted more widely? Unlike bank capital, there are no internationally agreed standards on supervisory provisioning prescriptions. However, guidance has been provided on a country-by-country basis. National practices vary, partly because banks' provisioning decisions are influenced by an interaction of the regulatory, accounting, and taxation regimes, as well as management objectives regarding earnings. Elements of these different dimensions tend to conflict with forward-looking provisions, especially those that are more general (not identified with any particular exposure or impairment).

Historically, regulatory prescriptions on provisioning have tended to be backward looking, that is, focusing on relating provisioning levels to the extent of deterioration in the outstanding value of the loan. In recent times, many countries have included forward-looking elements by requiring identified, though not incurred, impairments to be provisioned, and some have also encouraged the creation of across-the-board general provisions, a limited portion of which can qualify as capital. However, these practices are sometimes interpreted as being in conflict with the impairment provisioning laid out in the revamped International Financial Reporting Standards (IFRS). These standards champion a fair valuation of all assets, including loans; this valuation must reflect any incurred losses or impairment events, but restrict the ability to include (with some exceptions) losses that may occur in the future, an essential element of countercyclical provisioning. Market regulators, too, are wary of the possibility that such methods can allow banks to manipulate their earnings through "income smoothing," and thus hinder transparency for investors. Finally, the tax treatment of provisions (specific provisions are more likely to be tax deductible while general provisions are usually not) may also create disincentives for bank management.

Note: The main author of this box is Aditya Narain.

However, as the experience of Spain (and a few other countries, including Portugal and Australia) suggests, none of these issues is insurmountable, and it is likely that, in the context of the ongoing credit crunch, more supervisors will seek to interpret the accounting standards in a manner that supports their ability to dampen the procyclical effects of bank regulation. Supervisory discussions in international forums are also focusing on mitigating the unintended procyclical effects of bank regulation, particularly in the context of Pillar 2 of the Basel II framework, which requires supervisors to ensure that systems to manage bank risk take cyclical effects into account. Countercyclical methods for credit risk provisioning may, therefore, just be in the headlines once again.

regulatory and supervisory convergence remains essential to foster smooth and growth-oriented adjustment among economies characterized by increasingly complex linkages across market segments and borders—and even more so within a monetary union. In this context, further, bold steps are needed to commit EU member states to put in place national and cross-border arrangements to deal with financial stability issues (Box 13).

Box 13. Cross-Border Financial Stability in the European Union: Where Do We Stand?[1]

The European Union needs a more integrated approach to financial stability—a fact highlighted by the ongoing financial turmoil. Since the Treaty of Rome in 1957, the European Union has sought to establish a single financial market. It has made major progress toward this objective, but completing the process and managing the related risks require an integrated approach to financial stability.[2] Political preference, as well as legal and institutional considerations, has thus far limited the progress on cross-border financial stability arrangements; however, the increased sense of urgency created by the ongoing financial turmoil has bolstered support for reforms in this area.

The fundamental problem is that national supervisors' fiduciary responsibilities are toward national governments and parliaments. This limits their incentives to work toward common EU objectives. The IMF staff has for some time argued that the European Union needs joint responsibility and accountability for financial stability, and that this undertaking should be underpinned by more complete information sharing (including with the European Central Bank) and better crisis prevention, management, and resolution frameworks.

The European Union has adopted a set of cross-border crisis management principles and a supporting memorandum of understanding (MoU). These principles, adopted by the October 2007 Economic and Financial Affairs Council (ECOFIN), commit member states to act in crises to minimize the "potential harmful economic impacts at the lowest overall collective costs." If public resources are needed to achieve a cost-minimizing solution, then direct budgetary net costs are to be "shared among Member States on the basis of equitable and balanced criteria." The recently agreed MoU seeks to implement these principles. It commits member states to putting in place national and cross-border arrangements to manage financial stability problems, a set of common guidelines for crisis management, and a common assessment framework to determine the systemic nature of a crisis. Meanwhile, work is ongoing to overhaul the legal framework to deal with solvency problems in cross-border banks. This work covers improvements to deposit guarantee schemes, a framework for early intervention and reorganization measures, and an assessment of obstacles to the transfer of assets across borders.

. . . continued

Note: The main authors of this box are Martin Čihák and Wim Fonteyne.

[1] For details, see also IMF (2007).

[2] See Decressin, Faruqee, and Fonteyne (2007).

Box 13 *(concluded)*

The Lamfalussy framework, aimed at achieving regulatory and supervisory convergence, is being reinforced. This framework was set up to facilitate financial sector rule making at the EU level and achieve a more consistent application of these rules at the national level. The so-called Level 3 Committees of this framework bring together national supervisors and have been tasked with much of the burden of achieving the desired convergence. The December 2007 ECOFIN launched a road map of reforms to reinforce these committees by giving them more resources, introducing scope for qualified majority voting, and strengthening the national application of guidelines issued by these committees, while maintaining the nonbinding nature of the guidelines.

Strong political leadership will be needed to move decisively toward greater joint responsibility and accountability. The crisis management principles, with their recognition of a collective responsibility and a need to share costs, have broken the mold. However, in a severe crisis, national interests may still prevail over the good intentions embedded in these principles and the nonbinding MoU. The MoU also risks adding further complexity to the cross-border financial stability setup. All in all, timely and collective cost-minimizing solutions may still prove out of reach. The key challenge is to align the legal underpinnings of nationally anchored financial stability frameworks and the incentives of the relevant agents with the commonly agreed principles. In this context, an important step was taken at the May 2008 ECOFIN meeting, which called on member states to endow their supervisors' statutes with a European mandate so that they "are able to take into account the EU dimension in the performance of their duties, including having regard to the financial stability concerns in other Member States in exercising their duties." However, bolder steps will be needed. These will require strong political leadership—of the kind that led to the introduction of the euro as a common currency 10 years ago.

4. Cross-Border Labor Flows in New Member States: Patterns and Challenges

The flows of labor across the borders of the European Union's New Member States (NMS) have not only intensified significantly since the onset of transition, but have also become increasingly diverse and flexible. Cross-border labor mobility has been beneficial to the NMS, speeding up the convergence process in countries where these flows have been large. Contrary to perceptions, labor mobility is an unlikely source of overheating; instead, it tends to play a cushioning role over the business cycle. In the medium term, however, outward labor mobility may contribute to wage increases that could combine with other rigidities and set off second-round inflationary effects. These need to be kept in check to preserve competitiveness. Better mobilization and utilization of labor are also desirable, to meet the challenges of reversing current account imbalances and ensuring sustained growth in the long run.

Overview

Along with the international flow of capital, the movement of labor across the borders of the European Union's NMS has been a key feature in their process of income convergence.[42] With the progressive relaxation of restrictions to the cross-border mobility of labor, most NMS have since the onset of transition experienced an intensification of the flow of labor across borders. These flows have manifested themselves in various guises and directions:

- Over the past decade or so, many countries have experienced a wider variety in the way labor services are being provided across borders, whether through physical migration, change of permanent residence, and participation in the foreign labor market, or through various types of seasonal, temporary, or irregular flows of labor services across borders. These different modes have emerged in response to factors such as an increased availability of (very) low-cost transportation options, a less restrictive policy environment, and an increased demand for flexible forms of foreign labor.
- Unlike capital flows—which have been primarily inbound—many countries have experienced flows of labor in both inbound and outbound directions. While several countries have witnessed sizable outflows to higher-income countries, many of them have simultaneously benefited from sizable inflows from their lower-income neighbors. In net terms, however, most countries have experienced large outflows for some time since the onset of transition.

The magnitude of these flows has fueled a debate that has unevenly emphasized the perspective of higher-income recipient or destination countries. For these countries, a key issue has been the absorption of foreign labor inflows in domestic labor markets. Whereas initially the concern was that large inflows would hurt labor market outcomes, the evidence thus far suggests that the inflows have been absorbed well. They have supplemented rather than replaced domestic labor, and, by doing so, they have alleviated aging-related problems, contributed to economic growth, and helped fend off inflationary pressures.[43]

Adopting the perspective of the NMS, this chapter documents the evolving patterns of cross-border labor mobility and addresses how the NMS can best manage the associated challenges. Building on a general equilibrium theoretical framework, this

Note: The main authors of this chapter are Rudolfs Bems and Philip Schellekens. Analytical underpinnings are provided in Bems and Schellekens (forthcoming).

[42] The NMS comprise Bulgaria, the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, the Slovak Republic, and Slovenia.

[43] World Bank (2006).

chapter discusses how labor mobility interacts with the process of income convergence. Among its key findings are the following:

- Labor mobility speeds up the convergence process, helps boost economy-wide capital-labor ratios, supports aggregate demand through remittances, and may contribute to skills augmentation through the reintegration of returning migrants into domestic labor markets.
- As labor migrates, so does part of the demand for nontradable goods. This migration moderates the boom in nontradable prices and the buildup of the current account deficit that arise during the convergence process. It also lessens the requirement for internal factor market flexibility to direct resources to the tradable sector, which would help reduce the current account deficit subsequently.
- Restricting labor mobility is therefore no answer to overheating pressures. Labor mobility is unlikely to be a significant primary source of overheating. In addition, labor mobility tends to play a cushioning rather than amplifying role. However, over the medium term, second-round effects of wage inflation possibly associated with outward labor flows need to be avoided to prevent an erosion of competitiveness.
- To ensure sustained growth, labor needs to be mobilized and utilized better, including by fostering labor force participation. This outcome would help countries face the challenges of reorienting resources from the nontradable to the tradable sector, as well as address any mismatches resulting from the differences in the age and skills composition of labor outflows and inflows.

Patterns

A general caveat applies to the discussion that follows on general patterns in cross-border labor mobility. The measurement of labor flows across borders is subject to various data limitations (availability, timeliness, precision, and quality). For example, migration registration systems reliant on changes in permanent residency may underestimate flows when foreign workers maintain their residency status while working abroad. Also, population censuses and labor force surveys may not capture temporary and irregular flows. Moreover, workers' registration and other administrative systems in recipient countries may produce double counting and suffer from cross-country comparability.[44]

Intensified Flows

Labor market openness has made large and rapid strides since the onset of transition. Before transition, the movement of labor was highly restricted by governments (in terms of volume and destination) and primarily took the shape of settlement and irregular migration. The fall of the Iron Curtain gave a significant impetus to migration and, thereby, the mobility of labor across borders. However, labor markets in destination countries were opened up only gradually. Given the large income differentials and the uncertainty surrounding the possible scale of migration, restrictions were initially in force, but these were gradually alleviated in the wake of the successive EU enlargements.

The intensification of cross-border labor flows is evident in the development of net migration rates (Table 8). The data on net migration, derived from population statistics and available for most countries over relatively long periods of time, suggest that several countries have experienced strongly negative net migration rates over extended periods of time (i.e., outflows dominating inflows). This was particularly so in the Baltics during the early years of transition (reflecting the return migration of ethnic groups). Bulgaria, Poland, and Romania also experienced high negative net migration rates. For other countries, such as the Czech Republic, Hungary, and Slovenia, the average migration balance was positive.

[44] Worker registration systems, for example, may not be able to ensure that workers deregister when they leave the destination country. This would cause the measure of inflows to be overstated.

Table 8. New Member States: Net Migration Rates, 1992–2007
(Percent)

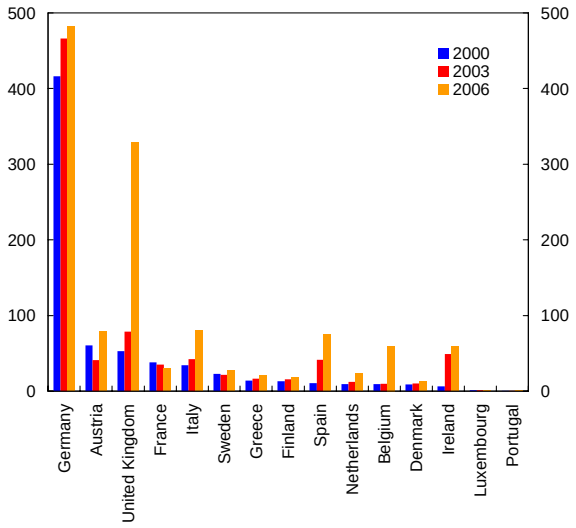
	1992–95	1996–99	2000–03	2004–07
Estonia	-17.1	-4.9	0.1	0.1
Latvia	-11.6	-3.0	-1.3	-0.5
Lithuania	-6.5	-6.1	-2.1	-2.1
Bulgaria	-2.7	0.0	-6.5	0.0
Slovenia	-1.1	0.1	1.7	3.6
Romania	-0.9	-0.5	-6.1	-0.3
Poland	-0.4	-0.3	-3.0	-0.5
Slovak Republic	0.3	0.3	-0.9	0.8
Czech Republic	0.9	1.0	0.0	4.2
Hungary	1.7	1.7	1.1	1.7

Sources: Eurostat; and IMF staff calculations.

Considering the period following the first EU enlargement in 2004, the evidence available on gross emigration rates suggests the following patterns:

- From the perspective of the EU-15 old member states, the stock of foreign residents from the NMS-8 has increased by about 200,000–250,000 a year since the first EU enlargement.[45] This represents a cumulative 1.5 percent of source countries' total population since 2004, with Latvia, Lithuania, and Poland experiencing higher-than-average gross emigration rates.[46]
- Countries that opened up earlier were among the more popular destination countries (Figure 33). Ireland and the United Kingdom, which were among the first to lift restrictions, recorded large inflows, leading to well-established migration networks.[47] Factors other than migration restrictions also played a role, such as language barriers, as countries with similarly liberal regimes (e.g., Denmark and Sweden) did not experience sharp rises in inflows.
- Bulgaria and Romania became important source countries well before their accession in 2007 (Table 9). In response to the large inflows after the first EU enlargement, Ireland and the United Kingdom chose to restrict access to their labor markets from Bulgaria and Romania in 2007.[48] The most attractive destination countries then became Italy and Spain.[49]

Figure 33. Residents from the NMS-8 in the EU-15, 2000–06 1/
(Thousands)



Source: Brücker (2007).
Note: Data compiled from various national population statistics and Eurostat labor force surveys.
1/ NMS-8 comprises the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Slovenia, and the Slovak Republic.

Table 9. Largest Source Countries for Immigration in OECD European Countries, 2000 and 2005
(Thousands)

2000		2005	
Morocco	96	Poland	324
Ecuador	96	Romania	202
Poland	94	Morocco	128
Bulgaria	81	Bulgaria	82
Turkey	79	Germany	77
Romania	76	Ukraine	70
United States	64	Turkey	66
Germany	61	United Kingdom	65
France	60	Russia	54
Italy	56	France	49

Source: OECD, *International Migration Outlook (2007).*

[45] Brücker (2007). These figures are based on labor force and population statistics.
[46] Kaczmarczyk and Okólski (2008).
[47] Ireland attracted large migrant inflows from Lithuania, Poland, and Romania; the United Kingdom, from various countries but especially Poland.
[48] Other countries where restrictions were applied regarding access of Bulgarian and Romanian workers during the first stage of the transitory arrangements include the Czech Republic, Cyprus, Estonia, Latvia, Lithuania, Poland, Slovenia, the Slovak Republic, and Finland.
[49] Iara (2008).

Growing Flexibility

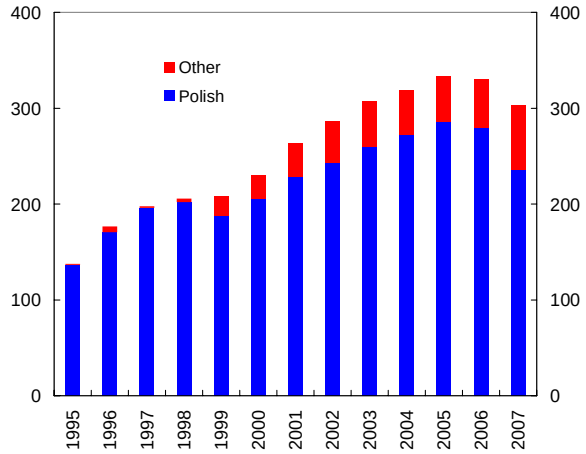
The past decade has also seen a sea change in the ways labor services are being provided across borders, as flexible modes of service delivery became increasingly more common:

- Flexible forms of labor mobility have thrived in response to (1) the seasonality of labor demand in destination countries, especially in the agriculture and construction sectors, and (2) the generally greater demand in these countries for flexible forms of labor, given domestic labor market rigidities. This situation has increased short-term and high-frequency labor flows.
- Proximity and accessibility factors have played a critical role in the emergence of these more flexible modes of delivery. The importance of geographical proximity is well illustrated in the cross-border linkages between Germany and Poland (Figure 34). For areas farther apart, accessibility has improved, thanks to low-cost transportation. This has fostered temporary forms of labor mobility (for example, between the Baltics and Ireland).[50]
- A significant part of short-term labor flows may consist of irregular flows. The commuting back and forth by foreign laborers is hard to capture in the data and may lead to an underestimation of actual flows. At the same time, an increase in official cross-border flows after the lifting of inflow restrictions may be illusory, if the increase reflects the formalization of existing employment.[51]

Changes in Composition

Although net flows may be of primary concern when the macroeconomic impact of labor mobility is being examined, the composition of gross flows matters too. Even if gross inflows exactly match gross outflows, an impact may be felt, not only through transitional costs arising from labor movements but also through changes in the composition of the labor force.

Figure 34. Germany: Seasonal Migratory Workers, 1995–2007
(Thousands)



Source: Bundesagentur für Arbeit.

Two dimensions of interest for the composition of flows are age and skill level:

- The limited evidence available suggests that, in recent years, the age distribution has not been significantly affected by the migration of labor (Table 10). By and large, young people are highly represented in outflow statistics. Yet, at the same time, they are also highly represented in the inflows to these countries. For the 15–24-year age group, the net migration rate is lower than average in Latvia and Poland (net emigration)

Table 10. New Member States: Net Migration Rates by Age Cohorts, 2004–06
(Per thousands)

	15–24 years	25–39 years	40–54 years	55–64 years	15–64 years
Bulgaria	…	…	…	…	…
Czech Republic	5	4.7	2.3	0.4	3.3
Estonia	0	0	0.2	-0.1	0
Latvia	-0.7	0.1	-0.2	-0.3	0.2
Lithuania	0.4	-10.6	13.1	12.8	2.8
Hungary	2.8	2.4	1.1	1.4	1.9
Poland	-0.7	-0.4	-0.4	-0.1	-0.4
Romania	-0.3	-1	-0.2	-0.1	-0.5
Slovenia	4.1	2.5	1.3	0.5	2.1
Slovak Republic	0.3	0.6	0.6	0.5	0.5

Source: Schreiner (2008).

[50] Low-cost airlines have facilitated the practice of "blue-collar" air commuting.
[51] World Bank (2006).

and in Lithuania and the Slovak Republic (net immigration). For the age group of 25–29 years, only in Lithuania and Romania is net emigration significantly higher than average.

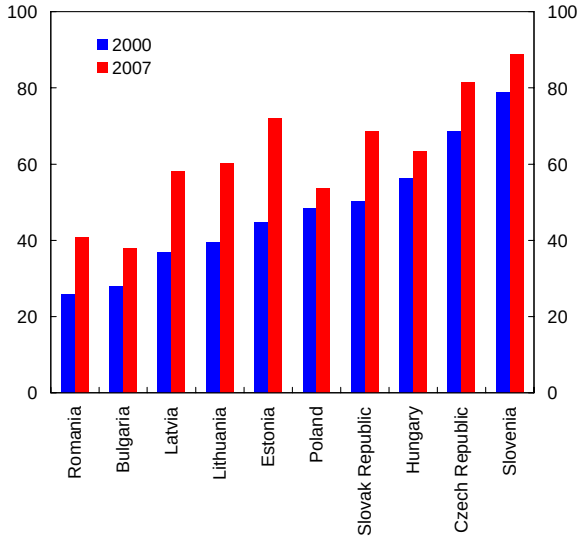
- It is not clear whether a similar conclusion holds for the distribution of skills. Data on skill levels are much harder to obtain. The partial evidence available for Estonia and Poland suggests that the skill levels of immigrants are generally lower than those of emigrants, even though the evidence for Poland also suggests that skill levels of recent emigrants are higher than those of emigrants in previous decades.[52] This finding, however, may not apply to other countries, as indicators of educational attainment of the working-age population in the NMS suggest an improvement in recent years.[53] So, if emigrants had high educational levels, their departure is unlikely to have significantly reduced the average skill level of the labor force.[54]

Impact of Labor Mobility on Convergence

Over the past decade, the NMS economies expanded strongly, with income levels converging at unprecedented speed to EU averages (Figure 35). The per capita income levels in the Baltic economies improved dramatically, rising from about 40 percent to 63 percent of the overall EU average over only eight years.[55] Other countries, such as Hungary and Slovenia, converged more slowly, partly because of their stronger starting position.

How has this convergence process been affected by the mobility of labor across borders? Before addressing this question, it is useful to consider the stylized example of an economy catching up to higher living standards when the only type of labor mobility allowed is that between the sectors of the economy. Thus, workers can shift between jobs in a country ("internal labor mobility"), but not between countries for employment in a similar job ("external labor mobility"). Afterward, the cases of both internal and external mobility will be considered.

Figure 35. New Member States: Income per Capita Relative to EU-27, 2000 and 2007
(Percent)



Sources: Eurostat; and IMF staff calculations.
Note: The index provides a measure of the GDP per capita in purchasing power standards relative to the EU-27 average, which is normalized to 100.

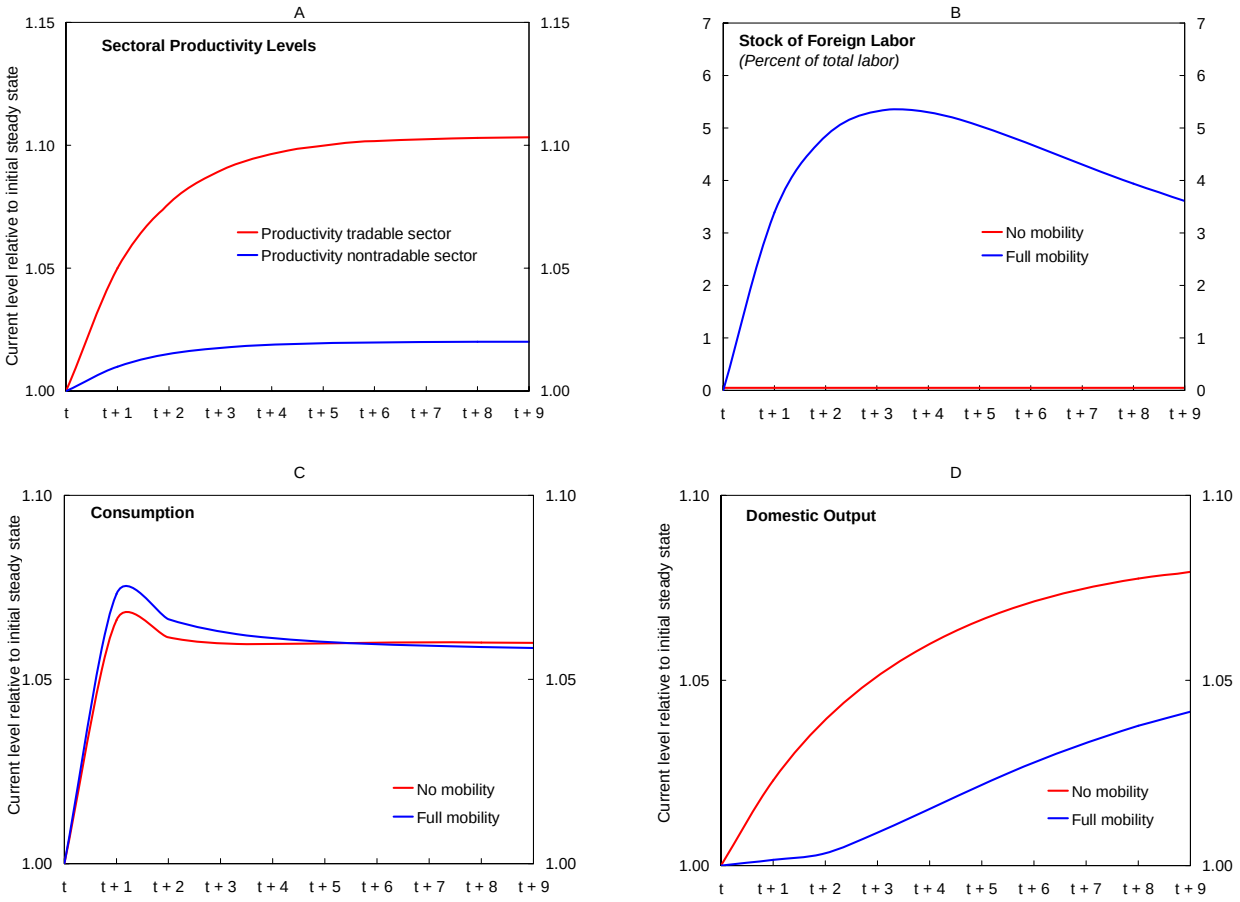
Convergence with Only Internal Mobility

Consider an economy whose productivity improves, benefiting all sectors in the economy, but especially the tradable sector (Figure 36, panel "A").[56] The process of convergence when labor is externally immobile is described by two distinct stages: an expansion stage and a reorientation stage.[57]

- The *expansion stage* features a boost in the demand for tradable and nontradable goods. Consumers,

[52] Budnik (2007) and Kaczmarczyk and Okólski (2008).
[53] Schreiner (2008).
[54] However, average educational attainment levels might have been higher if highly educated migrants had not left.
[55] These ratios are calculated as the simple unweighted average of the per capita income positions of Estonia, Latvia, and Lithuania to that of the EU-27.
[56] The asymmetric treatment of productivity developments in the nontradable and tradable sectors does not result in a loss of generality. Its sole purpose here is to generate the Balassa-Samuelson effect of price convergence.
[57] The theoretical underpinnings of the two stages of convergence are detailed in Bems and Schellekens (2007).

Figure 36. Simulated Developments in Productivity, Foreign Labor, Consumption, and Output



Source: IMF staff simulations.
Note: For simulation details, see Bems and Schellekens (forthcoming).

to be able to smooth their consumption in anticipation of higher permanent income, will borrow from abroad. To satisfy the increased demand for goods, tradable goods can be easily imported from abroad, but nontradable goods need to be produced locally. Because it takes time to produce nontradables, demand for nontradable goods initially exceeds supply, causing nontradable prices to appreciate.

- The *reorientation stage* takes place as soon as capacity in the nontradable sector has caught up with demand. This catch-up results in a dampening of nontradable price pressure, and the moderation in the relative price of nontradables, if not reversal, will help direct resources back to the production of tradable goods. The change in the economy's production structure will reduce the dependence of consumers on foreign borrowing and help service the stock of foreign liabilities.

The internal mobility of labor is a crucial factor in making sure that convergence proceeds smoothly. If internal mobility were to be constrained for some reason, the rapid buildup of foreign debt during the expansion stage would no longer be optimal. It would prove too costly during the reorientation stage to shift labor resources from one sector to another. When internal mobility is limited, it will therefore be optimal to slow the convergence process by reducing the upswing in the expansion stage and lessening the requirements for structural change in the reorientation stage.

Convergence with Internal and External Mobility

Capital-Labor Adjustment

Consider now the case in which, in the economy described above, labor can flow not only internally across sectors but also externally across borders. This kind of mobility will have several effects on the medium-term convergence process:

- As NMS economies typically have too little capital and too much labor, the marginal return on capital (labor) is high (low). The search for the highest return, therefore, simultaneously produces capital inflows and, when external labor mobility is allowed, labor outflows (Figure 36, panel "B"). In this way, the NMS are able to achieve a more efficient economy-wide capital-labor ratio.
- Because income levels can be boosted by providing labor services abroad, greater external labor mobility produces faster convergence in consumption and, therefore, welfare levels (Figure 36, panel "C").
- Convergence measured in terms of output per capita also speeds up. However, because the utilization of labor resources is partly diverted abroad, the domestic product of the source country will grow more slowly than in the case of less or no external mobility (Figure 36, panel "D").

Expansion and Reorientation

As for the two stages of convergence, external labor mobility has the following impact on the domestic economy:

- External labor mobility moderates the expansion stage boom and lessens the resource shift needed in the reorientation stage. As labor flows abroad, so does part of the demand for nontradable goods, easing the bottleneck in the nontradable sector. As a result, nontradable price inflation will be more modest, too (Figure 37, panel "A"). So, even if convergence in consumption is faster, the domestic nontradable boom will be more moderate since economies abroad carry part of the burden of providing nontradable goods.
- Since the expansion boom is moderated, the nontradable sector will expand less and more gradually, and the current account deficit will be narrower (Figure 37, panel "B"). This reduces the need in the next stage to reorient the economy toward the tradable sector. Interestingly, this is the opposite of the effect of greater internal mobility, where more flexibility in allocating labor across sectors will amplify cross-sectoral volatility. The inflow of remittances owing to greater external mobility helps finance the trade deficit (Figure 37, panel "C").

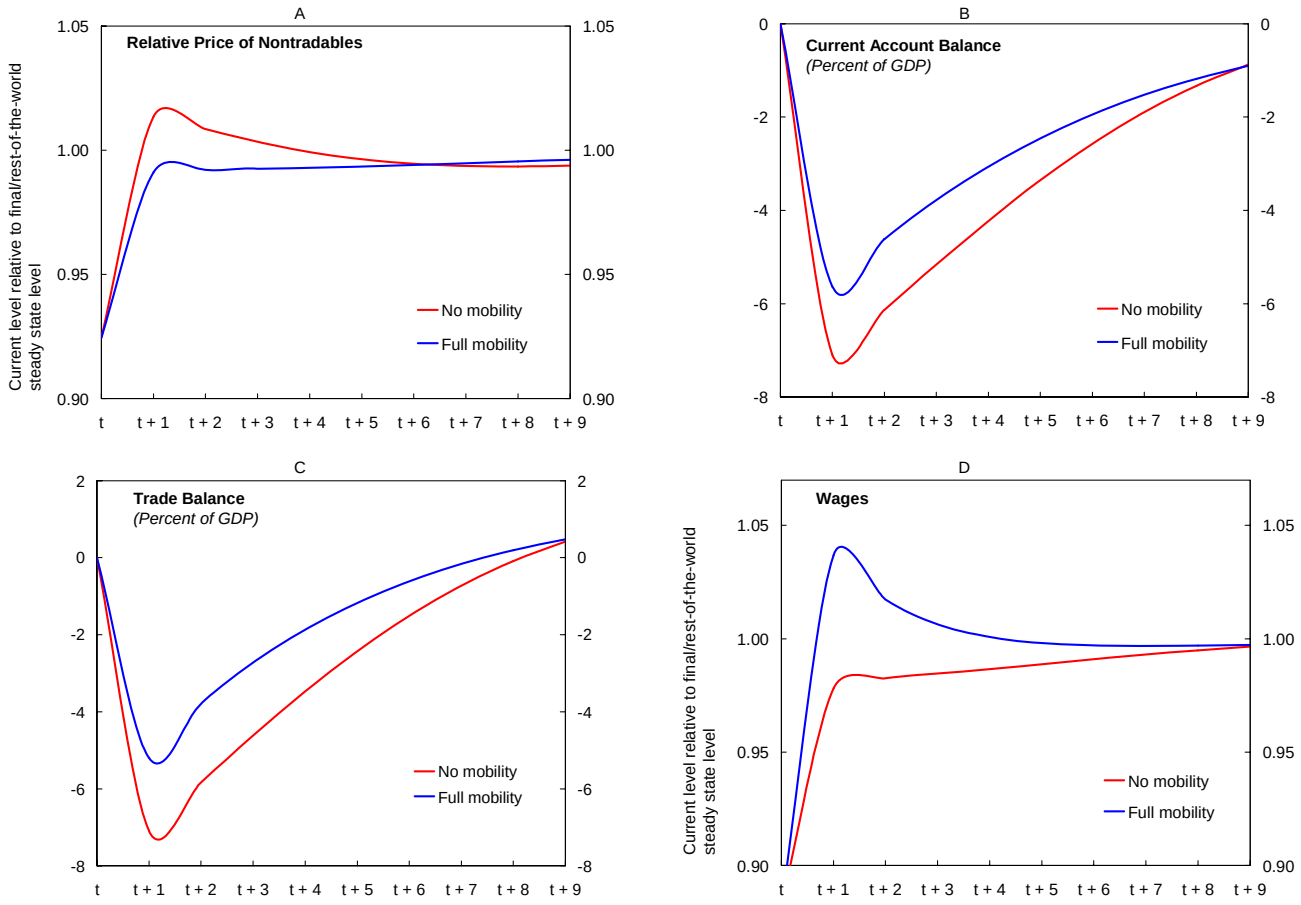
Wages and Remittances

Throughout convergence, the following wage-related developments can be observed:

- Greater external mobility may contribute to domestic wage inflation (Figure 37, panel "D"). The outflow of labor drives up the marginal product of labor domestically and, therefore, also domestic wages. This helps speed up wage convergence to foreign levels, reducing the incentive to provide labor services abroad. The extent of such wage pressure depends on the severity of domestic labor shortages and mismatches.[58]
- Some of the wage gains workers manage to extract by providing labor abroad are offset in real terms because of higher foreign price levels. As a result of their spending time abroad, migrant workers may need to consume substantial amounts of nontradable goods in the destination country. Foreign nontradables, however, are more expensive than in the source country due to sectoral productivity differentials across countries (the Balassa-Samuelson effect).

[58] This is not to say that labor mobility is the only source of wage pressure. An inflationary macroeconomic policy mix may constitute an additional source of wage inflation.

Figure 37. Simulated Developments in Relative Prices, Current Account, Trade Balance, and Wages



Source: IMF staff simulations.
Note: For simulation details, see Bems and Schellekens (forthcoming).

- Through remittances, the net gain in wages as a result of working abroad benefits both the migrant worker and any household members left behind in the source country.[59] Remittances can be spent on domestic goods, invested, or used to finance a part of the trade deficit. To the extent that remittances fuel the demand for nontradable goods, the relative price of nontradable goods is boosted by their inflow.

Outflows and Return Inflows

Considering the intertemporal nature of the adjustment process, the outflows and return inflows of labor follow this general pattern:

- Labor initially flows out at high speed. However, as wage levels converge between source and destination countries, the incentive to leave the source country is diminished, and the outflow of workers slows.
- Eventually, the outflow of workers may reverse (Figure 36, panel "B"), particularly when agents expect persistently higher growth

[59] The general equilibrium model in Bems and Schellekens (forthcoming) assumes a utility-maximizing representative household, a fraction of which can work abroad and earn the foreign wage.

in productivity in the source country.[60] This development will provide an incentive to reap the benefits of higher wages abroad early on, since domestic wages will be expected to converge rather quickly.

To the extent that cross-border workers have acquired specific skills and built human capital by virtue of their jobs abroad, the return of these workers will also augment the growth potential of the source country.

Policy Challenges

Greater labor mobility has substantial benefits at the level of the individual but presents a number of challenges at the aggregate level:

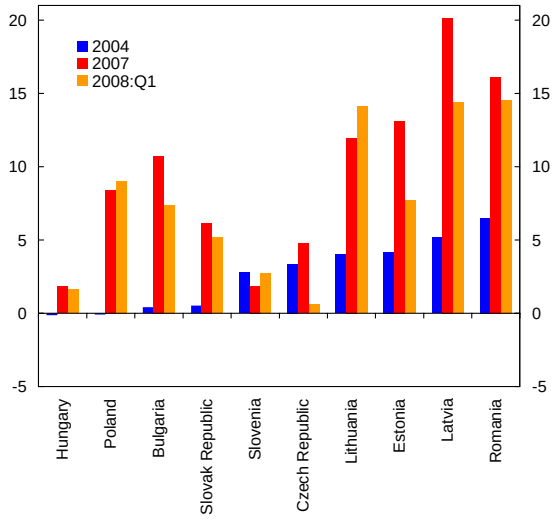
- From the perspective of the individual, greater mobility offers a wider set of possibilities. Insofar as the outflow of labor is the outcome of a decision made under free choice, the outcome is welfare improving to the individual.
- From the perspective of society, however, the question is more difficult. Does the individual decision impose any externalities on the rest of society? How are these externalities shared across borders? Do national policymakers sufficiently take into account the cross-border externalities?

The challenge for policymakers is to maximize the benefits of cross-border labor mobility, while avoiding volatility by implementing demand-management policies and fostering growth through structural reforms.[61]

[60] Return migration is driven not only by the nature of the productivity shock, but also by imperfections in the degree of factor mobility, which amplify wage developments during transition. As labor flows out, capital cannot be immediately reduced to the optimal level. Thus, wages are temporarily "too high" in transition, which triggers return migration.

[61] Other challenges, relating to the distributional impact of cross-border labor mobility, are beyond the scope of this chapter.

Figure 38. New Member States: Real Wage Developments, 2004–2008:Q1
(Percent)



Sources: Eurostat; and IMF staff calculations.
Notes: Average year-on-year quarterly growth rates, deflated by the consumer price index.

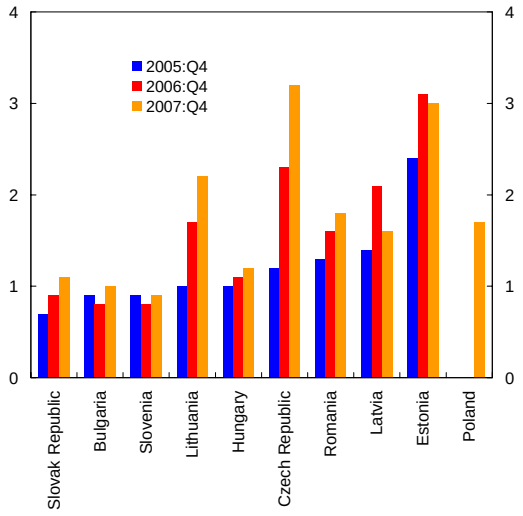
Managing Volatility

The flow of labor across borders has been repeatedly—and, as will be argued, often erroneously—associated with overheating and subsequent cooling (the boom-and-bust cycle). This is perhaps unsurprising in view of the rates of wage inflation recently observed in some countries, as well as the presumed boost of remittances to domestic demand.

Symptoms of Overheating . . .

During the early stages of transition, labor outflows occurred in the context of large unemployment and underemployment figures. Later on, however, domestic labor markets began to experience a tightening to some degree or another, resulting in real wage increases (Figure 38), although this has started to taper off somewhat more recently. This pattern is also reflected in job vacancy rates, which increased steadily (Figure 39), although in Estonia and Latvia they have recently started to fall. Shortages have emerged in specific segments of the labor market, including the construction and services sector, where labor demand has been especially buoyant. With labor markets tighter, incremental

Figure 39. New Member States: Job Vacancy Rates, 2005–07
(Percent)



Sources: Eurostat; and IMF staff calculations.
Note: The job vacancy rate is defined as the ratio of total posts that are vacant to the number of occupied posts plus the number of job vacancies.

moves in the supply of labor due to cross-border mobility have become more easily reflected in wages.

Associated with the cross-border outflow of labor is the inflow of remittances. Remittances support domestic economic activities, and, insofar as these activities translate into an increased demand for domestic products, remittances could contribute directly to price and wage inflation through a "remittances accelerator" mechanism. In addition to supporting household and family consumption, remittances may increasingly take on an investment character. The monies remitted by cross-border workers may be invested in domestic equity and real estate markets, thus amplifying existing appreciation pressures on these asset prices and feeding back into overall demand through wealth effects.

. . . or Business as Usual?

Before one can assess the role played by labor mobility in overheating, it is useful to first assess its worth in determining the relative importance of labor and capital in the convergence process (Box 14). In most countries, the combination of anticipated productivity growth and the desire to smooth consumption seems to have been a driving force more powerful than the impact of outward labor mobility. This conclusion is also apparent in the fact that, even if labor has flowed out, capital has continued to flow in—something that would not have been the case had net labor outflows been the dominant factor.[62] In sum, if labor plays a more limited role than capital in the convergence process, one can safely conjecture that the role of labor in producing overheating is also more limited.

The role played by labor mobility, and its contribution to wage inflation and demand support (e.g., through remittances), need not be seen as causing overheating per se:

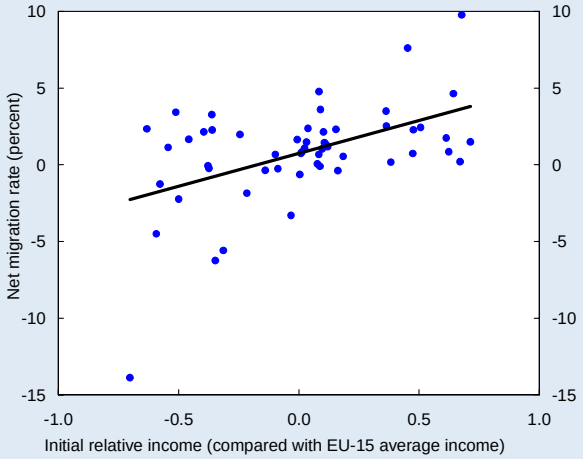
- A degree of wage inflation in domestic labor markets is a natural and optimal feature of convergence when labor is crossing borders.[63]
- Remittances allow households to access a wider set of consumption and investment choices, and are therefore a crucial channel through which cross-border labor mobility translates into welfare benefits.[64]
- Labor mobility may dampen the oscillations observed in the domestic economy. As labor flows out, some of the demand for nontradable goods is exported, thereby alleviating pressure on domestic resource constraints. As a result, the nontradable price boom and current account deterioration are both smaller (Figure 37, panels "A" and "B").

[62] If labor flows out, optimality would require dismantling the capital stock, as the remaining labor force would have too much capital.
[63] In a setting with a labor-leisure choice, employment could increase during the boom years, alleviating some of the wage pressure
[64] Kaczmarczyk and Okólski (2008) report that most expenses by seasonal migrants who worked in Germany during 1998–2000 fall under the category of current consumption.

Box 14. Migration and Economic Convergence in the New Member States

Many New Member States (NMS) are concerned with the economic and social consequences of emigration. Although official statistics are incomplete, populations are declining markedly in some of these countries, owing to both falling birthrates and net outward migration. In addition, recent surveys suggest that *potential* migration could be substantial, especially in light of the relaxed migration policies that are mandated for European Union (EU) countries by end-2010.

EU-15 Countries: Net Migration Rate and Initial Relative Income, 1960–2000
(Percent of total labor)



Source: Eurostat; and IMF staff simulations.

At the same time, it is important to recognize that labor outflows, along with capital inflows, are an integral part of the development process. Growth models predict that countries with relatively low capital-to-labor ratios will attract capital, since the rate of return on capital is relatively high. The models also predict that labor will move abroad, where labor productivity and real wages are higher. The convergence process for a particular country will depend, among other factors, on the degree to which labor and capital are mobile across borders, and the degree of substitutability between capital and labor.

Two questions are particularly important in this respect:

- *Is labor migration unusual in the NMS?* Net migration rates and income differentials for the EU-15 countries during 1960–2000 indicate that migration among EU-15 countries was strongly responsive to economic incentives (figure). This estimated relationship is somewhat successful in explaining recent migration trends for NMS, even though outward migration is likely flowing to non–EU-15 countries, as well as to EU-15 countries (first table). The actual net migration rates tend to be lower than the predicted rates for lower-income countries and tend to be higher for countries with income levels closer to the EU-15.

New Member States: Relative Income and Net Migration Rates, 1995–2007
(Annual average, percent)

	Average Income, 1995 (Relative to EU-15)	Net Migration Rate, 1995–2007 1/	
		Actual	Predicted
Latvia	-0.71	-1.9	-2.3
Lithuania	-0.65	-3.7	-2.0
Estonia	-0.65	-2.3	-2.0
Poland	-0.58	-1.2	-1.8
Slovak Republic	-0.52	0.1	-1.5
Hungary	-0.47	1.5	-1.3
Slovenia	-0.30	1.7	-0.5
Czech Republic	-0.28	1.7	-0.5

Sources: Eurostat; and IMF staff calculations.
1/ Per 1,000 inhabitants.

. . . *continued*

Note: The main author of this box, which is based on Brunner (forthcoming), is Allan D. Brunner.

Box 14 *(concluded)*

- *How important is labor migration for the convergence process?* Capital-to-employee ratios have improved quickly for all NMS, especially those with relatively low initial levels (second table). Most of the gains, however, came from capital accumulation rather than from outward migration, suggesting that labor is relatively immobile compared with capital.

New Member States: Changes in Capital-per-Employee Ratios, 1995–2006 1/
(Constant U.S. dollars)

	Capital per Employee in:		Average Annual Percent Change		
	1995	2006	*K/E*	*K*	*E*
Latvia	10,017	28,480	16.8	14.3	-0.9
Lithuania	11,036	23,433	10.2	8.6	-0.8
Estonia	13,158	35,186	15.2	14.6	-0.2
Slovak Republic	15,856	31,537	9.0	10.5	0.8
Poland	17,011	31,460	7.7	7.4	-0.2
Hungary	22,714	39,057	6.5	7.1	0.3
Czech Republic	22,879	44,389	8.5	8.2	-0.2
Slovenia	44,390	68,067	4.8	6.2	0.9

Sources: World Bank, Social Development Indicators database; IMF, *World Economic Outlook;* and IMF staff calculations.
1/ *K* refers to capital and *E* to number of employees.

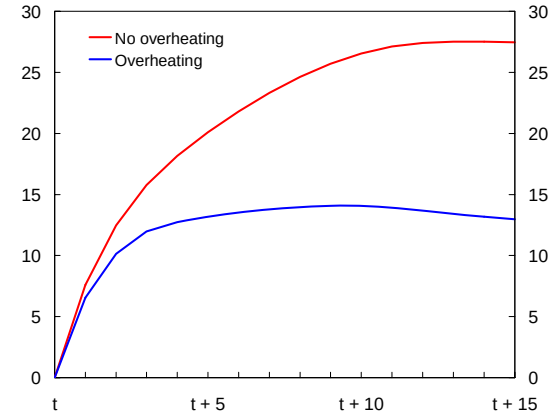
Labor Mobility's Cushioning Role

Labor mobility responds to overheating pressures: the outflow of labor moderates as the economy overheats, thereby diminishing labor's effect on wage inflation.

- Consider the case where overheating derives from an overoptimistic assessment of future productivity developments, which drives up present consumption and investment in anticipation of future permanent income increases that will (or may) not materialize.[65] Through its effect on relative wages and prices, overheating can have an important impact on the incentive to provide labor services across the border.

- Compared with an economy that is not overheating (i.e., one in which—in keeping with this example—productivity expectations are about right), an overheating economy will experience smaller labor outflows because local economic conditions are perceived to be better (Figure 40). Thus, relative to the best case of no overheating, labor mobility plays a smaller role in producing wage inflation than the underlying cause of overheating.

Figure 40. Foreign Labor Developments with and without Overheating (Simulated)
(Percent of total labor)

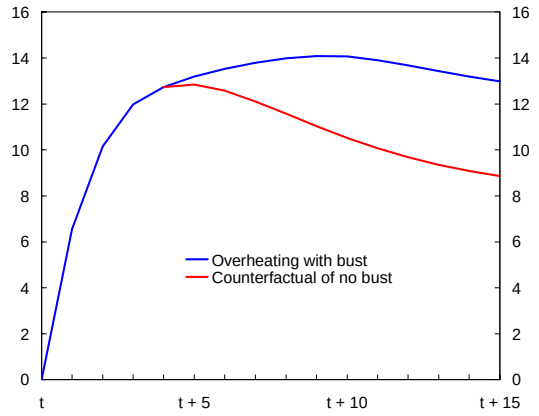


Source: IMF staff simulations.
Note: For simulation details, see Bems and Schellekens (forthcoming).

Labor mobility would also respond in the case of a significant cooling or "bust" in the boom-bust cycle. Whereas most countries have continued to register strong growth, the economic

[65] Overheating may also result from an inappropriate policy mix.

Figure 41. Impact of Bust on Foreign Labor (Simulated)
(Percent of total labor)



Source: IMF staff simulations.
Note: For simulation details, see Bems and Schellekens (forthcoming).

conditions in some countries, particularly those that had experienced overheating pressures previously, have started to turn around or have already done so. With labor markets open internationally, the concern is that the downturn would produce additional outward flows of labor, as well as a smaller inflow of labor from abroad (including a reduced incentive for return inflows). The concern is particularly valid when the wage gap with destination countries is insufficiently closed.

Model simulations illustrate this mechanism (Figure 41). Given expectations about future productivity growth, some labor flows out in the initial periods. If these expectations had been correct (the line denoted "Counterfactual of no bust" in Figure 41), the stock of foreign labor abroad would have started to taper off after a number of periods, reflecting the return inflow of labor. However, if the initial rosy expectations had been proven wrong ("overheating with bust"), the stock of foreign labor may actually continue to grow, reaching its maximum level later.

The magnitude of the labor outflow following a downturn also depends, of course, on whether the downturn is similarly being felt in recipient economies. Indeed, if conditions deteriorate simultaneously in recipient and sending countries, the threat of additional labor outflows may be diminished. Also, region-specific shocks may induce both inward and outward migration. For example, a sector-specific shock in one region may induce an inflow of high-skilled workers from other regions, while producing an outflow of low-skilled workers.

Demand-Management Policies

Against this background, what are the implications for demand-management policies?

- With respect to episodes of overheating, the key policy implication is to address the source of overheating directly, taking into account that much of the wage pressures caused by labor mobility reflect natural convergence and not overheating. Attempting to limit labor mobility directly or to offset the resulting upward pressure on wages through demand-management policies may hurt the overall economy's convergence process and, therefore, individual and social welfare.

- At the same time, from a demand-management perspective, overheating may pose a number of secondary challenges, and the key will be to address these while preserving the benefits of labor mobility. For example, as noted, wage inflation may be a natural consequence of labor mobility. While these inflationary consequences are optimal, the policymaker will need to fine-tune demand-management policies to ensure that wage pressures do not set off a self-feeding wage-price spiral.

- Policymakers will also need to keep the second-round impact in check to ensure that wage growth does not erode competitiveness. Even where local labor market characteristics, such as low degrees of unionization and high internal labor market flexibility, would suggest that wage growth can be kept in line with productivity growth, the threat of emigration limits the scope for doing so. In designing their policy response, policymakers will need to carefully monitor wage developments and walk a fine line between preserving competitiveness and allowing wages to rise naturally in line with what is optimal.

Fostering Growth

Several challenges to the competitiveness and dynamism of the NMS economies need to be addressed to ensure that these countries not only reorient their economies successfully toward the tradable sector but also utilize resources more efficiently.

Mobilizing Labor Supply and Employment

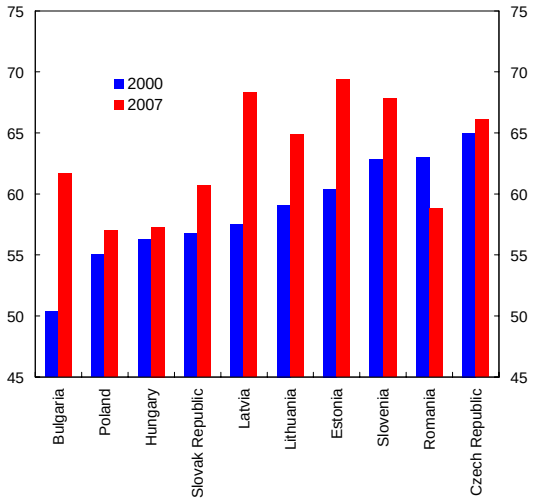
Most NMS have experienced a significant improvement in labor market outcomes since 2000. Convergence led to a boost in the rate of job creation (Figure 42). As a result, average employment rates for the NMS rose by almost 5 percentage points, although the improvement varied significantly across countries. Similarly, unemployment indicators improved (Figure 43), falling from about 12 percent during the early 2000s to 7 percent in the past few years. Long-term unemployment rates also improved in many countries.

Notwithstanding these improvements, there is further scope to mobilize and better utilize labor resources in most NMS. While the average employment rate has improved in most countries, it remains in all countries below the Lisbon target of 70 percent. The average employment rate in 2007 stood at 63 percent, with some countries (Poland, Hungary, and Romania) experiencing rates below 60 percent. Also, unemployment rates remain high in several countries (notably the Slovak Republic and Poland, but also Bulgaria and Hungary).

Raising labor market participation rates will help ease pressures on the labor force arising from natural demographic reasons and net migration, both of which reduce the working-age population. As argued by Kaczmarczyk and Okólski (2008), changes in labor market participation may play a bigger role than purely demographic changes through natural population growth and net migration. It is essential that the NMS improve participation rates so that they can successfully meet the challenges they will face.

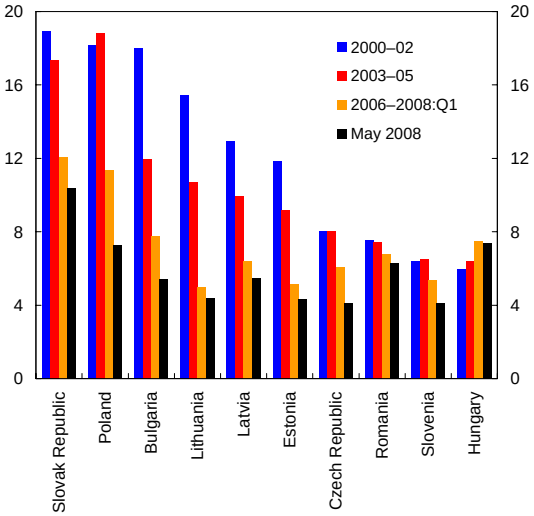
A number of factors may complicate the mobilization of labor supply and the increase in employment rates:

Figure 42. New Member States: Employment Rate, 2000–07
(Percent)



Sources: Eurostat; and IMF staff calculations.
Note: The employment rate is defined as the ratio of number of persons aged 15 to 64 in employment to the total population of the same age group. Values for the Czech Republic and Romania are based on forecasts.

Figure 43. New Member States: Unemployment Rate, 2000–08
(Percent)



Sources: Eurostat; and IMF staff calculations.
Note: The indicator refers to harmonized monthly unemployment rates averaged over the periods indicated. Romania's latest observation is for March 2008.

- Overheating forces may have eroded the competitiveness of tradable industries, causing them to close down; if reinstalling industries is costly, completing the reorientation stage will become more difficult.
- Reorientation stage challenges are also more difficult to meet if the labor supply is limited and the skills profile of the workforce has deteriorated through the allocation of resources to the nontradable sector.
- The foreign debt will need to be serviced with a smaller labor support (assuming that much of the foreign debt remains local while labor migrates).

The process of income convergence is accelerated if policymakers stimulate labor force participation and employment rates. Greater labor market participation and lower structural unemployment could be achieved through better-targeted active labor market policies, less rigid regulations regarding hiring and dismissals, and an improved design of the tax benefits system.

Reducing Labor Market Mismatches

In a number of countries, labor outflows of the young and relatively low skilled have been particularly pronounced. This phenomenon has lowered the rate of wage dispersion across education levels. In Estonia, for example, net wages in 1997 for those with tertiary education were 93 percent higher than for those with only primary education; by 2006, this premium had fallen to 32 percent.[66]

In countries where mismatches have arisen owing to changes in the composition of gross outflows and inflows, these mismatches will need to be addressed. Similar mismatches may arise from the aging of the populations in many countries. These problems complicate the reorientation of the economy to a high-value-added and competitive export sector.

To offset mismatches, further consideration should be given to relaxing immigration policies, so as to allow larger inflows from non-EU emerging economies.[67] In addition, countries could invest in return migration to attract back those emigrants who have, during their employment abroad, gained valuable skills. Some countries have, for example, launched initiatives to induce overseas nationals to "return migrate" to reduce mismatches domestically.[68] Policymakers could also consider investing further in education, including tertiary education.

[66] Statistics Estonia, *Labor Force Surveys.*

[67] These non-EU countries may soon, however, face similar problems of labor shortage.

[68] Romania, for example, launched initiatives to persuade Romanian construction workers to return home and fill domestic job vacancies.

References

Adjaouté, Kpate, and Jean-Pierre Danthine, 2004, "Portfolio Diversification: Alive and Well in Euroland!" *Applied Financial Economics*, Vol. 14 (November), pp. 1225–31.

Ball, Laurence, and N. Gregory Mankiw, 1995, "Relative-Price Changes as Aggregate Supply Shocks," *Quarterly Journal of Economics*, Vol. 110 (February), pp. 161–93.

Bank for International Settlements, 2004, "Housing Finance in the Global Financial Market," *CGFS Papers*, No. 26 (Basel: Committee on the Global Financial System).

———, 2004, *Quarterly Review* (Basel, March).

———, 2008, *78th Annual Report* (Basel, June).

Bank of England, 2008, *Financial Stability Report*, No. 23 (London, April).

Barro, Robert, and Xavier Sala-i-Martin, 2004, *Economic Growth* (Cambridge, Massachusetts: MIT Press, 2nd ed.).

Bebee, Jared, and Ben Hunt, 2008, "The Impact on the United States of the Rise in Energy Prices: Does the Source of the Energy Market Imbalance Matter?" *IMF Staff Papers*, Vol. 55, No. 2, pp. 285–96.

Bekaert, Geert, Campbell R. Harvey, and Christian Lundblad, 2005, "Does Financial Liberalization Spur Growth?" *Journal of Financial Economics*, Vol. 77 (July), pp. 3–55.

Bems, Rudolfs, and Philip Schellekens, 2007, "Finance and Convergence: What's Ahead for Emerging Europe?" IMF Working Paper 07/244 (Washington: International Monetary Fund).

———, forthcoming, "Macroeconomics of Migration in New Member States," IMF Working Paper (Washington: International Monetary Fund).

Bernanke, Ben, and Mark Gertler, 1989, "Agency Costs, Net Worth, and Business Fluctuations," *American Economic Review*, Vol. 79 (March), pp. 14–31.

———, and Simon Gilchrist, 1999, "The Financial Accelerator in a Quantitative Business Cycle Framework," in *Handbook of Macroeconomics*, Vol. 1C, ed. by John Taylor and Michael Woodford (Amsterdam: North-Holland), pp. 1341–93.

Blanchard, J. Olivier, and Jordi Gali, 2007, "The Macroeconomic Effects of Oil Shocks: Why Are the 2000s So Different from the 1970s?" NBER Working Paper No. 13368 (Cambridge, Massachusetts: National Bureau of Economic Research).

Brücker, Herbert, 2007, "Labor Mobility After the European Union's Eastern Enlargement: Who Wins, Who Loses?" German Marshall Fund Paper Series (Washington: German Marshall Fund). Available via the Internet: www.gmfus.org/doc/0307_LaborMobility.pdf.

Brunner, A., forthcoming, "Migration and Economic Convergence in New Member States: Theoretical, Empirical, and Historical Perspectives," IMF Working Paper (Washington: International Monetary Fund).

Budnik, Katarzyna, 2007, "Migration Flows and Labour Market in Poland," Working Paper No. 44 (Warsaw: National Bank of Poland).

Calza, Alessandro, Tommaso Monacelli, and Livio Stracca, 2007, "Mortgage Markets, Collateral Constraints, and Monetary Policy: Do Institutional Factors Matter?" CEPR Discussion Paper No. 6231 (London: Centre for Economic Policy Research).

Caruana, Jaime, and Aditya Narain, 2008, "Banking on More Capital," *Finance & Development*, Vol. 45 (June), pp. 24–28.

Catte, Pietro, Nathalie Girouard, Robert Price, and Christophe André, 2004, "Housing Markets, Wealth and the Business Cycle," OECD Economics Department Working Paper No. 394 (Paris: Organization for Economic Cooperation and Development).

Čihák, Martin, and P. Koeva Brooks, forthcoming, "From Subprime Crisis to Subprime Growth," IMF Working Paper (Washington: International Monetary Fund).

Čihák, Martin, and Li L. Ong, 2007, "Estimating Spillover Risk Among Large EU Banks," IMF Working Paper 07/267 (Washington: International Monetary Fund).

Decressin, Jörg, Hamid Faruqee, and Wim Fonteyne, 2007, *Integrating Europe's Financial Markets* (Washington: International Monetary Fund).

Dees, Stephane, Filippo di Mauro, L. Vanessa Smith, and M. Hashem Pesaran, 2007, "Exploring the International Linkages of the Euro Area: A Global VAR Analysis," *Journal of Applied Econometrics*, Vol. 22 (January/February), pp. 1–38.

De Nicolò, Gianni, and Iryna Ivaschenko, 2008, "Financial Integration and Risk-Adjusted Growth Opportunities," IMF Working Paper 08/126 (Washington: International Monetary Fund).

Elekdag, Selim, René Lalonde, Douglas Laxton, Dirk Muir, and Paolo Pesenti, 2008, "Oil Price Movements and the Global Economy: A Model-Based Assessment," *IMF Staff Papers*, Vol. 55, No. 2, pp. 297–311.

European Central Bank, 2003, "Structural Factors in the EU Housing Markets" (Frankfurt, March).

———, 2008a, *Monthly Bulletin* (Frankfurt, May).

———, 2008b, *Financial Stability Review* (Frankfurt, June).

———, 2008c, Governing Council press conference (Frankfurt, July 3, 2008). Available via the Internet: ttp://www.ecb.int/press/pressconf/2008/html/is080703.en.html.

European Commission, 2008, "High Prices on Agricultural Commodity Markets: Situation and Prospects," Working Document (Brussels: Directorate-General for Agriculture and Rural Development).

European Mortgage Federation, 2006a, *Study on the Cost of Housing in Europe* (Brussels).

———, 2006b, "A Review of Europe's Mortgage and Housing Markets," *Hypostat* (Brussels).

Fabrizio, Stefania, Deniz Igan, and Ashoka Mody, 2007, "The Dynamics of Product Quality and International Competitiveness," IMF Working Paper 07/97 (Washington: International Monetary Fund).

Galesi, A., and S. Sgherri, forthcoming, "Regional Financial Spillovers Across Europe," IMF Working Paper (Washington: International Monetary Fund).

Goodhart, Charles, and Avinash Persaud, 2008, "How to Avoid the Next Crash," *Financial Times*, January 30.

Gruss, B., and S. Sgherri, forthcoming, "The Volatility Costs of Procyclical Lending Standards: An Assessment Using a DSGE Model," IMF Working Paper (Washington: International Monetary Fund).

Hilbers, Paul, Alexander Hoffmaister, Angana Banerji, and Haiyan Shi, 2008, "House Price Developments in Europe: A Comparison," IMF Working Paper 08/211 (Washington: International Monetary Fund).

Hunt, Benjamin, 2006, "Oil Price Shocks and the U.S. Stagflation of the 1970s: Some Insights from GEM," *Energy Journal*, Vol. 27 (October), pp. 61–80.

Iara, A., 2008, "East-West European Migration: Labour Mobility in the EU-27," paper presented at the Vienna Institute for International Economic Studies, Spring Seminar, Vienna, March 28.

International Monetary Fund (IMF), 2007, *Euro Area Policies: 2007 Article IV Consultation—Staff Report*, IMF Country Report No. 07/260 (Washington: International Monetary Fund).

———, 2008a, *World Economic Outlook* (Washington, October).

———, 2008b, *Global Financial Stability Report* (Washington, October).

———, 2008c, *Regional Economic Outlook: Europe* (Washington, April).

———, 2008d, *Euro Area Policies: 2008 Article IV Consultation*, IMF Country Report No. 08/262 (Washington: International Monetary Fund).

———, 2008e, "Food and Fuel Prices—Recent Developments, Macroeconomic Impact, and Policy Responses" (Washington: June). Available via the Internet: www.imf.org/external/np/pp/eng/2008/063008.pdf.

———, 2008f, *World Economic Outlook* (Washington, April).

Jiménez, Gabriel, and Jesús Saurina, 2006, "Credit Cycles, Credit Risk, and Prudential Regulation," *International Journal of Central Banking*, Vol. 2 (June), pp. 65–98.

Jokipii, Terhi, and Alistair Milne, 2006, "The Cyclical Behaviour of European Bank Capital Buffers," Bank of Finland Discussion Paper No. 17/2006 (Helsinki: Bank of Finland).

Kaczmarczyk, Pawel, and Marek Okólski, 2008, "Economic Impacts of Migration on Poland and the Baltic States," Fafo Paper No. 2008:01 (Oslo: Fafo Institute for Labour and Social Research). Available via the Internet: www.fafo.no/pub/rapp/10045/index.html

Kalemli-Ozcan, Sebnem, Bent E. Sorensen, and Oved Yosha, 2004, "Asymmetric Shocks and Risk Sharing in a Monetary Union: Updated Evidence and Policy Implications for Europe," CEPR Discussion Paper No. 4463 (London: Centre for Economic Policy Research).

Kiyotaki, Nobuhiro, and John Moore, 1997, "Credit Cycles," *Journal of Political Economy*, Vol. 105 (April), pp. 211–48.

Lalonde, René, and Dirk Muir, 2007, "The Bank of Canada's Version of the Global Economy Model," Technical Report No. 98 (Ottawa, Bank of Canada, September).

Laxton, Douglas, and Paolo Pesenti, 2003, "Monetary Rules for Small, Open, Emerging Economies," *Journal of Monetary Economics*, Vol. 50 (July), pp. 1109–46.

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

Lombardi, M. J., and S. Sgherri, forthcoming, "A Global Repricing of Risk or New Episodes of Financial Contagion?" IMF Working Paper (Washington: International Monetary Fund).

Mendoza, Enrique G., 2006, "Lessons from the Debt-Deflation Theory of Sudden Stops," *American Economic Review, Papers and Proceedings*, Vol. 96 (May), pp. 411–16.

Miles, David, and Vladimir Pillonca, 2008, "Financial Innovation and European Housing and Mortgage Markets," *Oxford Review of Economic Policy*, Vol. 24 (Spring), pp. 145–75.

Minsky, Hyman P., 1992, "The Financial Instability Hypothesis," Jerome Levy Economics Institute Working Paper No. 74 (Annandale-on-Hudson, New York: Bard College).

Organization for Economic Cooperation and Development (OECD), 2007, *International Migration Outlook, Annual Report* (Paris).

Pesaran, M.H., T. Schuermann, and S.M. Weiner, 2004, "Modeling Regional Interdependencies Using a Global Error-Correcting Macroeconometric Model," *Journal of Business and Economic Statistics*, Vol. 22 (April), pp. 129–62.

Repullo, Rafael, and Javier Suarez, 2008, "The Procyclical Effects of Basel II," CEPR Discussion Paper No. 6862 (London: Centre for Economic Policy Research).

Riksbank, 2008, *Financial Stability Report 2008:1* (Stockholm, June).

Saurina, Jesús, and Carlos Trucharte, 2007, "An Assessment of Basel II Procyclicality in Mortgage Portfolios," *Journal of Financial Services Research*, Vol. 32 (October), pp. 81–101.

Schreiner, Josef, 2008, "Labor Markets in Central, Eastern and Southeastern European EU Member States: General Trends and Migration Effects," *Focus on European Economic Integration 01/08* (Vienna: Oesterreichische Nationalbank).

Sims, Christopher A., 2003, "Implications of Rational Inattention," *Journal of Monetary Economics*, Vol. 50 (April), pp. 665–90.

Statistics Estonia, various years, *Labor Force Survey* (Tallinn).

Stavrev, E., 2006, "Measures of Underlying Inflation in the Euro Area: Assessment and Role for Informing Monetary Policy," IMF Working Paper 06/197 (Washington: International Monetary Fund).

Swiston, Andrew, 2008, "A U.S. Financial Conditions Index: Putting Credit Where Credit Is Due," IMF Working Paper 08/161 (Washington: International Monetary Fund).

Taylor, Ashley, and Charles Goodhart, 2006, "Procyclicality and Volatility in the Financial System: The Implementation of Basel II and IAS 39," in *Procyclicality of Financial Systems in Asia*, ed. by Stefan Gerlach and Paul Gruenwald (Houndsmill, Basingstoke, United Kingdom: Palgrave Macmillan).

World Bank, 2006, *World Bank EU8 Quarterly Economic Report* (Washington, September).

Yontcheva, B., C. Abdallah, and R. Luzio, forthcoming, "The Commodity Drum: Inflation and Commodity Price Shocks in Advanced Europe," IMF Working Paper (Washington: International Monetary Fund).

Zoli, Edda, forthcoming, "The Impact of Commodity Price Shocks on Inflation in Emerging Europe," IMF Working Paper (Washington: International Monetary Fund).

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