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Chapter 2: Sovereigns, Banks, and Emerging Markets: Detailed Analysis and Policies

International Monetary Fund (IMF)

CHAPTER 2

SOVEREIGNS, BANKS, AND EMERGING MARKETS: DETAILED ANALYSIS AND POLICIES

The Sovereign Debt Crisis—Shifting From a Bad to a Good Equilibrium

Stresses in euro area government bond markets escalated in late 2011 as investors grew increasingly concerned about the risk of a disorderly bank or sovereign default. Subsequent policy actions, notably the European Central Bank's (ECB's) provision of collateralized three-year liquidity to banks, have relieved acute stress. Yet sovereign bond markets remain fragile under the weight of strained fiscal positions and an ongoing loss of demand from traditional investors. Financing public debt could still prove challenging for some euro area countries. A lasting recovery in market confidence will take time, during which domestic policy efforts need to be bolstered by stronger external support, notably an enhanced financial firewall.

The euro area crisis reached a point of intense stress in late 2011.

Concerns about a possible chain reaction of bank failures and sovereign defaults intensified in late 2011. Credit default swap spreads rose to new highs; even sovereigns with relatively strong public finances (including Austria, Finland, and the Netherlands) were hit by illiquid market conditions (Figure 2.1). In the absence of credible funding backstops for vulnerable countries, a steady stream of negative news—the need for higher write-downs on Greek sovereign bonds under the envisaged private sector involvement agreement, fresh political turmoil in Greece and Italy, and acute funding pressures for euro area banks—undermined already fragile investor confidence. The episode underscored the risk that adverse self-fulfilling shifts in market sentiment could rapidly push fragile sovereigns into a bad equilibrium of rising yields, a funding squeeze for domestic banks, and a worsening economy.

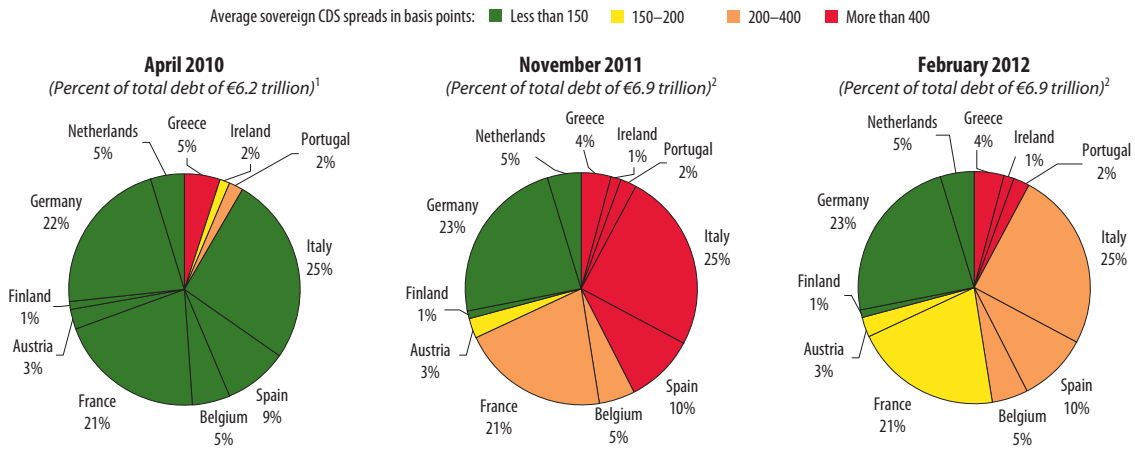
Indeed, government bond yields and volatilities for several vulnerable sovereigns rose to precarious levels (Figure 2.2), while inverted yield curves suggested acute concern about default risk. Banks that were holding Spanish and Italian government bonds in their trading portfolio faced significant mark-to-market losses, as valuations tumbled. Some institutions responded to increasing market and regulatory scrutiny of their government bond holdings by trimming exposures, thereby adding to selling pressures. Meanwhile, market makers contributed to the collapse in trading volumes as they were forced to reduce their activity because of risk limits (Figure 2.3). Haircuts on Italian government bonds used as collateral in repo (repurchase agreement) markets were increased several times, further reducing the incentive to hold such bonds. These factors combined to forcefully roil sovereign bond markets in late 2011.

Traditional bond investors took fright from rising credit risk, fresh rating downgrades, and unprecedented market volatility.

Foreign banks have been divesting from the sovereign debt of the stressed euro area periphery since 2010, starting with Greece (2010:Q1), followed by Portugal and Italy (2010:Q2), and then Ireland and Spain (2010:Q3) (Figure 2.4). Amid the increased market turmoil, foreign institutional investors continued to shed exposure to these countries in 2011 (Figure 2.5). In the third quarter of 2011, foreign

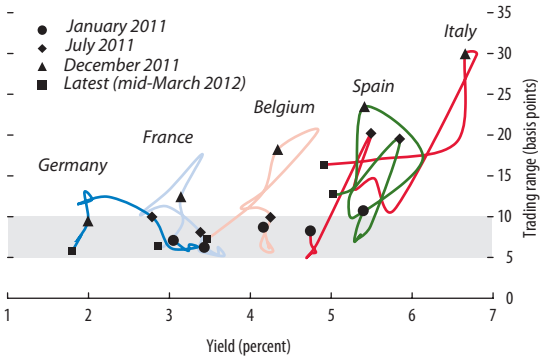
Note: This chapter was written by Peter Dattels and Matthew Jones (team leaders), Sergei Antoshin, Serkan Arslanalp, Ana Carvajal, Eugenio Cerutti, Jorge A. Chan-Lau, Nehad Chowdhury, Sean Craig, Jihad Dagher, Reinout De Bock, Giovanni Dell'Ariccia, Martin Edmonds, Michaela Erbenova, Luc Everaert, Jeanne Gobat, Tommaso Mancini Griffoli, Vincenzo Guzzo, Kristian Hartelius, Sanjay Hazarika, Eija Holttinen, Anna Ilyina, William Kerry, Peter Lindner, Estelle Xue Liu, André Meier, Paul Mills, Esther Perez Ruiz, Marta Sánchez Saché, Jochen Schmittmann, Alasdair Scott, Katharine Seal, Mark Stone, Narayan Suryakumar, Takahiro Tsuda, Nico Valckx, and Chris Walker. Guidance on iFlow[SM] data and interpretation was provided by Samarjit Shankar, managing director, BNY Mellon.

Figure 2.1. Credit Default Swap Spreads in Selected Euro Area Government Bond Markets



Sources: Bank for International Settlements; Bloomberg L.P.; and IMF staff estimates.
Note: Percentages for countries are their share of euro area government debt for period indicated.
[1]As of 2010:Q1.
[2]As of 2011:Q2.

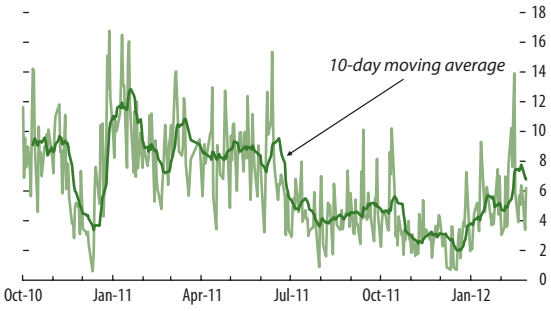
Figure 2.2. Ten-Year Government Bond Yields and Trading Ranges, Selected Euro Area Countries, 2011–12



Source: Bloomberg L.P.
Note: Data are monthly averages.

Figure 2.3. Daily Trading Volume of Italian Sovereign Bonds

(In billions of euros)



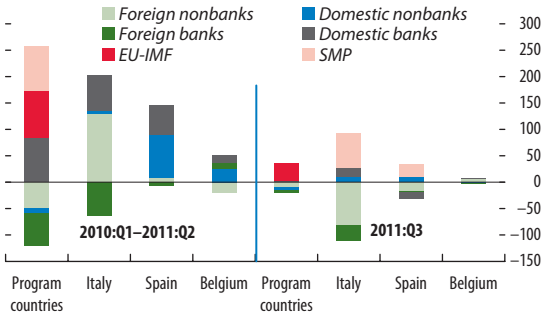
Source: MTS Data.
Note: Bonds are BTP (Buoni del Tesoro Poliennali)—multiyear Treasury bonds with maturities of 3 to 30 years. Includes purchases and sales.

banks made large withdrawals from Italy (Figure 2.6) that coincided with the heightened stress in Italian and Spanish sovereign debt markets. These outflows were largely offset by the ECB's Securities Markets Program (SMP) and by domestic purchases.

The erosion of the foreign investor base can be attributed to several distinct factors:

- *Rising credit risk and market volatility* deterred investors that seek steady, low-risk returns, such as central banks, insurance companies, and pension funds. Risk-adjusted returns in sovereign debt markets in Italy and Portugal deteriorated significantly in 2011 because of higher volatility and weak bond prices, particularly in comparison with other OECD sovereign issuers (Figure 2.7). The sudden emergence of high and volatile credit risk premiums also scared off hedge funds and other asset managers used to trading pure interest rate risk. Their withdrawal from the market further heightened problems of illiquidity and large price fluctuations, underscoring the self-reinforcing nature of the bond market rout.
- *Rating downgrades and exclusion from benchmarks.* Several large buy-and-hold investors have begun to change benchmarks for their sovereign bond portfolios, removing countries that are perceived to be subject to greater credit risk or more volatile

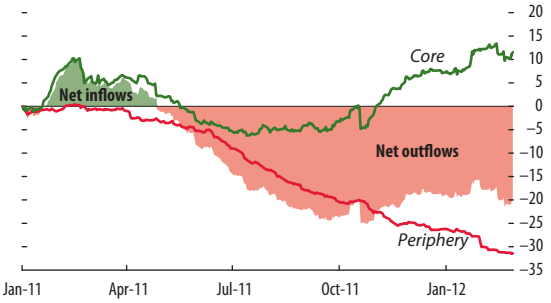
Figure 2.4. Changes in the Sovereign Investor Base
(In billions of euros)



Sources: Bank for International Settlements; European Central Bank; Eurostat; IMF International Financial Statistics database; IMF-World Bank Quarterly External Debt Statistics; and IMF staff estimates.

Note: Program countries are Greece, Ireland, and Portugal. SMP = ECB's Securities Markets Program. EU-IMF = joint EU and IMF euro area support programs. SMP data are estimates.

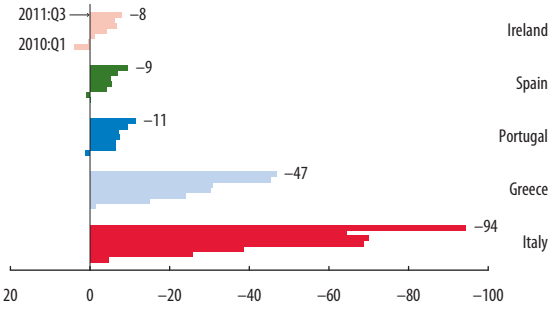
Figure 2.5. Custodial Holdings of Selected Euro Area Sovereign Bonds, 2011
(Cumulative flows, in billions of euros)



Sources: BNY Mellon iFlow[SM]; and IMF staff estimates.

Note: Core = Austria, Belgium, Finland, France, Germany, and Netherlands. Periphery = Greece, Ireland, Italy, Portugal, and Spain.

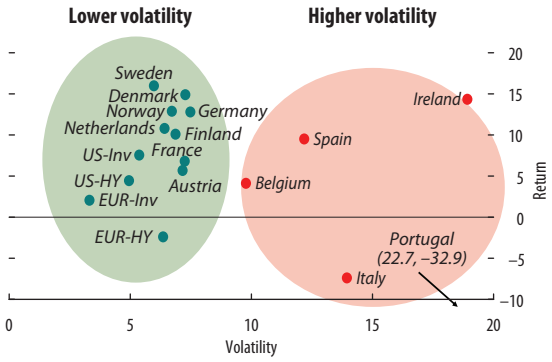
Figure 2.6. Cumulative Change in Foreign Bank Holdings of Sovereign Debt of Selected Euro Area Countries, 2010:Q1–2011:Q3
(In billions of euros)



Sources: Bank for International Settlements; Eurostat; and IMF staff estimates.

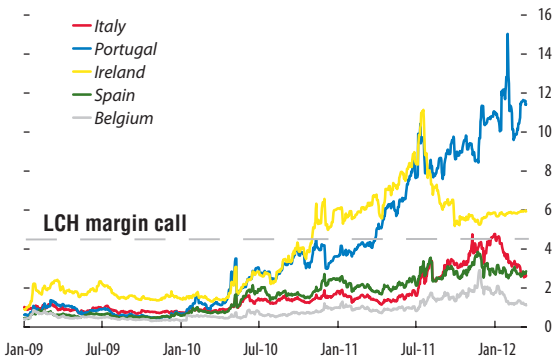
Note: Cumulative change is shown for seven successive quarters, from 2010:Q1 through 2011:Q3.

Figure 2.7. Returns and Volatility of U.S. and European Sovereign Bonds, 2011
(In percent)



Sources: Bank of America Merrill Lynch; and IMF staff estimates.
Note: EUR = European. HY = high yield. Inv = investment grade.

Figure 2.8. Ten-Year Peripheral Euro Area Government Bond Spreads over AAA Core
(Spread in percent)



Source: Bloomberg L.P.
Note: LCH = LCH Clearnet.

returns. Sovereign downgrades can also trigger selling by benchmark-oriented investors.[1]

- *Increased haircuts on repo transactions*. The sharp rise in yields has also reduced the collateral value of peripheral bonds. Under the rules of LCH Clearnet, margin requirements are raised once the spread on 10-year bonds relative to core issuers exceeds 450 basis points.[2] This happened successively to Greece (in May 2010), Ireland (November 2010), and Portugal (April 2011). Spanish and Italian spreads hit the threshold in November 2011 but since then have fallen back below it (Figure 2.8).

Fresh policy actions, especially by the ECB, relieved acute pressures by early 2012.

In response to these intense pressures, the new governments in Italy and Spain announced important policy measures to bring down fiscal deficits and address structural weaknesses in their economies. Moreover, euro area policymakers reached agreement on expanding the lending capacity of the European Financial Stability Facility (EFSF), brought forward the effective date of the European Stability Mechanism (ESM), and adopted a "fiscal compact" that aims to contain the emergence of excessive deficits in the future.[3] Although the longer-term value of the agreed compact is clear, investors generally saw its short-term benefits as limited, except to the extent that it might allow the ECB to step up its purchases of government bonds (Figure 2.9).

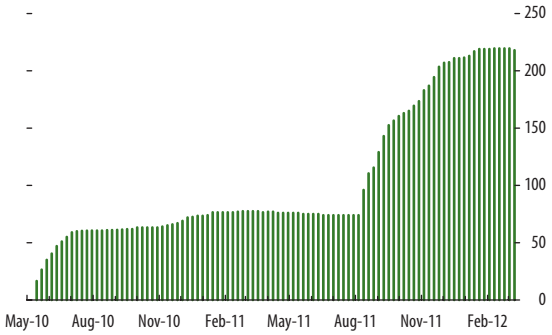
Central bank actions in late 2011 proved more effective in turning around investor sentiment. First, on November 30, the Federal Reserve agreed to reduce the cost of its swap lines with major central banks, including the ECB, making it cheaper for euro area banks to meet their need for short-term dollar funding. On December 8, the ECB announced that it would cut its policy rate by 25 basis points, to 1.0 percent, and reduce bank reserve requirements from 2 percent to 1 percent. Even more important, the ECB also announced that it would offer unlimited amounts of collateralized loans to euro area banks through three-year longer-term refinancing operations (LTROs) and expand the pool of collateral eligible for those transactions. The first such operation, launched on December 21, attracted bids from 523 banks for a total of €489 billion. It was followed by a second round of LTROs on February 29, which provided an additional €529 billion to 800 banks and covered a substantial part of near-term funding needs. The three-year ECB loans

[1]One case in point is the sharp underperformance of Portugal's bonds after their recent removal from the Citigroup World Government Bond Index.

[2]The rules for LCH Clearnet S.A. are different for Italian bonds.

[3]In March, euro area policymakers followed up on their earlier commitment to review the overall ESM/EFSF envelope, by agreeing to temporarily combine both facilities so as to ensure a fresh lending capacity of €500 billion even before ESM capital is fully paid in.

Figure 2.9. ECB Purchases of Government Bonds under Its SMP
(Cumulative, in billions of euros)



Sources: Bloomberg L.P.; and European Central Bank.
Note: Weekly data. SMP = Securities Markets Program.

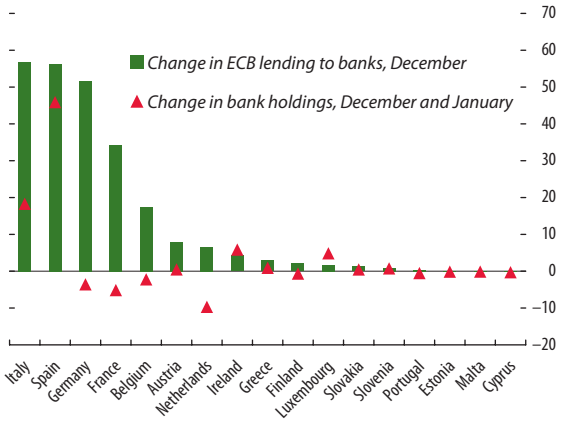
progressively came to be viewed as a crucial measure to curb the tail risk of disastrous bank failures.

Reflecting the improved sentiment, default risk premiums on bank debt eased markedly, and equity valuations recovered. In addition, the cheap longer-term funds led some banks, notably in Italy and Spain, to buy short-dated government paper, reaping the significant spread between bond yields and the ECB policy rate (Figure 2.10). The ECB's acceptance of Italian banks' government-guaranteed bonds issued to themselves as collateral also contributed to alleviate immediate pressures. The combined effect of lower tail risk perceptions and some "carry-trading" in peripheral euro area bonds, plus growing speculative flows and short-covering by institutional investors, caused yield curves to shift downward markedly beginning in late November. This was initially led by the short end of the yield curve but later extended to longer maturities (Figure 2.11). At this stage, however, there is still great uncertainty as to whether these developments will have durable effects on the stability of the investor base, and, of late, there has been some retrenchment and increased market volatility.

Nonetheless, as the policy response to the crisis has so far failed to restore confidence, many sovereigns remain in a zone of vulnerability.

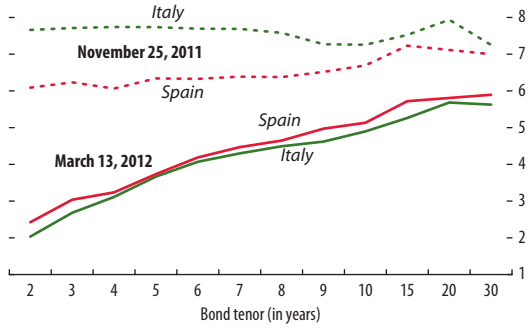
Despite this welcome improvement in market sentiment, the fundamental challenges facing euro area

Figure 2.10. ECB Lending and Bank Holdings of Euro Area Sovereign Bonds, December 2011–January 2012
(In billions of euros)



Source: European Central Bank.

Figure 2.11. Yields on Government Bonds of Italy and Spain, November 2011 and March 2012
(In percent)



Source: Bloomberg L.P.

sovereigns—as well as those in several other advanced economies—remain significant. Public finances remain under strain, reflecting various combinations of high primary deficits, weak growth, and large debt stocks. Many countries, notably in the euro area, have embarked on the process of fiscal consolidation to reach safer positions, but this effort will take many years. In the meanwhile, sovereigns remain exposed to sudden shifts in investor perceptions that can tilt the balance from a good equilibrium—which features low funding costs and affordable debt—to a bad equilibrium—where funding becomes very costly or even unavailable, reviving default risk.[4]

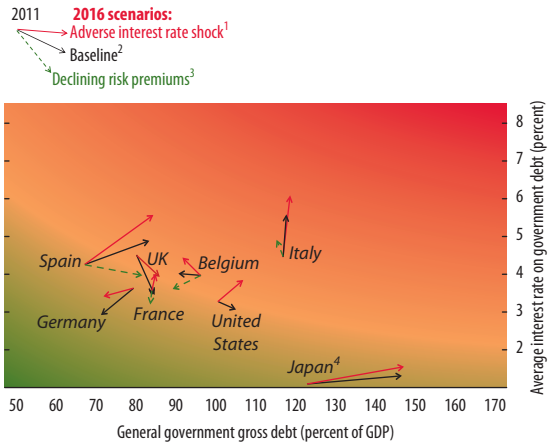
The policy response to the unfolding crisis in the euro area has been unprecedented in its breadth and scope. Yet, the key question remains whether enough has been done to entrench stability. To address this question, we analyze sovereign risks in terms of funding costs, debt servicing ability, and investor base dynamics under a baseline scenario and under upside and downside shocks. The baseline corresponds to the "current policies" scenario detailed in Chapter 1 and, in essence, extrapolates trends on the basis of current market conditions. Similarly to the analysis in the April 2011 GFSR, we project debt and interest payments assuming market forward interest rates and country-specific issuance strategies to be in line with historical patterns.[5] The scenarios can be explored through standardized sensitivity tests that compare vulnerabilities across countries. To this end, we consider upside and downside scenarios corresponding to the "complete policies" and "weak policies" scenarios in Chapter 1. In the complete policies setting, spreads over German yields are halved from 2013. In the weak policies situation, yields rise by one standard deviation across the board starting in 2013. The results are illustrated in Figure 2.12.

Within the euro area, Italy is facing a particular challenge as high current debt levels interact negatively with elevated marginal funding costs (Table 2.1). Even under the complete policies scenario, the average interest rate on Italy's public debt rises somewhat by 2016,

[4]See the April 2012 *Fiscal Monitor* for further analysis.

[5]Projections are made using *World Economic Outlook* (WEO) inputs for primary deficits, real growth, and inflation. Debt service projections are based on Bloomberg data (made consistent with WEO aggregates). Interest rates are forecast on the basis of market data as of March 13, 2012. IMF program countries are excluded from the projections.

Figure 2.12. Projections for Government Debt and Average Interest Rate in Selected Advanced Economies, 2011–16



Sources: Bloomberg L.P.; IMF, World Economic Outlook (WEO) database; and IMF staff calculations.

[1]Assumes a permanent increase in interest rates by one standard deviation (computed for the 2002–11 period) across the curve, starting in 2013. The size of the assumed country-specific interest rate shock, averaged over all bond maturities under consideration, is (in basis points), for Belgium, 85; France, 88; Germany, 95; Italy, 93; Japan, 34; Spain, 98; United Kingdom, 102; United States, 114.

[2]Based on WEO projections for primary balance and GDP, combined with market interest rate structure as of March 13, 2012. The computations use a large set of forward rates for each country; the following five-year bond yields are given here to provide a snapshot of market conditions on the cutoff date: Belgium, 2.11%; France, 1.72%; Germany, 0.80%; Italy, 3.67%; Japan, 0.30%; Spain, 3.74%; United Kingdom, 1.05%; United States, 0.98%. Projections do not take into account "below the line" financing operations that could also affect debt dynamics.

[3]Assumes a permanent reduction in spreads over German bunds by 50 percent, starting in 2013. Shown for selected countries only. As an illustration, the spread of five-year government bonds over German bunds on the cutoff date was (in basis points), for Belgium, 131; France, 92; Italy, 287; Spain, 293.

[4]Calculations for Japan based on net debt.

to about 4.6 percent. But it would climb to 5.3 percent if current yield levels are maintained, as assumed under the current policies scenario, and exceed 5.7 percent under the increase in marginal funding costs assumed under the weak policies scenario. Spain's debt dynamics are also challenging, though for different reasons: the country starts from relatively low levels of indebtedness, but unlike Italy continues to run sizable primary deficits, which push up debt levels even if interest rates remain contained.

Many other countries also require moderate funding costs to keep their public finances on an even keel. In particular, Japan and the United States continue to benefit from very low interest rates despite rapidly growing debt stocks which, even under the baseline, are making them more vulnerable. This observation underscores that fiscal challenges are by no means confined to the euro area. But whereas market pressures have led

Table 2.1. Sovereign Debt: Market and Vulnerability Indicators
(Percent of WEO projection of 2012 GDP except as noted)

	Fiscal and Debt Fundamentals			Financing Needs[1]		External Funding	Banking System Linkages			Sovereign Credit[2]		Sovereign CDS
	Gross general government debt, 2012[3]	Net general government debt, 2012[4]	Primary balance, 2012[5]	Gross general government debt maturing plus budget deficit		General government debt held abroad[6]	Domestic depository institutions' claims on general government[7]		BIS reporting banks' consolidated international claims on public sector[8]	Rating (notches above speculative)	Outlook as of Feb. 1, 2012	Five-year as of end-2011 (basis points)
				2012	2013		Percent of 2012 GDP	Percent of depository institutions' consolidated assets				
Australia	24.0	9.5	–2.0	4.9	3.6	10.6	2.5	1.4	2.6	10	Stable	83
Austria	73.9	54.1	–0.9	8.6	8.7	59.2	15.3	4.7	11.4	9	Stable	186
Belgium	99.1	84.2	0.5	19.3	19.5	56.5	23.1	7.3	13.5	7	Negative	311
Canada	84.7	35.4	–3.1	16.1	17.8	16.7	17.8	10.1	3.0	10	Stable	n.a.
Czech Republic	43.9	n.a.	–2.2	12.5	12.6	12.4	17.0	14.3	4.4	6	Stable	174
Denmark	51.3	8.4	–5.5	13.6	11.3	22.8	14.9	3.4	6.9	10	Stable	135
Finland	51.6	–57.1	–2.0	8.6	8.0	44.2	6.3	1.9	12.2	10	Stable	78
France	89.0	83.2	–2.2	18.2	19.5	56.3	16.9	4.1	7.2	9	Stable	220
Germany	78.9	54.1	1.0	8.9	8.5	48.3	21.2	6.7	10.0	10	Stable	102
Greece	153.2	n.a.	–1.0	. . .	. . .	87.5	28.7	12.4	15.7	–8	Negative	8786
Ireland	113.1	102.9	–4.4	15.3	14.7	65.7	26.8	3.3	4.8	2	Negative	724
Italy	123.4	102.3	3.0	28.7	23.9	48.8	32.0	12.4	9.6	4	Negative	484
Japan	235.8	135.2	–8.9	59.1	59.5	19.2	79.3	24.6	1.8	7	Negative	143
Korea	32.9	31.5	1.6	0.9	0.4	4.5	5.2	3.8	3.5	5	Stable	161
Netherlands	70.1	36.0	–3.2	14.9	16.4	40.4	13.3	3.4	7.8	10	Stable	119
New Zealand	36.0	11.5	–3.8	8.8	11.7	22.4	7.3	4.2	3.7	8	Negative	94
Norway	49.6	–173.7	11.9	–10.1	–6.7	22.3	n.a.	n.a.	6.2	10	Stable	45
Portugal	112.4	110.9	0.1	26.7	19.7	61.5	19.3	5.6	9.6	0	Negative	1082
Slovak Republic	47.1	n.a.	–2.7	11.7	13.6	16.8	16.7	20.7	9.1	5	Stable	300
Slovenia	52.5	n.a.	–3.0	7.9	7.4	29.9	13.7	9.3	8.9	5	Negative	400
Spain	79.0	67.0	–3.6	20.9	21.5	28.4	26.5	7.7	5.9	5	Negative	380
Sweden	35.5	–20.1	–1.1	4.5	1.9	14.7	6.6	2.5	4.2	10	Stable	78
United Kingdom	88.4	84.2	–5.3	14.8	13.9	24.8	8.5	n.a.	2.8	10	Stable	98
United States	106.6	83.7	–6.1	25.8	26.2	29.7	7.1	5.1	3.6	9	Negative	49

Sources: Bank for International Settlements (BIS); Bloomberg L.P.; IMF, International Financial Statistics, Monetary and Financial Statistics, and World Economic Outlook (WEO) databases; BIS-IMF-OECD-World Bank Joint External Debt Hub (JEDH); and IMF staff estimates.

Note: Based on projections in the April 2012 *World Economic Outlook*, which also summarizes the policy assumptions. CDS = credit default swaps.

[1]As a percent of WEO projection of GDP for the year indicated.

[2]Rating as notches above speculative grade is the average of long-term foreign currency debt ratings by Fitch, Moody's, and Standard & Poor's rating agencies, rounded down; outlook is based on the most negative of the three agencies' ratings.

[3]All liabilities that require the government to make future payments of interest and/or principal to the creditors, including SDRs, currency and deposits, debt securities, loans, insurance, pensions and standardized guarantee schemes, and other accounts payable.

[4]Gross debt minus financial assets that are debt instruments; the financial assets are monetary gold and SDRs, currency and deposits, debt securities, loans, insurance, pensions and standardized guarantee schemes, and other accounts receivable.

[5]Primary net lending/borrowing balance for general government. Data for Korea are for central government.

[6]Most recent data from JEDH divided by WEO projection of 2012 GDP. JEDH and WEO debt data are incompatible when one set is at market value and the other is nominal. Data for New Zealand are from Reserve Bank of New Zealand.

[7]Claims exclude those of the central bank on general government. For the United Kingdom, claims are on the public sector. Data are for fourth quarter of 2011 or latest available.

[8]On an immediate borrower basis as of September 2011.

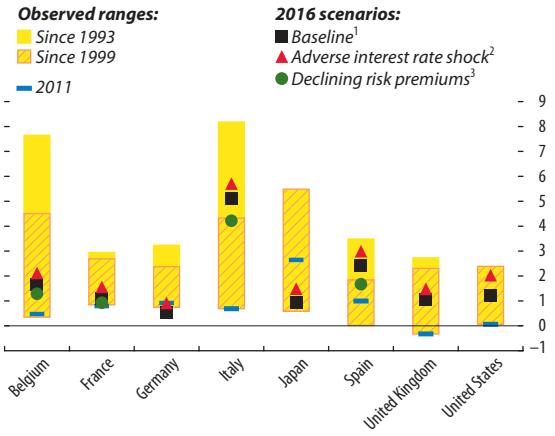
euro area countries to at least adopt a proactive stance in laying out the necessary plans for medium-term fiscal adjustment, Japan and the United States have yet to take that crucial step to safeguard investor confidence (see Annex 2.2). Given the size and importance of both countries' debt markets, this vulnerability remains a latent risk to global stability.

The debt service capacity of countries can be further illuminated by their individual fiscal histories. Italy, for instance, has lived with above-average interest burdens for a long time. To elucidate this aspect, Figure 2.13 shows current and projected interest burdens of selected countries under the three scenarios in relation to their historical experience. Indeed, Italy's projected interest burden in 2016 remains well within the range of past experience; during the 1990s, interest burdens were significantly higher than projected even under the weak policies scenario. It is worth cautioning, however, that those high real interest bills of the 1990s were perhaps made more tolerable by the prospect of qualification for the euro and the associated convergence of interest rates to a lower euro area level. In fact, since the inception of the monetary union (striped area in Figure 2.13), Italy has not had to bear as high an interest burden as is projected for 2016, even in the baseline scenario, and neither has Spain. Thus, there is no denying the worsening headwinds from rising interest rates on sovereign debt for most countries shown in Figure 2.13.

Domestic investors are expected to provide the bulk of gross financing needs in Germany, Italy, and Spain in 2012, but foreign investors still hold a significant portion of outstanding debt stocks (Figure 2.14), despite a steady decline for some countries since 2010. Would domestic investors be able to replace foreign investors if they continued to reduce their share of the outstanding stock? This question can be examined using our three scenarios. Consistent with the nature of the scenarios, we assume a progessively higher reliance on domestic investors the more policies fall short of the comprehensive reform package recommended in this report (see assumptions in Table 2.2).

The additional sovereign bonds that domestic investors would need to purchase to cover the funding needs (under both the complete and current policies scenarios), as well as replace foreign investors (under weak policies) could be quite large (Table 2.3).

Figure 2.13. Scenarios for Ratio of Real Government Interest Expenditure to GDP, Selected Advanced Economies
(In percent)



Sources: Bloomberg L.P.; IMF, World Economic Outlook (WEO) database; and IMF staff estimates.

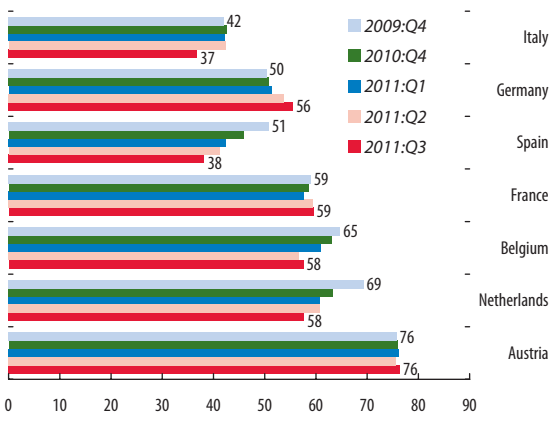
Note: Data are for real interest expenditures on general government debt. The real rate is the nominal rate less inflation in the consumer price index. Data constraints limit the U.S. historical range to 2001–11.

[1]Based on WEO and market interest rates as of March 13, 2012.

[2]Permanent increase in interest rates by one standard deviation across the curve, starting in 2013.

[3]Permanent 50 percent decline in interest rate spreads relative to bunds, starting in 2013.

Figure 2.14. Foreign Investor Share of Total Sovereign Debt, 2009–11, Selected Euro Area Economies
(In percent)



Sources: Eurostat; IMF-World Bank Quarterly External Debt Statiistics; and IMF staff estimates.

Table 2.2. Share of Foreign Investors in Gross Refinancing Needs of Selected Euro Area Sovereigns under Three Policy Scenarios
(In percent)

	Complete Policies[1]	Current Policies[2]	Weak Policies[3]
Austria	75.7	76.4	77.1
Belgium	64.7	57.5	50.3
France	59.0	59.5	60.0
Germany	50.5	55.5	60.6
Italy	42.0	36.8	31.7
Netherlands	69.3	57.7	46.1
Spain	50.8	38.1	25.5

Source: IMF staff estimates.

[1]Refinancing share equals end-2009 share of total debt stock.

[2]Refinancing share equals end-2011 share of total debt stock.

[3]Refinancing share declines by same amount as decrease from end-2009 to 2011:Q3.

If domestic banks absorbed this additional sovereign debt, it would raise the proportion of their balance sheet devoted to government bonds by as much as 9½ percent of assets (in the case of Italy under the weak policies scenario, Table 2.3). While this may be manageable, the strains placed on domestic investors would be magnified if yields were to rise sharply again and financial institutions suffered fresh losses on their existing holdings.[6] Given these considerations, the increases in domestic funding outlined in these scenarios will require either a significant increase in home bias on the part of domestic investors or some form of financial repression on the part of policymakers. Neither of these two developments would be innocuous, underscoring the importance of decisive steps to restore the confidence of investors that a strong and flexible firewall can be deployed to prevent a repeat of the downward spiral toward a bad equilibrium. The recent decision by euro area policymakers to raise the effective lending capacity of the ESM (through accelerated buildup of capital and temporary backstopping by the EFSF) marks an important step in the right direction.

Overall, the situation in several euro area sovereign bond markets has improved in recent months but still remains fragile. This has allowed a number of sovereigns to prefund a large share of rollover needs for 2012. The governments of Italy and Spain now finance themselves in the market at lower yields than at the end of 2011, so their marginal funding costs do not pose immediate threats to debt sustainability. However, current fragilities leave bond markets prone to renewed turmoil: negative news or sudden changes in sentiment could quickly drive up yields and further erode the investor base as expectations shift toward a bad equilibrium.

Countries currently facing market pressures therefore need to sustain their resolve to rectify fiscal imbalances that weigh on investor confidence. Across the rest of the euro area, these efforts should be matched by a more resounding message of cohesion and support. Key to assuaging market fears is a sufficiently large financing backstop for countries that are fundamentally solvent but could be threatened by temporary swings of confidence in funding markets.

[6]This additional stress is not incorporated in the scenarios presented above.

Bank Deleveraging—Why, What, by How Much, and Where?

Banks have been under pressure to deleverage since the outbreak of the subprime crisis. Pressures on European banks escalated at the end of 2011 as sovereign stress increased and many private funding

Table 2.3. Amount of Additional Funding from Domestic Investors Required by Selected Euro Area Sovereigns under Three Policy Scenarios, 2012

	Billions of Euros			Percentage of Domestic Bank Assets		
	Complete policies	Current policies	Weak policies	Complete policies	Current policies	Weak policies
Austria	7	7	7	0.8	0.8	0.8
Belgium	24	29	34	4.1	4.9	5.8
France	146	144	144	2.4	2.3	2.3
Germany	148	133	118	2.0	1.8	1.6
Italy	205	223	241	8.1	8.8	9.5
Netherlands	30	41	52	1.3	1.7	2.2
Spain	107	135	162	3.1	3.9	4.6

Source: IMF staff estimates.

channels closed. The ECB's provision of longer-term funding has substantially eased the strains, but banks still face the need to raise capital or reduce assets by scaling back credit or cutting business lines. Some of these adjustments are healthy since high leverage is no longer supported—by either markets or regulators—and some activities are no longer viable. However, there is a risk that a large-scale reduction in European bank assets might have serious negative repercussions for the real economy and financial markets in the euro area and beyond.

European bank leverage and reliance on wholesale funding remains high.

Advanced economy banks have been under pressure to reduce leverage since the outbreak of the subprime crisis, as many institutions had entered the crisis with thin capital cushions and a heavy reliance on wholesale funding. However, progress has varied in this adjustment process. While institutions in the United States have reduced their leverage and reliance on wholesale funding, EU banks—in aggregate—remain more reliant on wholesale funding and, though leverage has been reduced, levels remain elevated (Figures 2.15 and 2.16). This has left the European banking system more exposed to structural and cyclical deleveraging pressures.

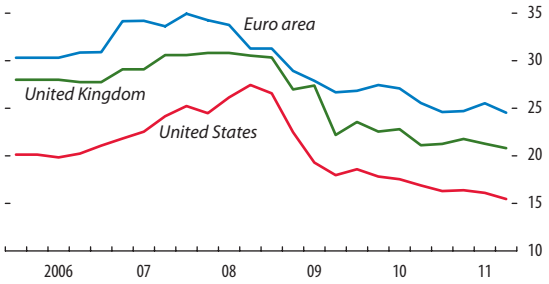
Bank funding strains intensified toward the end of last year.

Toward the end of last year, market pressures on banks intensified significantly as the euro area debt crisis continued to spread and spill over to the banking system.[7] Escalating investor concerns were reflected in weak bank equity prices—as discussed in Box 2.1 and as shown in Figure 2.17—and soaring credit default swap spreads for banks in countries with the most affected sovereigns (Figure 2.18).

Wholesale bank funding markets became particularly strained. Unsecured funding channels closed for many weaker European banks. This was most evident in U.S. dollar funding markets, where U.S.

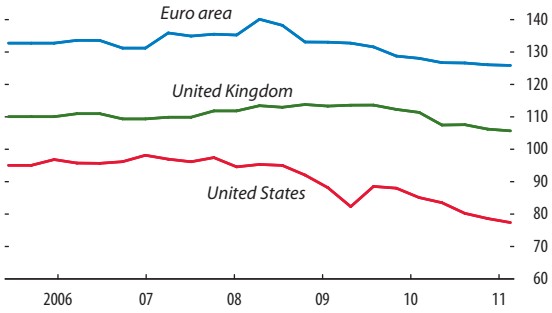
[7]See the September 2011 GFSR for an analysis of sovereign spillovers on the euro area banking system.

Figure 2.15. Bank Leverage
(Adjusted tangible assets to Tier 1 common capital)



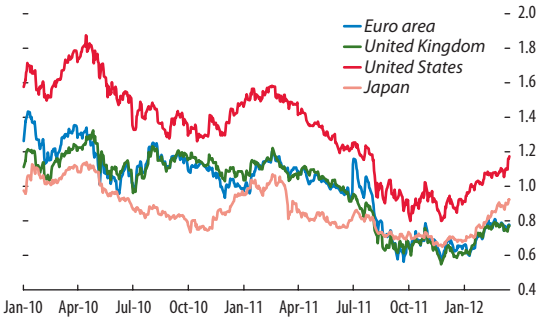
Sources: SNL Financial; and IMF staff estimates.
Note: Tangible assets are adjusted by subtracting derivatives liabilities from tangible assets of European banks. However, some accounting differences may remain. Based on large banks in each economy.

Figure 2.16. Bank Loan-to-Deposit Ratios
(In percent)



Sources: SNL Financial; and IMF staff estimates.
Note: Based on large banks in each economy.

Figure 2.17. Bank Price-to-Tangible Book Value
(Ratio)



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

Box 2.1. What Explains the Performance of European Bank Equities?

An econometric analysis indicates that the weak performance of European bank shares during the financial crisis has been largely due to macro factors, but the strength of individual bank balance sheets has also affected share price performance. The analysis suggests that sovereign stress in the European periphery, and economic growth prospects in the wider euro area, have had pronounced and roughly equal impacts on bank share prices. Higher equity buffers and capital ratios are positively related to equity performance during the second phase of the crisis, vindicating policymakers' efforts to strengthen bank capitalization.

The study is based on a monthly sample of 37 major European banks over the period 2006–11. Panel and simple ordinary least-squares regressions are employed to study the co-movement between bank equity excess returns and measures of sovereign risk, economic activity, market volatility, and funding market conditions.[1] The analysis also incorporates bank-specific variables including Tier 1 capital ratios, leverage, the loan-to-deposit ratio, and the ratio of short-term to total liabilities (Table 2.1.1).[2]

The role of macro variables in explaining bank performance is shown by the pooled cross-sectional regressions for the periods 2006–08 and 2009–11, presented in columns (1) and (2) of Table 2.1.1. The first period includes the U.S. subprime mortgage crisis and the collapse of Lehman Brothers; the second covers the European sovereign debt crisis. The model—containing only macro variables in this version—provides a

Note: Prepared by Jorge Chan-Lau, Estelle Xue Liu, and Jochen Schmittmann.

[1]The sovereign risk variable is constructed as the arithmetic average of the five-year CDS spreads of Belgium, Greece, Ireland, Italy, Portugal, and Spain. Expectations of economic activity are measured by the manufacturing sector purchasing managers' index (PMI), and market volatility is measured by the VIX. Funding market conditions are proxied by two factors: the three-month Euribor-EONIA spread (Euribor-OIS spread) and the option-adjusted spreads (OAS) for Eurobonds issued by global banks. The former is used as an indicator for short-term funding stress, while the latter is used as a measure of long-term funding conditions. All variables are expressed in logarithmic form as changes from the previous month.

[2]The results are robust to variations in the measurement of the variables. For example, similar results are obtained if the loan-to-deposit ratio is replaced by the wholesale funding ratio.

Table 2.1.1. Determinants of Bank Equity Returns

Variable	(1) 2006–08	(2) 2009–11	(3) 2006–08	(4) 2009–11
Change				
Sovereign stress	–0.181***	–0.250***	–0.181***	–0.249***
	(0.017)	(0.033)	(0.017)	(0.031)
European PMI	1.010***	1.946***	0.934***	1.788***
	(0.102)	(0.210)	(0.103)	(0.198)
U.S. PMI	0.215**	–0.805***	0.206**	–0.691***
	(0.091)	(0.186)	(0.092)	(0.174)
VIX	–0.073***	0.023	–0.068***	0.002
	(0.016)	(0.035)	(0.016)	(0.033)
Euribor-OIS spread	0.018***	–0.043**	0.017**	–0.053***
	(0.007)	(0.021)	(0.007)	(0.020)
Euro–bank bond spread	0.037	–0.211***	0.039	–0.197***
	(0.038)	(0.066)	(0.039)	(0.061)
Short-term liabilities/total liabilities			0.005	0.020
			(0.018)	(0.037)
Equity/assets			0.216***	0.294**
			(0.059)	(0.116)
Loans/deposits			0.004	–0.006
			(0.006)	(0.010)
Tier 1 capital/RWA			–0.089	0.475**
			(0.155)	(0.220)
Constant	–0.002	–0.030***	–0.013	–0.068**
	(0.003)	(0.006)	(0.020)	(0.032)
Number of observations	1,207	1,155	1,122	1,120
R-squared	0.362	0.282	0.367	0.313

Note: Standard errors are in parentheses. *** = $p < 0.01$; ** = $p < 0.05$; * = $p < 0.1$. Euribor = euro interbank offered rate. OIS = overnight indexed swap. PMI = purchasing managers' index. RWA = risk-weighted assets. VIX = Chicago Board Options Exchange Market Volatility Index.

Box 2.1. *(continued)*

good fit, explaining 36 percent of the variation in the earlier period, and 28 percent in the latter.

The analysis shows that bank returns are negatively related to sovereign risk, and positively related to changes in euro area activity as measured by the purchasing managers' index (PMI). The estimated elasticity of returns with respect to sovereign risk (0.25) was much lower than that for the PMI (about 2), but given the higher volatility of the sovereign stress measure over the period in question, both variables had roughly the same impact on returns. Over the course of the euro area crisis, the sensitivity of banks to sovereign stress and euro area economic conditions increased.

Of less importance in explaining banks' returns are market volatility (VIX) and funding measures. Market volatility was significantly related to bank returns only in the earlier (2006–08) period, reflecting the dominance of sovereign stress and economic growth prospects in the latter period. Short-term and long-term funding conditions were negatively related to banks' excess returns during the euro area crisis period, reflecting funding stresses.

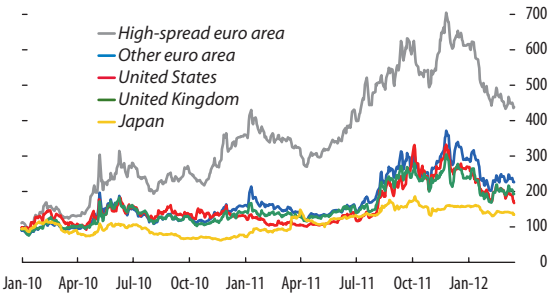
The regressions presented in columns (3) and (4) of Table 2.1.1 provide empirical support for the beneficial effects of stronger bank capitalization on returns. Banks with lower leverage (equity/assets) did better over the entire sample period, and banks with higher Tier 1 capital outperformed other sample banks during the European sovereign crisis.[3] During 2009–11, a 1 percentage point increment in a bank's Tier 1 capital ratio was associated with a premium of about 0.5 percent in monthly excess stock returns.

Banks located in Belgium, Greece, and Ireland were particularly sensitive to changes in economic conditions. The co-movement of bank performance with sovereign risk was strongest in Belgium and Greece and significant for other euro area countries except Ireland. In the case of Ireland, the large guarantees the government gave to its banking sector precipitated the country's sovereign debt crisis, inducing a negative correlation between bank returns and sovereign performance for a period.

Market volatility in the euro area was significant only for banks in France and Germany. Using a larger sample that included banks in Japan, the United Kingdom, and the United States, the study found that British and American banks exhibited sensitivities to European sovereign risk and economic conditions of a magnitude similar to that for core European banks. Japanese banks were least sensitive to European factors, but the coefficients are significant nonetheless.

[3]Panel regressions with bank fixed effects yield very similar results except for the Tier 1 capital ratio, which becomes insignificant.

Figure 2.18. Bank Five-Year Credit Default Swap Spreads
(In basis points)



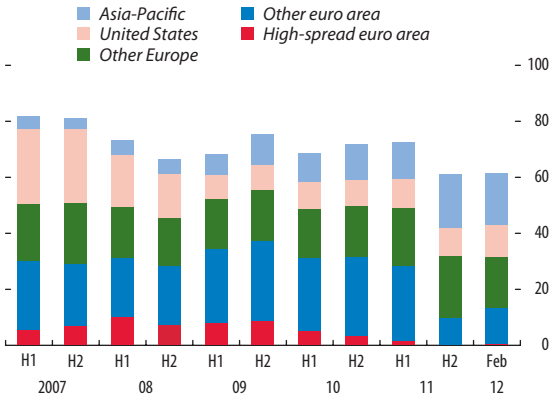
Sources: Bloomberg L.P.; and IMF staff estimates.
Note: High-spread countries are Belgium, Greece, Ireland, Italy, Portugal, and Spain.

prime money market funds sharply reduced their exposure to euro area banks and stopped lending to banks from high-spread euro area countries altogether (Figure 2.19).[8] But strains also appeared in other short-term markets, with counterparties only willing to lend at high rates and at increasingly short maturities. Bank term debt issuance was also impaired through the second half of the year (Figure 2.20).

At the same time, customer deposits—including from nonresidents—fell in banks domiciled in Greece, Ireland, Italy, and Spain (Figure 2.21). This contrasts with increases in deposits in France and Germany. Although the situation appears to have

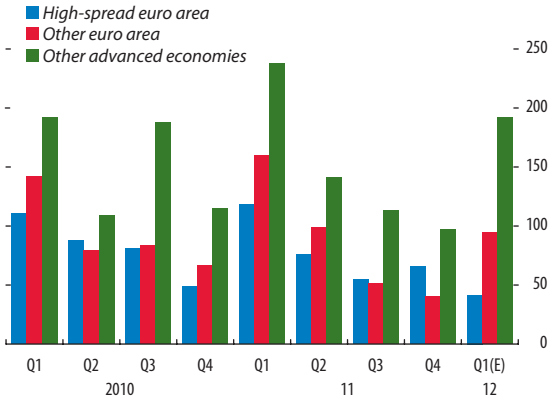
[8]The high-spread euro area countries are the same as those used in the April and September 2011 GFSRs (Belgium, Greece, Ireland, Italy, Portugal, and Spain).

Figure 2.19. U.S. Prime Money Market Fund Exposures to Banks
(In percent of total assets)



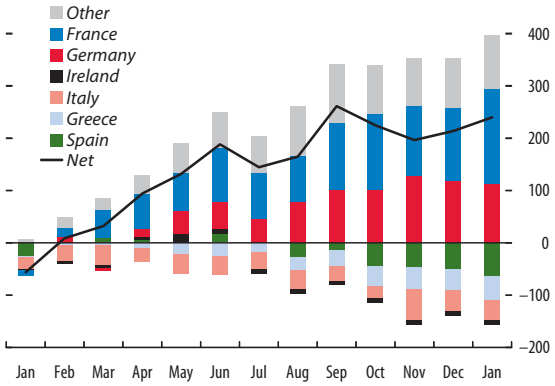
Source: Fitch.
Note: High-spread countries are Belgium, Greece, Ireland, Italy, Portugal, and Spain.

Figure 2.20. Bank Debt Issuance
(In billions of U.S. dollars)



Sources: Dealogic; and IMF staff estimates.
Note: High-spread countries are Belgium, Greece, Ireland, Italy, Portugal, and Spain.

Figure 2.21. Cumulative Euro Area Deposit Flows, 2011–12
(In billions of euros)



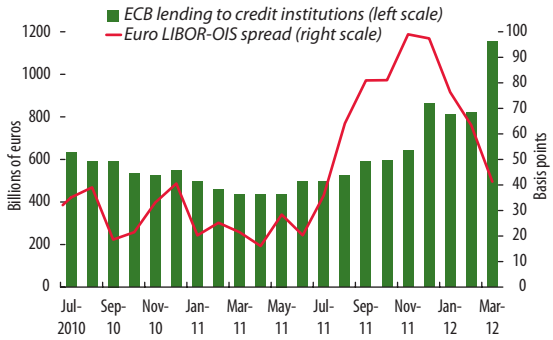
Source: Haver Analytics.
Note: Other includes Austria, Belgium, Finland, Luxembourg, Netherlands, and Portugal.

stabilized at the end of 2011, there is a risk that outflows could resume in 2012 if depositors' perceptions change.

The ECB's longer-term refinancing operations prevented a systemic collapse and reduced funding strains, but conditions are still far from normal.

The ECB's decision in December to provide unlimited collateralized loans for up to three years afforded much-needed relief for banks (see Annex 2.4). Since the end of 2011, credit default swap spreads have narrowed by about 180 basis points for banks in high-spread euro area countries. Short-term funding costs have also fallen, with the euro LIBOR-OIS spread about 50 basis points lower. There are also signs that bank funding market conditions are easing, as term debt issuance has risen above the levels of 2011:H2 (Figure 2.20) and U.S. money market fund exposures to core euro area banks have stabilized (Figure 2.19). But market conditions are still far from normal, with indicators of bank credit risk persisting at high levels and with a number of institutions still relying heavily on central bank liquidity support (Figure 2.22). Furthermore, economic conditions have continued to weaken. The difficult economic backdrop will likely lead to lower bank earnings and a deterioration of banks'

Figure 2.22. ECB Liquidity Facilities and Interbank Market Spreads



Sources: Bloomberg L.P.; and Haver Analytics.
Note: LIBOR = London interbank offered rate; OIS = overnight indexed swap.

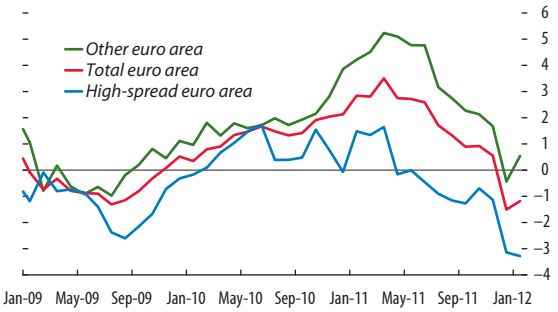
asset quality, potentially creating an adverse feedback loop through higher provisioning and capital needs, which could further add to deleveraging pressures.

Against this backdrop, European bank deleveraging appears to have accelerated in the second half of 2011.

Reflecting these market pressures, European bank deleveraging appears to have begun in earnest in the second half of 2011, with some of the asset reductions taking place under official restructuring plans. Euro area bank credit growth to the nonfinancial private sector has also slowed, particularly in high-spread countries where loan growth rates have been diverging from those in other euro area countries (Figure 2.23), though the most recent data show some stabilization in growth rates. Although credit growth may reflect both demand and supply factors, euro area survey results show that banks have tightened their lending standards in response to balance sheet constraints, with cyclical factors also playing a role (Figure 2.24).

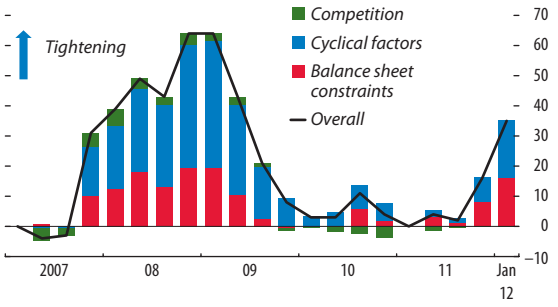
In addition, European banks sold assets in some non-EU markets as part of their efforts to rebalance their balance sheets during the third quarter of 2011 (Figure 2.25). High-spread euro area banks, in particular, reduced their private sector claims on Latin America and on advanced countries outside the EU. Banks in other euro area countries scaled back their claims on borrowers in advanced economies outside the EU and in some emerging market economies.

Figure 2.23. Credit Growth to the Nonfinancial Private Sector
(In percent, seasonally adjusted three-month change, annualized)



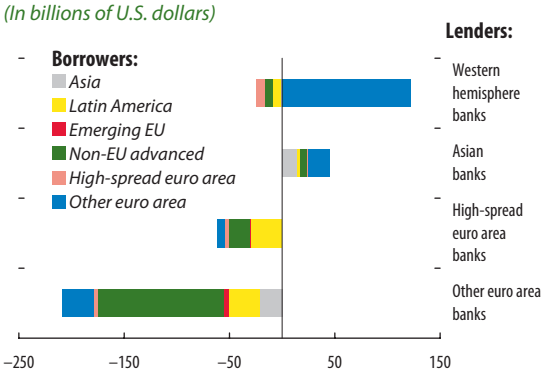
Sources: Haver Analytics; and IMF staff estimates.
Note: High-spread countries are Belgium, Greece, Ireland, Italy, Portugal, and Spain.

Figure 2.24. Contributions to Euro Area Bank Lending Conditions for Companies
(Net percentage balance)



Sources: Haver Analytics; and IMF staff estimates.
Note: The bars show the average proportion of respondents citing the different factors. Balance sheet constraints include capital, access to financing, and liquidity position. Cyclical factors include general economic activity, industry outlook, and collateral needs. The sum of the bars has been adjusted to equal the corresponding overall value.

Figure 2.25. Change in Banks' Foreign Private Sector Claims, 2011:Q3
(In billions of U.S. dollars)



Sources: Bank for International Settlements; and IMF staff estimates.
Note: Data are for BIS reporting banks. Claims on euro area and emerging EU countries are corrected for variation in the dollar-euro exchange rate. High-spread countries are Belgium, Greece, Ireland, Italy, Portugal, and Spain.

The deleveraging trend is likely to continue and broaden.

Looking ahead, many European banks have announced medium-term business plans with reductions in assets amounting to about $2.0 trillion in total. The size of planned asset reduction tends to be larger for universal banks, institutions that had been taken over by national authorities, and banks that are highly reliant on wholesale and less stable sources of funding (Box 2.2). There are several structural drivers shaping the evolution of European bank balance sheets.

- First, a number of European banks have not yet completed the clean-up of their balance sheets and shedding of legacy assets. Institutions that received government support are required under EU law to sell parts of their business to minimize competitive distortions. Other banks are facing additional national requirements that may lead them to cut back certain activities (for example, the ring-fencing to separate commercial and investment banking activities in the United Kingdom).
- Second, banks are seeking to be better capitalized. Some institutions are raising their capital buffers following the European Banking Authority (EBA) recapitalization exercise. Banks are also reacting to the so-called Basel 2.5 rules, which came into effect early this year, and have reinforced incentives to accelerate the disposal of legacy assets and to reconsider the scale of banks' investment banking activities.
- Third, institutions are seeking to reduce their reliance on less stable (short-term, wholesale) sources of funding. This is, in part, a reaction to the seizing-up of wholesale markets in the aftermath of the Lehman Brothers collapse as well as regulatory norms under Basel III. In Europe, it also reflects increases in the cost of private wholesale funding.

There is a risk that a large-scale reduction in assets by European banks could lead to a credit crunch.

These structural changes are healthy as they will lead, over time, to a stronger and more resilient banking system. However, there is a risk that large, simultaneous asset reduction by a number of European banks could have an adverse impact on the economy and the financial system. In general, deleveraging can be accomplished through increases in capital or a fall in assets, with the exact mix depending on a bank's starting position and on macro-financial conditions. For example, under adverse conditions, banks may find it more difficult to generate capital and therefore could choose to adjust their balance sheets through asset shrinkage. In what follows, the term "deleveraging" will be used to refer to a reduction in assets after taking into account changes in levels of capital.

The potential scale of European bank deleveraging is assessed through simulations of the balance sheet adjustment for a sample of 58 large EU banks, using the same scenarios presented in Chapter 1.[9] The scenarios run from the end of September 2011 to the end of December 2013. In the exercise, bank deleveraging is driven by both structural and cyclical forces. The *structural* forces are: (1) the need to adjust banks' business models (as reflected in the business plans announced by banks), (2) the need to further strengthen capitalization, and (3) the drive to reduce reliance on less stable (short-term, wholesale) sources of funding. The *cyclical* factors include financial conditions—in sovereign and bank funding markets—and the state of the economy, which affects banks' retained earnings. This scenario approach is consistent with the EBA exercise, but takes a broader view of bank deleveraging, as discussed in Box 2.3.

How do banks deleverage?

For each bank, the target amount of asset reduction is determined given its initial condition, projected capital generation, as well as cyclical and structural factors described above. The asset reduction is then implemented according to banks' business plans, if such information is available, or through an assumed deleveraging strategy (see Annex 2.1 for details). This assumed deleveraging strategy is such that not all deleveraging occurs through a reduction in customer lending. Banks first consider selling securities and cutting back part of their interbank exposures before

[9]See Annex 2.1 for more details on the methodology and the list of banks.

Box 2.2. European Banks' Business Plans

Of the 58 EU-based banks that are the focus of the GFSR deleveraging exercise, 24 have announced detailed plans (available on their websites) to sell about $2.0 trillion over the next two years (2011–13) (Figure 2.2.1). These banks are among the largest globally and have tremendous cross-border and cross-business line reach. The banks' business plans are addressing a number of weaknesses that the financial crisis exposed in banks' business models and risk management practices, including (1) excessive reliance on wholesale funding, in particular short-term and cross-currency; (2) weaknesses in market risk measurement and management, especially credit trading and counterparty risk; and (3) low levels of capital and profitability. The following list details the areas that are most affected:

- *Trading within investment banking*. Banks with large investment banking arms are cutting back sharply on trading activities, in particular proprietary trading, nonstandardized derivatives, distressed sovereign exposures, repurchase agreements, and AAA-rated securitized and structured products. These activities have become less profitable and require more capital and liquidity buffers under Basel 2.5 and Basel III. In addition, many banks see this as a way to quickly reduce wholesale funding needs, especially in U.S. dollars.
- *Corporate banking*. Banks are scaling back parts of corporate banking, such as interbank lending,

Figure 2.2.1. EU Banks with Announced Changes to Business Strategy

Source: Company websites; and IMF staff estimates.
[1]Includes interbank lending and commercial real estate loans; and working capital, project, and specialized finance, including leasing, equipment, trade, and commodities finance.
[2]Includes companies that specialize in car, aircraft, shipping, leasing, project, and structured finance; investment banks; and municipal bond agencies.
[3]All EU and non-EU countries in eastern Europe, including Poland, Russia, and Turkey.
[4]Has received government financial support.

Box 2.2. *(continued)*

syndicate loans, factoring, and leasing as well as commodities, project, and trade finance. These activities are wholesale-funding intensive and will require more capital and liquidity under Basel III. One typical example is the decision by some French banks to run off certain businesses in the areas of aviation, commodity, and equipment leasing finance.

- *Retail banking*. A number of banks plan to scale back retail banking through run-offs or loan sales (e.g., commercial real estate), sale of distressed assets (e.g., downgraded structured products), or even sale of bank branches or credit businesses (e.g., the sale of ING Direct to Capital One in 2012:Q1).
- *Nonbank and shadow bank assets*. Universal banks have started selling nonbank financial companies, including in insurance, asset management, securities, finance, and real estate investment. For about 65 percent of the transactions, buyers are regulated financial institutions, such as other commercial banks or insurance companies. Private equity companies and investment companies have bought mainly project loans, structured and distressed assets, real estate management companies, financial services companies, and some investment and private asset management banks (e.g., the sale of Dexia's Bank International and of KBC's KBL to the Qatar investor group Precision). For the largest-value sales, buyers have come largely from the United States and Japan.

they start scaling back their loan portfolio. This assumption reflects: (1) what has happened to date, as a number of European banks have already been selling dollar-denominated securities; (2) banks' publicly announced business plans; and (3) banks' likely reaction to the increase in risk weights under Basel 2.5.

When banks consider reducing their loan books, some home or regional bias is assumed, with institutions expected to consider curtailing their foreign loan books before cutting domestic credit. This bias is visible, to some extent, in the evolution of banks' foreign claims during 2011:Q3 as shown in Figure 2.25. The recently launched "Vienna 2.0" initiative, which aims at establishing mechanisms to avoid disorderly deleveraging in emerging Europe, also suggests that concerns about home bias in the behavior of European banks are real.[10] Finally, in its December 2011 press release on the 2011 EU Capital Exercise, the EBA recommended that bank recapitalization plans should not "lead to significant constraints on the credit flow to the EU real economy."

[10]See "Statement at the Conclusion of the European Bank Coordination 'Vienna 2.0' Initiative's Full Forum," IMF Press Release No. 12/80, March 13, 2012, www.imf.org/external/np/sec/pr/2012/pr1280.htm.

By how much and where?

In the *current policies* scenario, aggregate leverage of the sample banks falls from 29 to 23, with the majority of this decline achieved through retained earnings and the capital raised as part of the EBA exercise (Figure 2.26). The remainder comes through a $2.6 trillion (€2.0 trillion) reduction in assets, or about a 7 percent decline in total balance sheet size.[11] About one-quarter of the fall in assets occurs through a reduction in loans, with the remainder due to sales of subsidiaries, noncore assets (for example, insurance and asset management arms of banking groups), and securities. The end-2011 results available so far reveal that banks in the sample reduced assets by almost $580 billion in the last quarter of the year.

The variations in the scale of bank deleveraging across scenarios are mainly driven by differences in the extent of cyclical pressures. Under the *complete policies* scenario—where cyclical pressures ease—assets are cut back by $2.2 trillion, mostly reflecting banks' own business plans. By contrast, in

[11]This figure may not account for some recent asset sales. The methodology used may also differ from ongoing restructuring programs in certain countries.

Box 2.3. A Comparison of the GFSR Approach with the European Banking Authority's Bank Capital Strengthening Exercise

On December 8, 2011, the European Banking Authority (EBA) recommended a higher core Tier 1 capital (CT1) target of 9 percent and the creation of temporary capital buffers, to be attained by June 30, 2012, to strengthen bank balance sheets (EBA, 2011).[1] The EBA subsequently published an overview of the capital plans that banks had submitted to regulators (EBA, 2012). These plans, in aggregate, more than cover the capital shortfall identified by the EBA. Direct capital measures account for the majority of the plans, with the remainder comprising changes to bank risk weight models, asset disposals, and reductions in lending—mostly corresponding to actions taken under EU State Aid rules.

The December EBA recommendations as well as the bank deleveraging analysis in this GFSR suggest that capital generation is the key factor in strengthening bank balance sheets (as illustrated in Figure 2.26 through the fall in the leverage ratio). Both the EBA and the GFSR analysis also assume that most of the needed cutback in bank assets will come through asset sales rather than through lending.

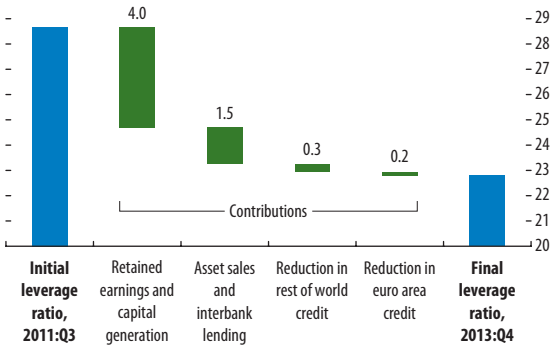
However, the GFSR analysis suggests that banks will reduce assets by $2.6 trillion (in the *current policies* scenario)—a much larger amount than implied by the bank capital plans submitted to the EBA. This distinction arises because the GFSR analysis is fundamentally different from the EBA capital exercise in a number of ways.

- First, the purpose of the EBA exercise is to increase bank capital positions; hence, it is based on a single capital target. The GFSR exercise, however, is driven by a range of structural and cyclical factors. The structural factors include changes to bank business plans (which imply a $2.0 trillion reduction in bank assets, according to the public announcements made by banks); maintaining a 9 percent CT1 capital position; and reducing reliance on less-stable wholesale funding. The cyclical factors include strains in bank funding markets and different degrees of sovereign stress. Indeed, the GFSR analysis finds that the capital target has a limited role in driving bank asset reductions (Figure 2.28).
- Second, the analysis in the GFSR has a *different time frame*, running up to the end of 2013, whereas the EBA exercise concludes in June 2012.
- Third, the results are for a *different set of banks*. Only institutions found by the EBA exercise to have capital shortfalls submitted plans. In contrast, the GFSR exercise applies to all banks in the sample.

Note: Prepared by William Kerry.

[1]Core Tier 1 capital is a subset of Tier 1 capital consisting predominantly of common shares and retained earnings.

Figure 2.26. Contributions to Reduction in Aggregate Bank Leverage Ratio, Current Policies Scenario
(Total assets to core Tier 1 capital)



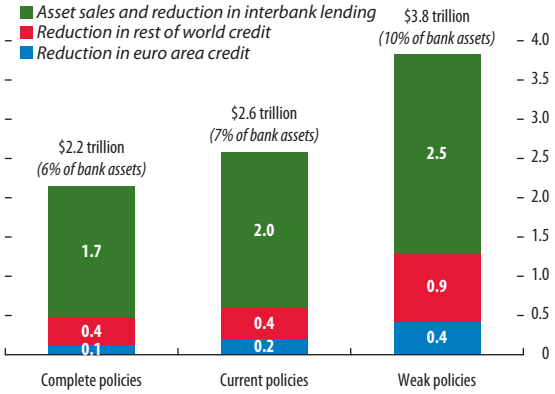
Source: IMF staff estimates.
Note: For a sample of 58 large EU banks. For details, see Annex 2.1.

the *weak policies* scenario—where cyclical pressures are stronger—banks reduce assets by $3.8 trillion (Figure 2.27). As cyclical pressures intensify, the impact on EU credit rises disproportionately. This is because with stronger cyclical headwinds, more banks need to work their way further down the deleveraging pecking order when reducing their balance sheets, and so EU and domestic credit is curtailed more.

The influence of cyclical and structural forces can also be assessed by calculating the incremental contribution of these factors in the three scenarios. Figure 2.28 shows that banks' business plans are a key determinant of the scale of deleveraging.[12] The

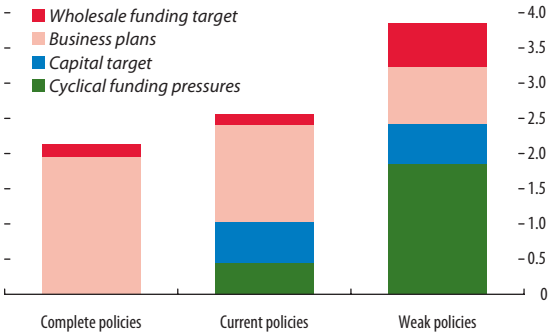
[12]As indicated in the figure, the influences are additive: The green bar shows the amount of asset reduction when banks face

Figure 2.27. Contributions to Aggregate Reduction in Bank Assets, Three Policy Scenarios
(In trillions of U.S. dollars)



Source: IMF staff estimates.
Note: For a sample of 58 large EU banks. For details, see Annex 2.1.

Figure 2.28. Factor Contributions to Aggregate Reduction in Bank Assets, Three Policy Scenarios
(In trillions of U.S. dollars)



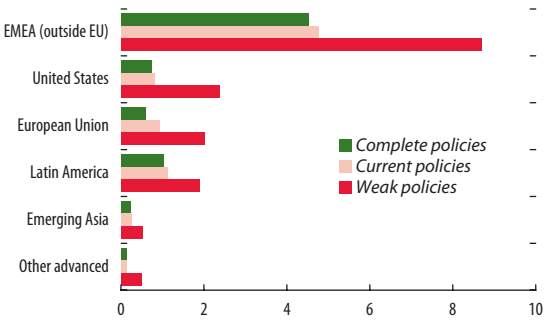
Source: IMF staff estimates.
Note: Marginal contribution of each factor for a sample of 58 large EU banks. For details, see Annex 2.1.

cyclical factors—such as funding pressures—play a much greater role in the *weak policies* scenario than in the other two scenarios. In the *current* and *weak policies* scenarios it is assumed that there are no further LTROs and that the level of other central bank lending remains constant. But if funding conditions deteriorate significantly, central banks are likely to lend more. Although this would alleviate pressures in the short term, large-scale increases in official liquidity support are not ultimately sustainable, as discussed in the September 2011 GFSR.

Across all three scenarios, sample banks cut back lending—in percent of total credit—most significantly in countries in emerging Europe (Figure 2.29). There are also cutbacks in lending in advanced economies—mainly in the European Union and the United States—and in Latin America. Lending to emerging Asia is less affected than to other emerging market regions.

The analysis of deleveraging involves a considerable amount of uncertainty since it includes assumptions about the behavior of banks and is affected by some data gaps. Moreover, the ultimate impact on credit across countries is subject to many other factors. The methodology, however, gives priority to

Figure 2.29. Reduction in Supply of Credit by Sample Banks, Three Policy Scenarios
(In percent of total bank credit)



Source: IMF staff estimates.
Note: Total bank credit includes domestic and direct cross-border credit supplied by banks in each region. EMEA = Europe, Middle East, and Africa. Sample = 58 large EU banks. For details, see Annex 2.1.

cyclical funding shortages only; the sum of the blue and green bars shows the amount of asset reduction when banks face both capital constraints and cyclical funding shortages, and so on.

other actions by banks for reducing balance sheets before cutting back lending to the real economy. For example: (1) the assumed deleveraging strategy favors sales of assets ahead of cutbacks in lending and thus cushions the effect on credit in all scenarios; moreover, because of the assumed home bias, advanced EU and domestic markets are relatively more protected; (2) foreign lending is protected by the assumption that lending by foreign subsidiaries of sample banks cannot be reduced below the level of local deposits; (3) it is assumed that banks will not take any losses on asset sales, as elaborated below (see Annex 2.1 for details). Figure 2.30 shows the relative importance of financial assets that can be sold to mitigate the impact of deleveraging on bank lending at the different banks in the sample.

What is the impact on credit?

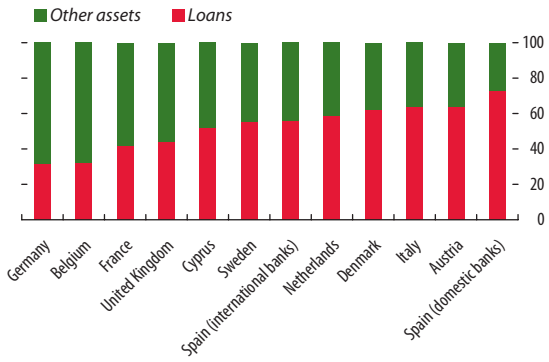
The results for the sample of banks are used to estimate the total impact on euro area credit supply in order to assess potential aggregate effects on the economy. In most cases, this is done by extrapolating the reduction in credit by banks in the sample to banks outside the sample on a country-by-country basis. However, in some cases, where there is clear empirical evidence of diverging credit trends between sample banks and out-of-sample banks, this has been taken into account. The approach suggests a shock to euro area credit supply of 1.7 percent over two years under the *current policies* scenario (Figure 2.31). The credit supply shocks are greater in high-spread euro area countries, with other euro area countries relatively less affected. That said, the decline in credit—after taking into account the second-round effects (from asset sales) on banks and the feedback effects from deterioration in the economy—could be more sizable and could increase if cyclical pressures rose.

The ultimate impact of a simulated pullback in credit by EU banks will depend on a number of country-specific circumstances. First, it will depend on the ability of local banks and other intermediaries to substitute for potentially lower lending by EU banks (for example, local banks may increase lending in response to a decline in competition from EU banks, as is discussed elsewhere in this section). Second, it will also depend on the relative importance of banks as suppliers of credit in the economy (for example, in countries where capital markets play an important role as a source of funding, such as the United States, the impact on the overall supply of credit will be more muted). Finally, the net effect of the credit supply (which is modeled here) on interest rates and on the real economy will depend on the demand for credit.

How does this compare to past financial crises?

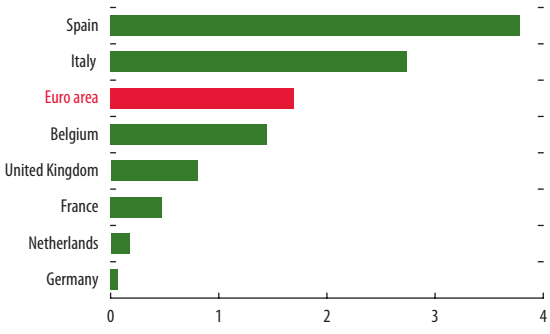
The simulated shocks to euro area credit supply are well within the range of past episodes of deleveraging

Figure 2.30. European Banks: Composition of Assets, 2010
(In percent of assets)



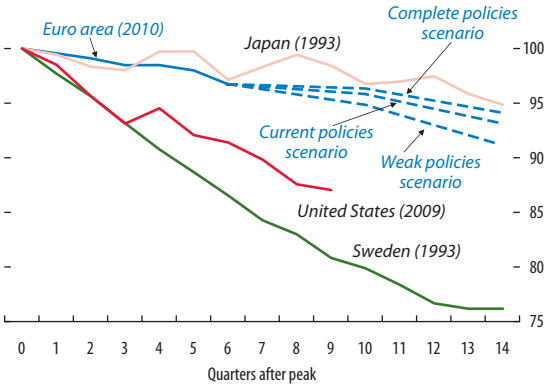
Sources: European Banking Authority; SNL Financial; and IMF staff estimates.
Note: Other assets are loans to other financial institutions, securities, noncore assets, and other financial assets. For a sample of 58 large EU banks.

Figure 2.31. Reduction in Suppy of Credit, by Banking System, Current Policies Scenario
(In percent of total bank credit)



Source: IMF staff estimates.
Note: Data are an extrapolation of results from a sample of banks to the entire banking system. Total bank credit includes domestic and direct cross-border credit supplied by banks in each country.

Figure 2.32. Euro Area Credit Supply Shock: Three Scenarios Relative to Historical Episodes
(Index: Ratio of peak credit to GDP = 100)



Source: IMF, International Financial Statistics and World Economic Outlook (WEO) databases; and IMF staff estimates.
Note: Year given in curve labels is the year of the peak quarter. The scenario lines show simulated paths for the euro area based on an extrapolation of the results from sample banks to the banking system; these lines are drawn using the WEO baseline GDP forecast.

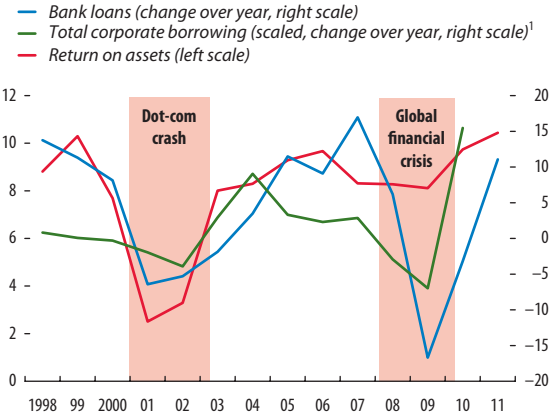
(Figure 2.32). Specifically, the implied decline in the credit-to-GDP ratio under all three scenarios sits between the relatively moderate experience in Japan in the 1990s and the more pronounced credit contraction in the United States in the earlier part of the financial crisis. However, the cutback in credit under the *weak policies* scenario approaches that seen in the United States.

What is the impact on growth?

The impact of these credit supply shocks on economic activity is assessed using the IMF Global Economy Model.[13] The credit shocks implied by the *current policies* scenario are incorporated in the World Economic Outlook (WEO) baseline. The credit shocks in the *complete policies* scenario imply that euro area real GDP would be 0.6 percent above the baseline after two years, consistent with assumptions under the WEO upside scenario. The *weak policies* scenario, in turn, suggests that euro area real GDP would be 1.4 percent lower than the baseline at the end of 2013. This is one of the key elements in one of the WEO downside scenarios.

[13]The Global Economy Model was presented in the July 2008 special issue of *IMF Staff Papers*, Vol. 55, No. 2.

Figure 2.33. United States: Nonfinancial Corporate Borrowing and Return on Assets
(In percent)



Sources: Federal Reserve; Haver Analytics; IMF, Corporate Vulnerability Utility database; and IMF staff estimates.
[1]Annual borrowing scaled down by a factor of 20.

The looming cutbacks in credit could test the resilience of Europe's corporate sector.

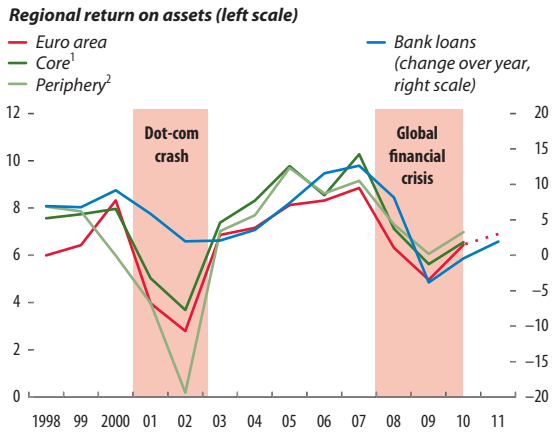
Although the effects of European bank deleveraging are likely to be felt far and wide, experience from earlier stages of the financial crisis suggests that credit to Europe's corporate sector is likely to prove a particular pressure point. As banks began to tighten lending standards in 2007–08, all firms suffered. Yet, U.S. firms generally showed greater resilience to the credit shock than did their European counterparts, as their return on assets fell by less and rebounded to precrisis levels by 2011 (Figure 2.33). In comparison, the return on assets for both core and peripheral euro area firms was hit harder in 2009 and has yet to return to precrisis levels (Figure 2.34).

Euro area firms are particularly vulnerable to reduction in bank credit because of their greater reliance on banks for funding and often limited ability to adjust labor costs, at least compared with their U.S. peers (Figure 2.35).[14] Because domestic banks

[14]In the World Economic Forum's competitiveness ranking of 142 countries in 2011, Spain (119), Portugal (122), Italy (123), and Greece (126) are included in the bottom 16 percent of countries for labor market efficiency. Those four countries are also ranked well below core euro area countries in goods market efficiency (WEF, 2011, pp. 20–21). See also the European Commission's *Quarterly Report on the Euro Area*, December 2010 and

Figure 2.34. Euro Area: Nonfinancial Corporate Borrowing and Return on Assets

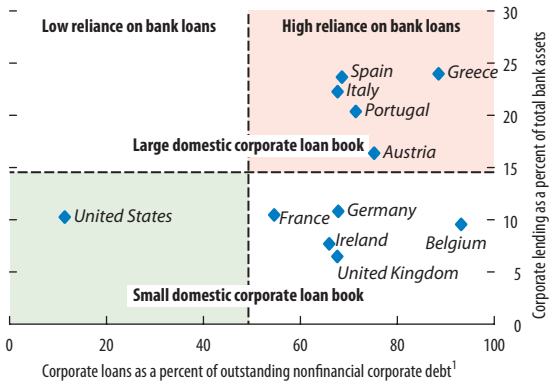
(In percent)



Sources: European Central Bank; Eurostat; Haver Analytics; IMF, Corporate Vulnerability Utility database; and IMF staff estimates.
[1]Core = Austria, Belgium, Finland, France, Germany, and Netherlands.
[2]Periphery = Greece, Ireland, Italy, Portugal, and Spain.

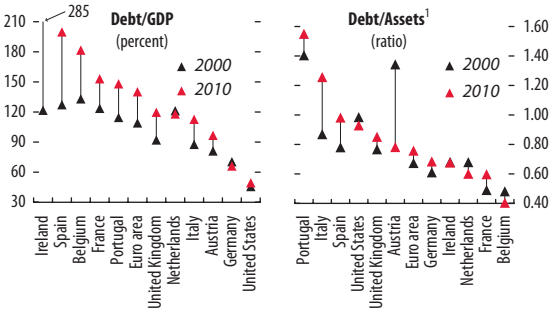
Figure 2.35. Reliance on Bank Financing by Nonfinancial Corporations

(In percent)



Sources: European Central Bank; Eurostat; Federal Reserve; Haver analytics; and IMF staff estimates.

Figure 2.36. Change in Nonfinancial Corporate Debt, 2000–10



Sources: European Central Bank; Eurostat; and Haver Analytics.
Note: Data are as of year-end. Total nonfinancial corporate debt is calculated as sum of loans, securities other than shares, and other accounts payable. GDP is annualized, and seasonally and working-day adjusted.
[1]Assets are Financial Assets, as published by the European Central Bank.

in peripheral economies are facing the greatest deleveraging pressures and have disproportionately large corporate loan portfolios, the potential impact on corporate financing may be especially pronounced there. Small and medium-sized enterprises (SMEs) are likely to be most affected. Even where credit is maintained, corporate borrowers could face elevated borrowing costs, as loan margins are on average 100 basis points higher across the rating spectrum since 2007.[15]

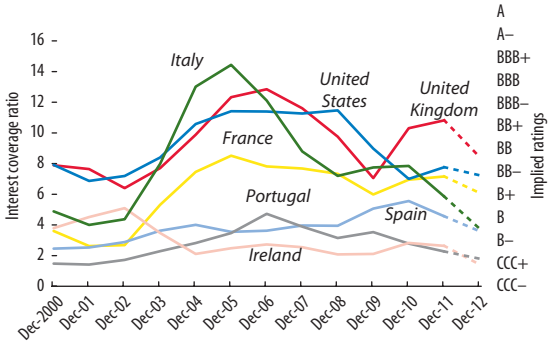
High debt burdens and weak profitability weigh on enterprises, suggesting further credit downgrades and lower bank asset quality.

In some cases, strains arising from reduced credit supply are compounded by weaknesses in the corporate sector. Some peripheral euro area nonfinancial firms, for instance, feature comparatively high levels of debt and leverage (Figure 2.36). Servicing high debt levels with deteriorating earnings will leave some companies increasingly fragile in the face of a protracted downturn in the business cycle.

Declining interest coverage ratios indicate the strained borrowing capacity and higher solvency

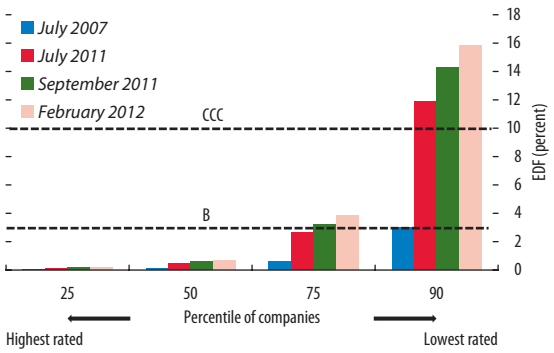
July 2011, http://ec.europa.eu/economy_finance/publications/qr_euro_area/index_en.htm.
[15]Based on Dealogic data for corporate syndicated loan issuance in Europe, Japan, and the United States.

Figure 2.37. Nonfinancial Corporations: Interest Coverage Ratio and Implied Ratings
(Ratio, left scale, in percent)



Sources: Bloomberg L.P.; and IMF staff estimates.
Note: Dashed lines are projections. Interest coverage ratio is earnings before interest and taxes divided by interest expense. The implied ratings are from a sample of more than 800 U.S. firms that constitute the benchmark high-grade and high-yield corporate bond indices.

Figure 2.38. Corporate Credit Quality in Western Europe, 2007–12
(In percent)



Source: Moody's KMV.
Note: EDF = expected default frequency. EDF is a market-based credit measure that represents the probability that a firm will default within one year. The dotted lines show implied credit ratings associated with particular EDFs. Western Europe comprises the euro area, Denmark, Norway, Sweden, Switzerland, and the United Kingdom.

risks for these firms.[16] Assuming a credit crunch of the magnitude that would ensue under a severe downturn, large corporations could see their interest coverage ratios fall (Figure 2.37).[17] In turn, the deterioration in corporate credit quality would further weaken bank asset quality (Figure 2.38).

Potential spillovers through asset and derivatives markets could be significant.

While potential negative spillovers from the asset sales are not quantified here, their importance has to be acknowledged. A number of banks seeking to sell assets at scale simultaneously could lead to a fall in asset prices, which may—in turn—induce mark-to-market losses for other investors holding similar assets. There is also a risk of an adverse dynamic developing between asset market and funding market liquidity. Poor liquidity in asset markets would mean that greater discounts need to be taken on sales of assets. The subsequent fall in bank capital would mean that banks need to reduce balance sheets further, which could entail further asset sales or a cutback in interbank lending. The latter would generate funding shortages for other banks, that would then need to sell assets or reduce interbank lending themselves, reinforcing the adverse dynamic.

Derivatives markets could also transmit shocks affecting European banks and sovereigns to U.S. banks through both direct and indirect channels. Indirect channels, which have affected U.S. banks the most during the current crisis, arise from the interaction between counterparty risk, reliance on market funding, and the use of hedging strategies. Direct channels arise from potential losses to U.S. banks' holdings of derivative claims on European counterparties. Data disclosures are not sufficient to assess the exposures adequately, a factor that has contributed to the volatility of CDS spreads and equity prices of U.S. banks (see Box 2.4 for details). Even though net exposures might be small, large gross positions expose banks to large swings in the market value of their derivatives holdings, making them vulnerable to margin calls and raising the

[16]The interest coverage ratio is defined as the ratio of EBIT (earnings before interest and taxes) to interest expenses.

[17]We use a sample of publicly traded nonfinancial corporations that are constituents of major stock indices in the respective countries. For example, for the United States we use all the nonfinancial members of the S&P 500 stock index for estimating the market-capitalization-weighted interest coverage ratio for the corporate sector.

Assuming that (1) firms face a credit crunch in 2012 similar to that seen in 2008–09, (2) EBIT falls by a magnitude similar to that in 2008–09 for the respective countries, and (3) interest expense remains stable, we estimate the change in interest coverage ratios for a sample of publicly traded firms in the given countries and map these levels to their respective implied ratings.

Box 2.4. How Derivatives Markets Link U.S. Banks and European Counterparties

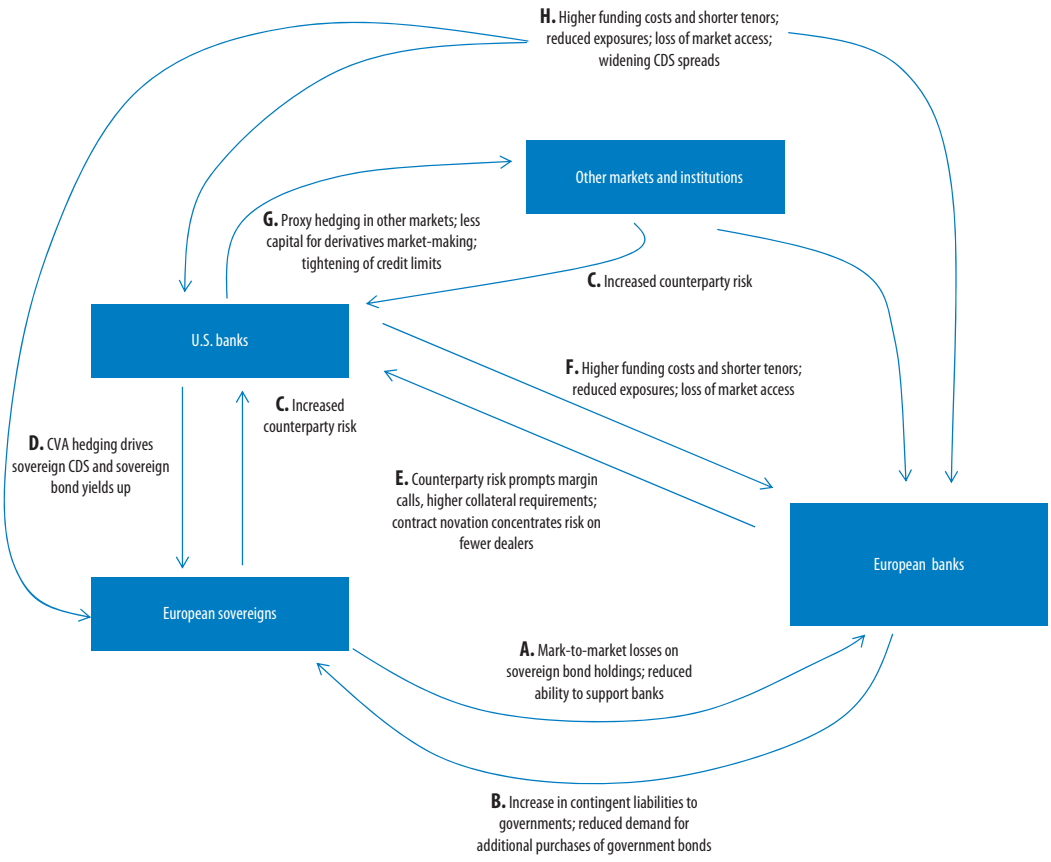
Shocks affecting European banks and sovereigns are transmitted and amplified to U.S. banks by derivatives markets through indirect and direct channels. The indirect channels arise from feedback loops generated by the interactions among counterparty risk, market funding, and the use of hedging strategies. These indirect channels have affected U.S. banks the most during the current crisis, with stresses feeding back and forth between them and European counterparties. Direct channels arise from potential losses to U.S. banks' holdings of derivatives claims on European counterparties. These holdings appear small on a net basis, but data disclosures are not sufficient to assess the exposures adequately, which has contributed to the volatility of CDS spreads and equity prices of U.S. banks.

Note: Prepared by Jorge A. Chan-Lau.

Derivatives markets increase the interconnections among banks, sovereigns, and other markets and institutions, contributing to the transmission and amplification of shocks. As shown in Figure 2.4.1, a negative European sovereign risk shock could trigger a negative feedback loop affecting European banks, U.S. banks, and other markets and institutions.

A negative feedback loop could start with a widening of European sovereign yields owing to an increase in sovereign risk. European banks holding European government debt suffer mark-to-market losses, and

Figure 2.4.1. Market Linkages



Note: CDS = credit default swaps. CVA = credit valuation adjustment.

Box 2.4. *(continued)*

the deterioration of their balance sheet increases their default risk (Figure 2.4.1, link A), leading to higher funding costs (link F). If the European bank has entered into derivatives contracts with a U.S. bank, it would be forced to post higher collateral (link E). Because derivatives markets are opaque, counterparties to the U.S. bank may have difficulties assessing its real exposure to the European bank. Thus, the U.S. bank could face higher funding costs and experience a widening of its CDS spreads on the market perception that its default risk has increased due to its exposure to the European bank (link H). The U.S. bank may reduce its exposure by assigning the derivatives contract to a different derivatives dealer in exchange for a fee—that is, by novating the contract (link E). Novation could concentrate risk among fewer dealers and thereby increase systemic risk in the derivatives market. The U.S. bank can also choose to hedge the risk of the European bank with market instruments, such as CDS protection or long put options purchased from other banks and institutions (link G).[1]

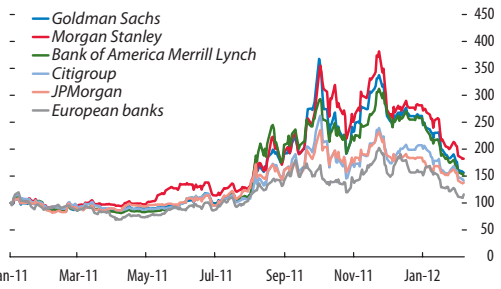
The potential of negative feedback loops to affect U.S. banks is real, as illustrated by events in the second half of 2011. As concerns about the solvency and liquidity of European banks mounted, the spotlight turned to U.S. broker-dealers. Market participants erred on the side of caution by reducing or hedging their exposures to U.S. broker-dealers. As a result, the price of default protection for U.S. broker-dealers widened faster than that of European banks in September 2011, demonstrating how interconnectedness could rapidly evolve into systemic risk (Figure 2.4.2).

Furthermore, spillovers flow in both directions, as U.S. bank actions could negatively affect European counterparties. Credit risk in derivatives contracts is managed by requiring the counterparty to post collateral, but sovereigns are not required to do so.[2]

[1]For details, see for example Blundell-Wignall (2012) and Chan-Lau (2008).

[2]When a bank enters a derivatives contract with a counterparty, it is exposed to credit risk arising from the failure of the latter to perform on the contract. The credit valuation adjustment (CVA) is the market value of the credit risk in the derivatives contract (Canabarro and Duffie, 2003; Pykhtin and Zhu, 2007).

Figure 2.4.2. Relative Price of Default Protection for Selected U.S. Banks and European Banking Sector
(January 3, 2011 = 100)



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

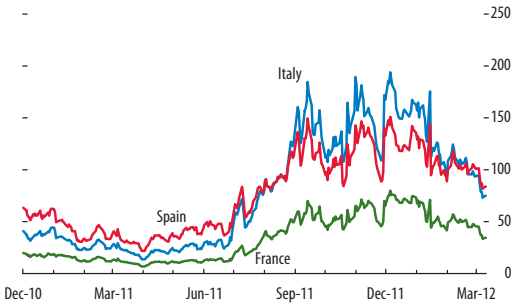
When dealing with sovereigns, banks hedge the credit risk by purchasing sovereign CDS protection, contributing to widening CDS spreads that lead to further rounds of hedging—a cycle referred to as the CVA feedback loop or CDS doom loop. For example, a fixed-rate receiver 10-year euro swap with Italy would have cost a dealer bank a CVA charge of 20 basis points in August 2010 but more than eight times as much, about 170 basis points, in November 2011, at the height of the European sovereign debt crisis (Figure 2.4.3). Similarly, the CVA increased sharply, to 130 basis points if the counterparty was Spain, and 60 basis points for France. The rapid increase of the CVA charges required a substantial increase in protection buying, which contributed to higher European sovereign CDS spreads. In addition, CVA desks also hedge by trading swaptions, leading to increased volatility in the swaption market.[3]

The stress episodes experienced in 2011:H2 suggest that data on direct derivatives exposures may underestimate the impact of spillovers from derivatives markets on U.S. banks. At end-2011:Q3, direct European derivatives exposures, measured on a fair-value basis and excluding credit derivatives, were small,

[3]Reportedly, the European Capital Requirement Regulation (CRR) and Directive (CRD) will not require banks to hold capital against CVA generated by trades with nonfinancial counterparties, which could help break the CDS doom loop (Cameron, 2012).

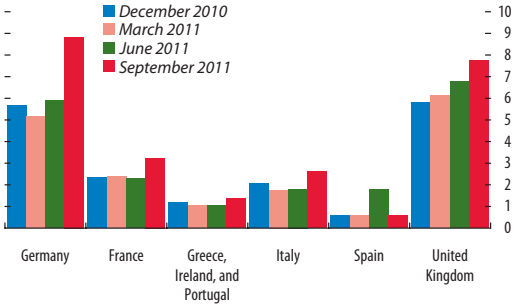
Box 2.4. *(continued)*

Figure 2.4.3. CVA on 10-Year Euro Swaps with a Sovereign Counterparty: France, Italy, and Spain
(In basis points)



Sources: Bloomberg L.P.; and IMF staff estimates.
Note: CVA = credit valuation adjustments.

Figure 2.4.4. Derivatives Exposures of U.S. Banks to Selected Euro Area Countries, All Counterparties
(In percent of Tier 1 capital)



Source: U.S. Federal Financial Institutions Examination Council.

amounting to 34 percent of the Tier 1 capital of U.S. banks, and concentrated mainly on Germany, France, and the United Kingdom (Figure 2.4.4).[4] Exposure to any single individual country did not exceed 10 percent of Tier 1 capital, and total exposure to peripheral countries was about 5 percent. Because official data on net credit derivatives exposures is not available, the best guidance is offered by data released in the banks' quarterly and annual reports, which suggest low exposures. The two stress episodes described above, however, illustrate that direct exposures are not all that matters and that substantial data gaps remain.

[4]Fair-value exposures do not account for mitigating factors such as netting and the use of collateral; and they neglect potential future exposure, which could be important. Data consistency may be affected by the different reporting criteria used across banks. Credit derivatives and guarantees reported in the lending survey of the U.S. Federal Financial Institutions Examination Council are on a notional basis, which prevents use of the data for risk assessment.

potential for destabilizing fire sales of assets, a risk further compounded by the current scarcity of collateral. Since derivatives market making is concentrated among few broker-dealers, there is the potential for a failure cascade once a dealer fails.

Among the 19 U.S. bank holding companies (BHCs) that participated in the Federal Reserve's early 2012 stress test, six were BHCs with large trading, private equity, and derivatives activities; for those six, the stress scenario was augmented with a global financial market shock that included a severe recession and financial market turmoil in Europe (BGFRS, 2012b). While it is difficult to single out the incremental impact of the assumed strains in Europe, the overall results of the stress tests suggest general resilience of the U.S. banks' capital structure to severe negative shocks.

Emerging Markets—Still Resilient?

Emerging markets have deftly navigated the financial shocks and economic spillovers from advanced economies. The impact of European bank deleveraging has been manageable so far, but there is a risk of a further pullback of bank credit and cross-border lending. Emerging Europe appears most vulnerable in this respect, although banks elsewhere are likely to step in and fill the gap, at least under the current policies scenario. Meanwhile, portfolio flows to emerging markets remain prone to sudden swings in global sentiment; they have rebounded sharply this year but could reverse again in a weak policies scenario. While emerging markets generally have substantial buffers and adequate policy room, homegrown vulnerabilities

in some economies could magnify the impact of external shocks.

Emerging markets have generally fared better than the advanced economies over the course of the global financial crisis, maintaining positive growth rates, good macroeconomic fundamentals, and financial stability. Most have shown resilience in the face of deleveraging pressures. Their relative strength has underpinned a secular trend of capital inflows, albeit one interrupted by occasional sharp reversals whenever global risk aversion spikes. This section assesses the vulnerability of emerging markets to fresh spillovers from Europe, takes account of their homegrown vulnerabilities, and measures these risks against their policy buffers.

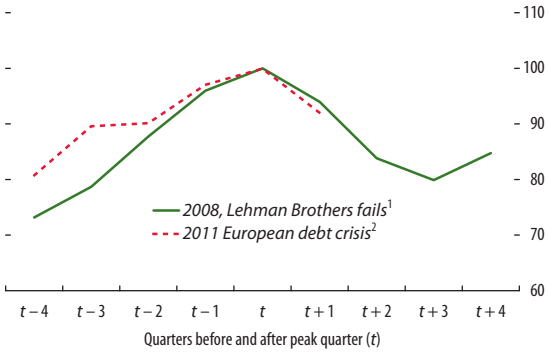
Overall, emerging markets are likely to continue doing well, but their resilience could be tested under a *weak policies* scenario that would accelerate European bank deleveraging and might prompt fresh portfolio outflows. Countries in emerging Europe are particularly exposed in this regard. Meanwhile, most emerging markets have policy space to counter adverse shocks, although the scope for easing credit policy is more limited where economies are already in the advanced stages of the credit cycle.

How big are the headwinds from euro area bank deleveraging?

The size of potential spillovers from the wave of deleveraging by euro area banks is illustrated under our policy scenarios. The impact is likely to differ significantly across regions, with larger effects expected in emerging Europe than in Asia or Latin America (see previous section—Figure 2.29). If the current episode were to follow the pattern of the post-Lehman crisis—when euro area banks reduced their credit to emerging markets by a cumulative 20 percent through end-2009—the deleveraging drive could run for several quarters, bottoming out in mid-2012 (Figure 2.39).

There are, however, two key differences with the Lehman episode. First, deleveraging pressures today are largely confined to euro area banks. Other banks are therefore in a better position to step in and cushion the impact on overall credit provision, at least

Figure 2.39. Euro Area Bank Deleveraging in Emerging Markets, 2008 and 2011
(Cross-border claims of BIS reporting banks, peak = 100)

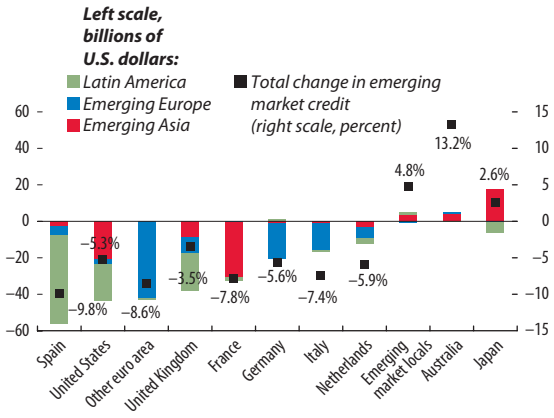


Sources: Bank for International Settlements (BIS), Consolidated Banking Statistics; and IMF staff estimates.
[1]Peak = 2008:Q2.
[2]Peak = 2011:Q2.

under the *current policies* scenario. Looking at developments during 2011:H2, it is true that the cutbacks in emerging market exposures were broad-based, as the negative impact of the euro area crisis on global bank funding costs, growth, and risk appetite affected banks in general. Yet, non-euro-area banks reduced credit to emerging markets more gradually (contracting by 2 percent in the third quarter) than to their euro area peers (a contraction of 8 percent), and after a rapid earlier expansion through mid-2011 (Figure 2.40). Moreover, the recent stabilization of markets has reportedly allowed local and regional banks in Asia and Latin America to step in where voids have been left by European banks in some lending segments (Figure 2.41). By contrast, a smooth handover would appear more challenging in emerging Europe, given the large market share of euro area banks. The potential downside risks in a *weak policies* scenario are explored below.

A second important difference from 2008–09 is that some of the factors driving the current deleveraging trend are structural in nature and thus likely to persist for a longer period. As detailed in the section on bank deleveraging, euro area banks are under regulatory and market pressures to move to a more robust funding model with less reliance on wholesale markets. This shift could permanently reduce their presence in countries where they lack a deposit base. This is especially true for euro area banks' business

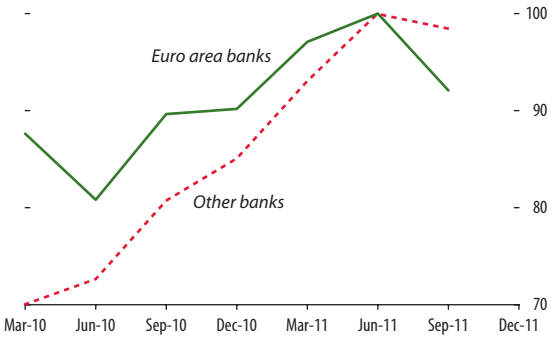
Figure 2.40. Deleveraging in Emerging Markets by Selected Advanced Economy and EM Local Banks, 2011:Q3
(Cross-border claims of BIS reporting banks)



Sources: Bank for International Settlements (BIS), Consolidated Banking Statistics; and IMF staff estimates.

Note: Emerging Asia includes East Asia (excluding Japan) and South Asia. Emerging market (EM) local banks are BIS reporting banks in Brazil, Chile, Mexico, Panama, Taiwan Province of China, and Turkey.

Figure 2.41. Emerging Market Credit Cycle for Euro Area Banks and Other Banks, 2010–11
(Index, peak = 100)



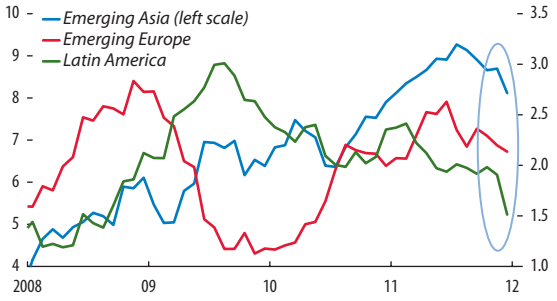
Sources: Bank for International Settlements, Consolidated Banking Statistics; and IMF staff estimates.

in Asia, whereas operations in emerging Europe and Latin America tend to involve large deposit franchises.

The recent experience also shows that pressures may be concentrated in specialty finance lines (Figure 2.42). Project finance and longer-term structured credit in fields such as aircraft and shipping appear particularly vulnerable owing to special characteristics, including long maturities, heavy use of syndication, and dependence on term dollar funding. During the recent episode of market stress, new lending in these segments fell sharply across emerging markets as longer-term dollar funding markets came under significant pressure. Euro area banks, now faced with deleveraging pressures, have traditionally played leading roles in these markets, although their share has been falling steadily since the 2008–09 crisis. Under the *current policies scenario*, such adjustments are likely to proceed in a smooth and orderly fashion. However, the recent episode also suggests that market strains could reemerge quickly under a *weak policies* scenario.

In comparison with longer-term structured and project finance, short-term trade finance proved remarkably resilient during the latest episode of market stress. Euro area banks are also notable lenders in this segment, but where they curtailed exposures, banks from other regions were able to step in with relative ease, reflecting the standardized form, short maturity, and comparatively low credit risk of trade finance. Euro area banks reportedly maintained trade

Figure 2.42. Long-Term Specialty Finance in Emerging Markets
(In billions of U.S. dollars, 12-month moving average)



Sources: Dealogic; and IMF staff estimates.

Note: Covers medium-term and structured finance and project finance. Emerging Asia includes East Asia (excluding Japan) and South Asia. Oval covers recent period of market stress.

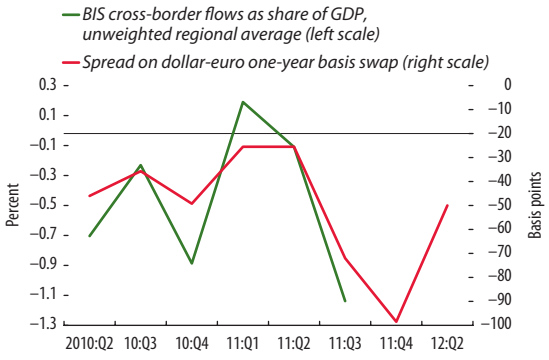
credit for established clients but otherwise pursued a restrictive credit policy. Overall, trade finance appears to have repriced somewhat, reflecting the rise in U.S. dollar funding costs and some tightening in the aggregate supply of credit.

Among emerging markets, emerging Europe is the most vulnerable to euro area bank deleveraging.

Emerging Europe has by far the largest economic exposure to a slowdown in euro area economic activity, the strongest banking links to the euro area, and the largest gross external financing needs. At the same time, potential policy buffers, such as international reserves or fiscal space, are smaller than in Asia or Latin America, and in many instances more limited than they were in 2008.

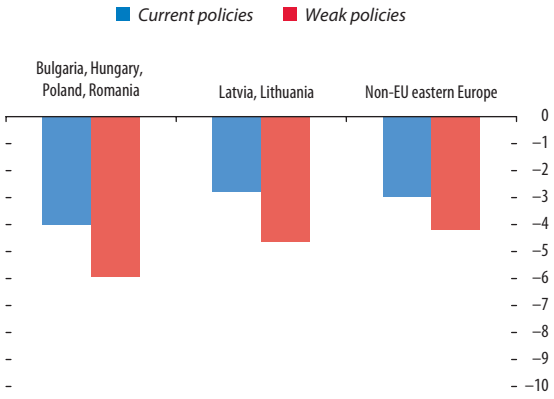
As sovereign and bank funding strains in the euro area intensified during the second half of 2011, parent banks' cross-border financing of operations in emerging Europe declined (Figure 2.43). Looking ahead, parent banks will likely grow their loan books in the region very modestly owing to funding and capital pressures, implying that overall credit growth in more vulnerable countries may be flat or negative. Credit standards have tightened considerably, while counterparty concerns have spilled over from the euro area; the resulting unsecured interbank rates are unusually high relative to policy rates and feed into higher lending rates for clients.

Figure 2.43. Emerging Europe: Cross-Border Bank Flows and Foreign Exchange Funding Costs



Sources: Bank for International Settlements (BIS); Bloomberg L.P.; and IMF staff estimates.
Note: Sample includes Bulgaria, Croatia, Hungary, Latvia, Lithuania, Poland, Romania, Russia, Turkey, and Ukraine.

Figure 2.44. Reduction in Supply of Credit by Sample Banks to Emerging Europe: Current and Weak Policies Scenarios
(In percent of total domestic private credit)



Source: IMF staff estimates.
Note: For a sample of 58 large EU banks.

Under the *current policies* scenario, deleveraging by EU banks in the sample would amount to about 4 percent of total private credit in emerging EU member countries in the period 2012–13, with a smaller impact in the Baltic countries, where Nordic parent banks are under less pressure to deleverage (Figure 2.44). EU bank deleveraging would have a more modest impact of about 3 percent on domestic credit in non-EU countries in the region, such as Russia and Turkey.[18] Credit segments most at risk of deleveraging include loans to municipalities and SMEs, as these loans generate less cross-sales and fee-based revenue. Some parent banks are also looking to sell certain operations in the region, although this process has so far been hindered by a scarcity of willing buyers.

A re-intensification of strains in the euro area could have a severe impact on emerging European banking systems, foreign exchange funding, and sovereign debt markets.

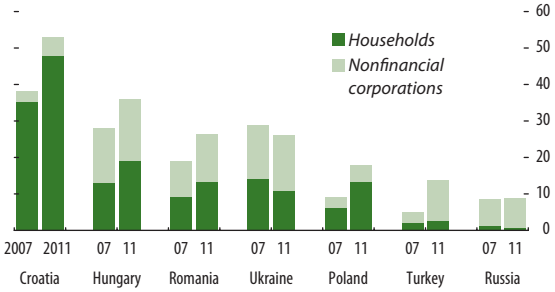
Under the *weak* policies scenario, deleveraging by EU banks would have a more severe impact on lending

[18]However, the estimated impact on non-EU countries in emerging Europe is biased downward by the fact that the sample does not include Greek banks, which have a significant presence in non-EU countries in the Balkans.

by banks in emerging Europe. With parent banks assumed to prioritize domestic lending while shoring up the capital base, repatriation flows could become significant. In this scenario, deleveraging by EU banks in the sample would amount to approximately 6 percent of total private credit in emerging EU member countries over the period 2012–13, whereas the impact in non-EU countries in the region would amount to about 4 percent of total private credit. In southeastern Europe, where Greek banks have a large market share in many countries, spillover and contagion risks need to be closely monitored, with contingency plans in place to contain any potential shocks to confidence in local banking systems.

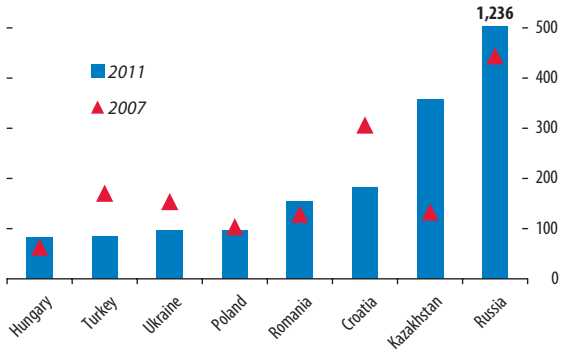
In many countries in emerging Europe, foreign currency loans have risen as a share of GDP since the start of the global financial crisis (Figure 2.45). When such shares are large, private sector balance sheets are vulnerable to currency depreciation, limiting the scope for monetary policy to mitigate potential negative shocks emanating from the euro area. In central Europe, where banks are dependent on foreign exchange swap markets to fund their hard-currency loan portfolios, a sharp global risk retrenchment could cause the private foreign exchange swap market to dry up again, potentially creating dislocations in currency and local interest rate markets, pressuring central bank reserves, and triggering a wave of accelerated deleveraging. In Turkey, where a large current account deficit has increasingly been financed by short-term cross-border bank flows (Table 2.4), and where the stock of international

Figure 2.45. Loans Denominated in Foreign Currency as a Share of GDP, Selected Countries in Emerging Europe, 2007 and 2011
(In percent)



Source: IMF staff estimates.

Figure 2.46. Emerging Europe: Reserve Coverage of Short-Term External Debt, Selected Countries, 2007 and 2011
(In percent)



Sources: IMF, World Economic Outlook database.

reserves is relatively limited (Figure 2.46), a change in the willingness of global banks to roll over loans could trigger currency depreciation and a potentially rapid adjustment of domestic imbalances.

Across the region, the share of local currency government debt held by foreign investors has grown rapidly over the past few years. The domestic investor base—including banks as well as pension and insurance funds—has strengthened in some countries. However, in a downside scenario, domestic investors may not be able to smoothly absorb the supply resulting from a widespread foreign retrenchment. In many countries, recurring current account deficits entail the need for continued capital inflows. Given elevated government financing needs in many countries in emerging Europe, funding gaps could emerge if investor sentiment deteriorated markedly (Figure 2.47). This is a particular concern in Hungary, where parent banks are retrenching, the share of foreign holdings in the local government debt market is at historic highs, and foreign investor confidence in the economic policy framework has weakened.

In turn, developments across emerging Europe could add to strains in western Europe.

Potential dislocations in sovereign debt markets in emerging Europe could present a systemic risk to Austrian banks and, more indirectly via counterparty risk, to the rest of western Europe's

Table 2.4. Capital Flow, Banking, and Policy Indicators in Selected Emerging and Other Markets

	Vulnerability of External Sector (percent of WEO projection of 2012 reserves)					Banking System Cross-Border Financing Vulnerability		Vulnerability of Real Economy to Euro Area	Fiscal Policy Room[1]		Monetary Policy Room[2]		Position in the Credit Cycle[3]
						Liabilities to BIS reporting banks							
	Current account deficit in 2012[4]	External refinancing needs in 2012[5]	Short-term liabilities to BIS reporting banks	Debt portfolio liabilities[6]	Equity portfolio liabilities[6]	Percent of total credit[7]	Percent of 2012 GDP	Exports to euro area (percent of 2010 GDP)	Gross public debt (percent of GDP)	Adjustment of primary balance (percent of GDP) in 2011–20 to achieve debt target in 2030[8,9]	2012 inflation target (percent)[10]	WEO projection of 2012 CPI inflation (percent)	Growth of private credit since Dec. 2008 (percent of 2012 GDP)
Europe													
Croatia	–2.7	144	119	57	6	78	96	10.2	52	. . .	. . .	2.5	6.9
Hungary	–6.1	154	60	108	36	52	67	41.9	76	5.3	3.0/4.0	5.0	–0.8
Kazakhstan	–24.1	37	13	43	7	16	8	10.2	15	–6.1	6.0–8.0[11]	6.4	6.6
Poland	27.5	135	40	110	29	28	28	19.0	56	4.4	2.5/3.5	3.2	12.5
Romania	16.4	100	64	12	4	61	44	16.5	35	1.8	3.0/4.0	3.6	4.4
Russia	–17.3	31	13	9	47	16	8	9.0	11	–2.4	5.0–6.0[12]	6.2	13.2
Turkey	82.0	164	96	70	75	23	18	5.0	37	–1.8	5.0/7.0	8.6	23.4
Ukraine	37.8	181	28	61	10	14	13	5.4	38	–0.1	. . .	9.6	2.4
Africa and Middle East													
Egypt	45.6	33	79	75	23	. . .	8	3.2	79	. . .	. . .	10.8	1.6
Israel	2.4	. . .	18	47	75	5	9	5.5	73	0.8	1.0–3.0[11]	2.3	10.8
Lebanon	17.4	175	11	. . .	. . .	6	14	1.8	135	. . .	. . .	4.5	30.5
Nigeria	–42.3	. . .	12	23	20	. . .	3	8.2	19	–3.7	. . .	11.0	11.7
South Africa	54.0	88	35	91	303	9	9	4.2	40	2.5	3.0–6.0[13]	5.5	7.0
Asia													
China	–6.7	14	10	0	6	5	6	3.9	23	–0.2	. . .	3.5	52.1
India	17.8	33	44	11	46	11	12	2.0	66	7.9	. . .	8.5	16.2
Indonesia	2.9	37	41	48	73	18	9	2.0	24	0.6	4.5/5.5	7.5	9.4
Korea	–8.1	. . .	43	58	82	16	19	3.8	30	. . .	3.0/4.0	3.2	11.0
Malaysia	–24.4	24	28	48	51	14	22	7.4	55	5.3	. . .	2.7	27.7
Philippines	–3.8	20	18	35	12	18	12	3.3	40	–0.5	4.0/5.0	4.2	6.6
Taiwan Province of China	–8.6	. . .	19	. . .	. . .	. . .	22	. . .	43	. . .	. . .	. . .	. . .
Thailand	–4.7	22	9	8	36	7	10	4.5	43	1.8	0.5–3.0[12]	5.5	25.3
Vietnam	12.7	34	37	. . .	. . .	. . .	15	8.4	46	. . .	. . .	2.7	. . .

Table 2.4. Capital Flow, Banking, and Policy Indicators in Selected Emerging and Other Markets (*continued*)

	Vulnerability of External Sector (percent of WEO projection of 2012 reserves)					Banking System Cross-Border Financing Vulnerability		Vulnerability of Real Economy to Euro Area	Fiscal Policy Room[1]		Monetary Policy Room[2]		Position in the Credit Cycle[3]
						Liabilities to BIS reporting banks							
	Current account deficit in 2012[4]	External refinancing needs in 2012[5]	Short-term liabilities to BIS reporting banks	Debt portfolio liabilities[6]	Equity portfolio liabilities[6]	Percent of total credit[7]	Percent of 2012 GDP	Exports to euro area (percent of 2010 GDP)	Gross public debt (percent of GDP)	Adjustment of primary balance (percent of GDP) in 2011–20 to achieve debt target in 2030[8,9]	2012 inflation target (percent)[10]	WEO projection of 2012 CPI inflation (percent)	Growth of private credit since Dec. 2008 (percent of 2012 GDP)
Latin America													
Brazil	17.4	29	27	61	85	7	10	1.7	64	–1.6	4.5/6.5	5.0	29.7
Chile	11.6	100	63	59	41	26	20	5.3	11	0.5	3.0/4.0	3.2	13.6
Colombia	33.5	56	35	82	12	8	5	1.4	34	–0.8	3.0/4.0	3.1	11.4
Mexico	5.2	39	30	87	85	16	10	1.2	43	1.3	3.0/4.0	3.6	4.5
Peru	7.6	19	32	19	40	. . .	18	3.4	22	–2.4	2.0/3.0	2.6	7.1
Venezuela	–76.7	153	13	89	1	5	4	0.7	52	. . .	. . .	33.4	7.0

Sources: Bank for International Settlements (BIS); Consensus Economics; Haver Analytics; IMF, Direction of Trade, International Financial Statistics, Monetary and Financial Statistics, and World Economic Outlook (WEO) databases; BIS-IMF-OECD-World Bank Joint External Debt Hub (JEDH); and IMF staff estimates.

Note: Values for 2012 GDP are WEO projections. JEDH and WEO debt data are incompatible when one set is at market value and the other is nominal.

[1]Values in both columns are red if debt-to-GDP ratio is above 40 percent and adjustment of primary balance is positive.

[2]Red if WEO forecast for 2012 inflation is either greater than 9 percent or above upper bound of inflation target for 2012.

[3]Values in red cells are in the top 25 percent of values in column; green, bottom 25 percent; yellow, 25th to 75th percentiles.

[4]WEO projection of the 2012 current account deficit.

[5]An IMF staff estimate of short-term debt at initial maturity at end-2011 plus amortization of medium- and long-term government debt during 2012.

[6]Calculated from country's international investment position (IIP).

[7]Total credit is credit to the private sector plus total public debt.

[8]The higher the indicated primary balance adjustment, the greater the degree of fiscal tightening needed to reduce the debt-to-GDP ratio to 40 percent in 2030, and thus the less available fiscal space. If the debt ratio is already less than 40 percent, the indicated adjustment is that required to stabilize debt at the end-2012 level by 2030. For methodology, see April 2012 *Fiscal Monitor,* Statistical Table 10.

[9]The required adjustment is computed in terms of the cyclically adjusted primary balance, defined as the cyclically adjusted balance (CAB) plus gross interest expenditure. For Chile and Peru, structural balances are used instead of CABs.

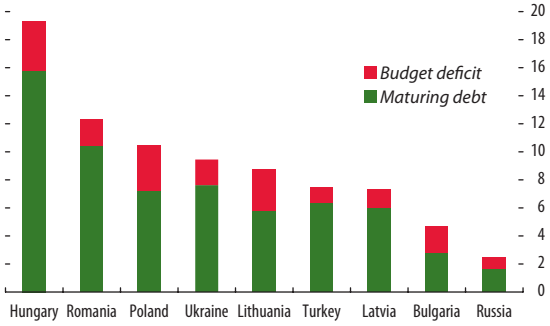
[10]Based on headline CPI data except as noted. Range (x–y) indicates no explicit target except as noted. For inflation targeters (x/y), first number is the midpoint of the target range, and the second is the upper bound.

[11]Target range with no explicit midpoint or upper bound.

[12]Has a target range with no explicit midpoint or upper bound. For 2012, also has a core inflation target of 4.5–5.5 percent.

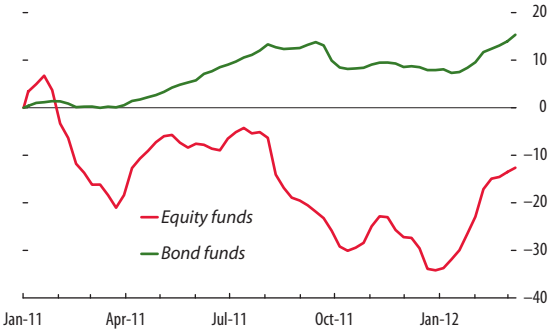
[13]Core inflation; target range but no midpoint.

Figure 2.47. Emerging Europe: Sovereign Gross Financing Needs, Selected Countries, 2012
(In percent of GDP)



Source: IMF staff estimates.

Figure 2.48. Net Flows into Emerging Market Funds, 2011–12
(In billions of U.S. dollars, cumulative from January 1, 2011)



Source: EPFR Global.

banking system.[19] For example, Austria and Belgium have systemically important financial institutions with significant exposure to Hungarian sovereign debt.

The volatility of capital flows to emerging markets has increased, while the direction is highly uncertain.

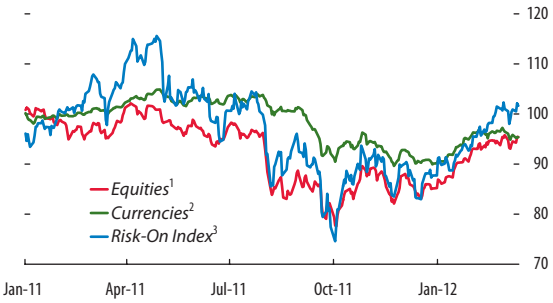
Portfolio and other capital flows to emerging markets have rebounded strongly in 2012, reversing much of the sharp decline during the second half of 2011, when strains in Europe escalated (Figure 2.48). At the time, emerging market authorities responded to the turbulence by selling some foreign currency reserves in a bid to smooth exchange rate moves. Local bond markets generally experienced less selling pressures, although in some cases, notably Indonesia, the authorities intervened heavily in local bond markets to cushion the withdrawal of foreign investors. Providing further stimulus, several emerging market central banks—such as those in Brazil, Chile, Indonesia, the Philippines, Romania, and Thailand—reduced their policy rates as growth forecasts were marked down.

The recent stabilization of euro area financial markets has prompted a rebound in capital flows to emerging markets. With reduced concern about tail risks in Europe, investors have refocused on some of the structural advantages of emerging markets, including superior growth prospects and stronger public and private balance sheets. The renewed optimism has helped prompt some equity markets—notably in Brazil, India, and Turkey—to rally since end-2011, while dollar funding pressures have eased and bond issuance has rebounded (Figure 2.49). As discussed in previous GFSRs, the effect of expansionary monetary and liquidity policies in advanced economies, coupled with the relative attractiveness of emerging markets, could lead to a further resurgence in capital flows that could strain the capacity of local markets and build up new vulnerabilities over time. In response to heavy inflows, the first line of defense is an appropriate use of macroeconomic policies. Macroprudential tools, and in some cases the careful use of capital flow measures, can play a supporting role. However, emerging market policymakers face a two-way risk and must also be prepared for the possibility of sudden outflows, as discussed below.

Under the *complete policies* scenario the volatility of capital flows would be reduced as the accompanying reduction in downside risks emanating from the euro zone would lead to more predictable patterns in flows. Furthermore, as monetary and liquidity policies normalize, this could also lead to a more balanced pattern of flows. The reverse is true under the *weak policies* scenario.

[19]Western Europe refers to the euro area plus Denmark, Iceland, Norway, Sweden, Switzerland, and the United Kingdom.

Figure 2.49. Performance of Emerging Market Assets, 2011–12
(Indices)



Source: Bloomberg L.P.
[1]MSCI emerging markets index in local currency.
[2]JPMorgan emerging market currency index (against U.S. dollar).
[3]Fisher-Gartman index capturing global risk sentiment.

A reversal of capital flows could amplify the negative effects of bank deleveraging.

Emerging market resilience to capital flow reversals withstood the test of the Lehman crisis and the recent episode of market stress. Many countries, particularly in Asia and Latin America, have higher stocks of reserves today than they held at the onset of the Lehman crisis in 2008. However, another sustained period of capital outflows—as might occur in the *weak policies* scenario—could put severe strains on countries that have received large inflows and accumulated high short-term external debt (Table 2.4). Heavy capital inflows to emerging markets in 2009–11, and greater involvement of foreign investors in local markets, have also increased the amount of potential "hot money" that might depart suddenly in the face of a severe shock.

The impact of sudden outflows on credit and GDP growth in emerging markets could be considerable. An econometric model presented in Box 2.5 shows that if total net inflows received by emerging markets in the period 2009–11 were reversed over a single quarter—as happened during the Lehman crisis—credit growth would fall by 2 to 4 percent, and GDP growth would decline by 1.5 to 2 percent on average. For a country like Brazil, which received a large amount of foreign capital during this period, the impact on growth could be on the order of 2 percentage points, even though the stock of reserves is sufficient to cover short- and medium-term financing needs.

Homemade vulnerabilities remain, particularly in domestic credit markets.

Many emerging markets have homemade vulnerabilities, including high fiscal deficits (e.g., Hungary and India), high external deficits (e.g., Turkey and Ukraine), credit-quality concerns, and political uncertainty (notably in parts of the Middle East). These vulnerabilities exacerbate the potential susceptibility of these emerging markets to external shocks. Table 2.4 provides some summary statistics for major emerging market and other countries on vulnerabilities, to external shocks in particular, as well as measures of policy space to buffer negative shocks. Among regions, emerging Europe registers the greatest strains.

Many emerging markets are in the advanced stages of the credit cycle. As detailed in the September 2011 GFSR, banking systems can be more vulnerable to increases in nonperforming loans in the wake of a rapid credit expansion and therefore less able to withstand externally generated shocks. In many cases, a policy response involving a fresh expansion of credit may add to domestic financial stress.

Credit conditions in China warrant special attention in light of the country's considerable size and systemic importance to the global economy. Property and credit markets represent potential vulnerabilities in an environment of decelerating—although still brisk—growth. In part because of administrative measures intended to prevent or deflate property bubbles, house prices in most Chinese cities have been moving down in recent months. Housing affordability is still stretched, and many market participants are concerned that price declines might accelerate, putting pressure on property developers, local governments relying on land sales for revenue, and other exposed sectors (Figures 2.50 and 2.51). With real estate investment accounting for 13 percent of economic output and about 20 percent of bank loans, difficulties in the property sector could have important effects on the quality of bank assets.

China is already at an advanced stage of the credit cycle. As a consequence of effective stimulus measures adopted in response to the global financial crisis, overall credit in China grew at the average annual rate of more than 25 percent in 2009–10, bringing the overall credit-to-GDP ratio above

Box 2.5. What Happens in Emerging Markets if Recent Bank and Portfolio Inflows Reverse?

A substantial amount of foreign portfolio and bank-related capital has been flowing into a number of emerging market economies since 2009. A reversal of these flows as a consequence of financial deleveraging or waning risk appetite could place the financial sectors of many of those economies under substantial pressure. Research indicates that under the shock of a flow reversal, growth prospects would deteriorate and currencies would weaken vis-à-vis the U.S. dollar. Bank lending to the private sector would contract significantly, and the asset quality of banks' balance sheets would deteriorate.

Large amounts of foreign bank-related and portfolio capital have been flowing into emerging markets since gross capital flows collapsed in late 2008 (Figure 2.5.1).[1] Although net capital flows to emerging markets have not been excessively strong by historical standards, there have been unusually high portfolio flows into certain countries (Figure 2.5.2), reflecting the desire of real money investors, including central banks and sovereign wealth funds, to increase exposure to emerging markets.[2] Flows into local currency bond markets have been especially strong since early 2009, in part because of wide interest rate differentials between emerging market and advanced economies.

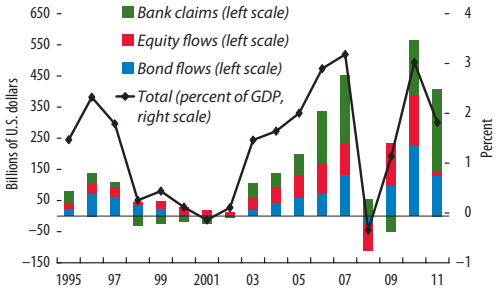
Research suggests that the financial sector in emerging markets could be particularly exposed to a sudden reversal of bank-related and portfolio flows (De Bock and Demyanets, 2012). These flows are more closely correlated with developments in emerging market banking sectors than are other flow measures, such as foreign direct investment or net capital flows. If portfolio inflows come to a sudden stop, the fall in asset prices would decrease the net worth of firms and negatively affect bank balance sheets, diminishing an economy's capacity to generate credit.

Note: Prepared by Reinout De Bock.

[1]Foreign portfolio and bank-related flows correspond to (1) foreign portfolio inflows (debt and equity) and (2) investment liabilities associated with foreign banks from the "other investment" category in the IMF's *International Financial Statistics*.

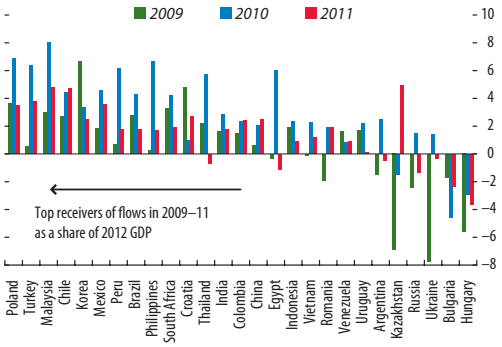
[2]Chapter 1 of the September 2011 GFSR discusses these trends in detail.

Figure 2.5.1. Bank and Portfolio Flows to Emerging Markets, 1995–2011



Sources: Haver Analytics; IMF, International Financial Statistics and World Economic Outlook databases; and IMF staff estimates.
Note: Portfolio and bank-related liabilities for 27 emerging markets. Values for 2011 are estimates.

Figure 2.5.2. Foreign Bank and Portfolio Flows, Selected Emerging Market Economies, 2009–11
(In percent of GDP for the given year)



Sources: Haver Analytics; IMF, International Financial Statistics and World Economic Outlook (WEO) databases; and IMF staff estimates.
Note: GDP values for 2012 are WEO projections. Some 2011 values are estimates.

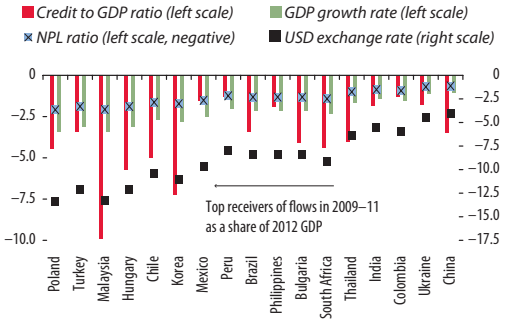
According to our econometric analysis, an abrupt reversal of foreign bank and portfolio flows is associated with a sharp contraction of credit and deterioration in loan quality, which potentially would force banks to recapitalize. Growth prospects deteriorate and currency valuations come under pressure. The depreciation pressure on currencies has clear policy implications, as it typically leads to substantial foreign exchange intervention and reserve loss. Debt denominated in foreign currency is harder to service

Box 2.5. *(continued)*

when the domestic currency weakens. Banks are also exposed to credit risk on foreign currency denominated loans to firms that themselves are not hedged against depreciation.

Figure 2.5.3 shows estimates of the first-year response of credit, asset quality, GDP, and the nominal exchange rate to a sudden reversal of the portfolio and bank-related inflows observed in 2009–11 (scaled by World Economic Outlook forecasts for 2012 GDP). The simulation is based on a fixed effects, structural panel, vector autoregression (VAR) model with nonperforming loan ratio, growth rate of private credit (as a percent of GDP), portfolio and bank flows (percent of GDP), GDP growth, and the change in the U.S. dollar exchange rate, as described in De Bock and Demyanets (2012). The shock is calculated versus the VAR model prediction based on 2010 values. The results indicate that growth risks to a reversal of flows are currently most elevated in Hungary, Poland, and Turkey. Credit as a share of GDP would contract strongly in Hungary, Korea, Malaysia, and Poland. Currencies would also be hit significantly, with an annual depreciation of up to 15 percent vis-à-vis the U.S. dollar.

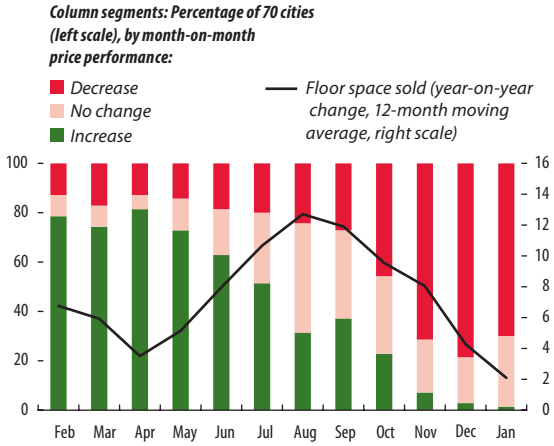
Figure 2.5.3. What Happens If the Bank and Portfolio Inflows of 2009–11 Reverse?
(First-year change, in percentage points)



Sources: Bankscope; Haver Analytics; IMF, International Financial Statistics and World Economic Outlook databases; and IMF staff estimates.

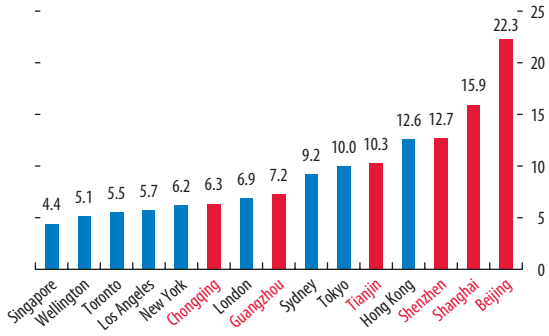
Note: Shown are annual responses if the foreign portfolio and bank flows observed in 2009–11 reverse (calculated relative to a vector autoregression model prediction based on 2010 values). Bulgaria, Hungary, and Ukraine had outflows for the period 2009–11, which are assumed to continue at the same pace. For further details, see the box text and De Bock and Demyanets (2012). NPL = nonperfoming loan.

Figure 2.50. Changes in Residential Property Prices and Sales in China, 2011–12
(In percent)



Sources: CEIC Data; and IMF staff estimates.
Note: Price data are for 70 cities in mainland China; sales data are national.

Figure 2.51. Ratio of House Price to Annual Household Income for Selected Cities, 2011



Sources: CEIC Data; 8th Annual Demographia International Housing Affordability Survey; national statistical offices; and IMF staff estimates.

Note: Data for cities in mainland China (in red), Tokyo, and Singapore are calculated as the price of a 70 square meter home divided by average annual pretax household income; data for other cities are the median house price divided by median pretax household income, as reported by Demographia.

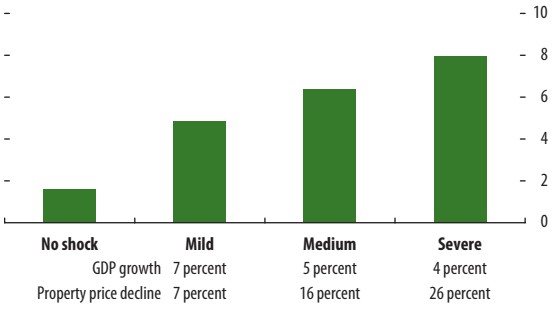
150 percent. Stress tests by the Chinese authorities (conducted in the context of the recent Financial Sector Assessment Program with the IMF and World Bank) suggest that, in a tail risk scenario with weak growth and plunging house prices, nonperforming loan rates could rise as high as 8 percent (Figure 2.52). While China clearly possesses the fiscal resources to recapitalize domestic banks facing difficulties, incipient problems with credit quality would likely deter the authorities from repeating the 2008–09 strategy of rapid domestic credit expansion.

Similar concerns apply to Brazil, which experienced average annual credit growth rates of about 20 percent during the 2008–11 period, raising credit in relation to GDP (Figure 2.53). Rapid growth in directed credit from the state-run development bank (BNDES) helped to limit the impact of the Lehman shock on the economy in 2009. But the continued expansion of public and private bank balance sheets has already led to rising nonperforming loan rates, particularly in the household sector. Under these circumstances, the scope for using the credit channel to counter negative shocks may be limited.

Many emerging markets have built buffers that can withstand a moderate shock from Europe, but policy space needs to be used wisely and, under larger shocks, may prove to be inadequate.

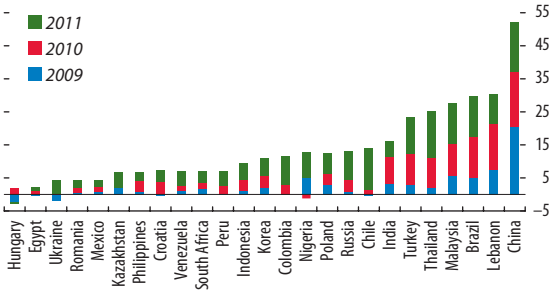
Emerging markets inevitably remain exposed to volatility, including external shocks through trade and financial channels. Yet in many cases, they have sufficient foreign exchange buffers and policy space—monetary, fiscal, and credit—to counter a range of financial and economic shocks such as those envisaged under the *current policies* scenario. The experience of 2008 in emerging economies as diverse as Brazil, China, Korea, and Russia was that the countercyclical use of available policy space, along with the creative deployment of targeted facilities and instruments, can be effective in sustaining growth in the face of a major external shock. However, in some cases—notably in eastern Europe—policy room is more limited today, while the potential shock could be larger than in 2008, especially under the *weak policies* scenario.

Figure 2.52. China: Projected Nonperforming Loan Rates under Adverse Macroeconomic Scenarios
(In percent of total loans at end-2009)



Source: IMF, Financial System Stability Assessment for the People's Republic of China.

Figure 2.53. Annual Change in Private Credit, 2009–11
(Percent of WEO projection of 2012 GDP)



Sources: Haver Analytics; IMF, International Financial Statistics and World Economic Outlook (WEO) databases; national authorities; and IMF staff estimates.

The Quest for Lasting Stability

Developments in the euro area remain the key risk to global financial stability. Recent important policy steps have brought some much-needed relief to financial markets, as sovereign spreads have eased, bank funding markets have reopened, and equity prices have rebounded. However, new setbacks could still occur. The path ahead has significant political and implementation risks, and policies need to be further strengthened to secure and entrench financial stability. Policymakers should therefore build on recently agreed reforms and complete the policy agenda. Policymakers also need to coordinate a careful mix of financial, macroeconomic, and structural policies to ensure a smooth deleveraging process that puts the financial system in a good position to support the economy. This should be accompanied by further steps toward financial and fiscal integration to prevent creeping financial market fragmentation in the euro area and reap the full benefits of a financially stable monetary union. The challenges facing other key advanced economies remain largely unchanged since the last GFSR. In particular, both Japan and the United States have yet to forge a political consensus for medium-term deficit reduction, which is crucial to secure debt sustainability and preserve market confidence. Most emerging markets, in turn, are well positioned to buffer moderate deleveraging forces emanating from the euro area, but their resilience could be tested in a downside scenario, most notably in emerging Europe. Meanwhile, progress is being made in strengthening the global regulatory framework, but agreements in key areas still need to be concluded and implemented.

Recent policy action has provided a much-needed reprieve, but euro area sovereign bond markets remain vulnerable.

The euro area crisis remains the main risk to global financial stability, requiring further policy action to preclude highly adverse outcomes and to shift the dynamics firmly toward a situation of lasting stability. To be sure, euro area policymakers have continued over the past few months to take crucial and unprecedented steps to overcome the crisis, as detailed in Chapter 1, Box 1.1.

Reflecting this progress, sovereign risk premiums have eased from their late-2011 peaks, banks have started tapping the senior debt market again, and equities have rebounded. Nonetheless, the situation in several euro area sovereign bond markets is still precarious. Current fragilities leave sovereign bond markets exposed to the risk of renewed turmoil: negative news or sudden changes in sentiment could quickly drive up yields again and further weaken the investor base if expectations shift back toward a bad equilibrium. The close link between sovereigns and banks could amplify the resulting threat to financial stability. Such shocks cannot be completely ruled out even if the countries concerned fulfill their policy reform commitments. Indeed, strains in euro area sovereign bond markets remain elevated; these reflect not only specific country weaknesses but also broader investor concerns about cohesion in the euro area, as policies still remain somewhat short of the oft-pledged "whatever it takes" to shore up confidence.

Disorderly European bank deleveraging could have serious consequences for growth in the region and beyond.

Faced with high sovereign risk, a weaker growth environment, and a legacy of insufficient capital cushions and imbalanced funding models, many major European banks have announced substantial plans to reduce their balance sheets. The drivers of this process are both cyclical (owing to current market stresses and weak growth) and structural (reflecting high initial leverage, the need to adapt business plans, and impending regulatory changes). In many cases, the envisaged adjustments are both inevitable and desirable. Their overall macro-financial impact depends, however, on the nature, pace, and scale of the deleveraging process. Thus, a synchronized, large-scale, and aggressive shedding of bank assets could have severe consequences for the real economy in the euro area and beyond. Under the current policies scenario, this GFSR estimates total balance sheet shrinkage of some $2.6 trillion (€2.0 trillion) over the next two years,

which represents about 7 percent of bank assets. The impact of bank deleveraging is global, although it will likely be strongest in the periphery of the euro area and in emerging Europe.

Current dynamics also portend a risk of some retrenchment behind national borders and fragmentation of euro area financial markets.

In many respects, the difficulties facing the euro area mirror the fundamental challenge of reconciling sovereignty with membership in a currency union. Euro area members have surrendered control over monetary policy, fostering a close integration of financial markets. At the same time, countries are reluctant to cede competence over other policy areas that have a bearing on the stability of those integrated financial markets. Now that the euro area crisis has exposed the deficiencies of the existing institutional framework, the consequence is a painful and haphazard process of reform under market pressure.

The dynamics of the current crisis may already be causing some tendency toward financial retrenchment behind national borders and fragmentation within the common currency area. For instance, the investor base for government bonds in many countries is becoming more domestic again; banks are making disproportionately large cuts to their cross-border exposures as they retrench; and some nonfinancial corporations are again considering cash flows and balance sheet positions on a country-by-country basis.

These centrifugal tendencies have been balanced by increasing public sector efforts to shore up the monetary union, notably through official loans and scaled-up ECB operations. However, the ECB's policy response, while necessary and effective, also reverses some elements of integration. Collateral rules for monetary operations are now differentiated by country, and the financial risks associated with the provision of liquidity under certain types of collateral are now excluded from the usual loss-sharing framework.

If such temporary forces were collectively to become entrenched, they could dilute the essential benefits of the common currency and weaken support for the euro. Forging political agreement on the comprehensive set of reforms outlined in the complete policies scenario and moving toward greater integration is, of course, difficult and will require concessions from both sides: those wary of mutualizing risks, and those loath to make further transfers of national sovereignty. Box 2.6 explores the benefits and drawbacks of various proposals for ex ante risk sharing through common eurobond issuance as part of a fuller fiscal union. Without more progress in crucial areas, including more centrally articulated frameworks for crisis prevention, management, and resolution, euro area authorities will find it difficult to deliver on their promise of a stability and growth union.

Urgent steps are being taken to match policy reform efforts in vulnerable member countries with a powerful financing backstop to curtail the risk of a "run" on solvent euro area sovereigns.

Countries currently facing market pressures must sustain their resolve to rectify fiscal, structural, and external imbalances that weigh on investor confidence. Across the rest of the euro area, these efforts should be matched by a more resounding message of solidarity, cohesion, and support. Key to assuaging market fears is a credible firewall that is large, robust, and flexible enough to stem contagion and facilitate the adjustment process in the highly indebted countries. Any lasting solution also needs to tie the availability of financial support to continued policy progress. But a well-designed package of financing assurances and reform could likely garner enough credibility to ensure affordable market funding conditions, with official facilities acting only as contingent credit lines.

The recent decision by euro area policymakers to raise the effective lending capacity of the ESM (through accelerated buildup of capital and temporary backstopping by the EFSF) will strengthen the European crisis mechanism and support the IMF's efforts to bolster the global firewall. The crisis facilities should also have the flexibility to take direct stakes in banks and assist the restructuring of financial institutions where necessary. This will help stem the adverse feedback loop between domestic banking and sovereign risks in the euro area.

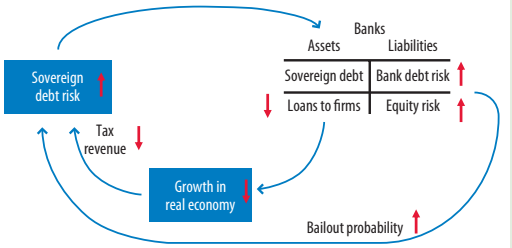
Box 2.6. Eurobonds and the Future of the Economic and Monetary Union

When the Economic and Monetary Union (EMU) was set up, it was recognized that an efficient monetary union would require deep economic and financial integration. Some argued that, for the EMU to work well, it would eventually require political and fiscal union. However, the choice at its inception was to focus on economic and financial integration and on disciplining fiscal policy rather than on creating a fiscal union. The crisis has shown that fiscal disciplining mechanisms failed, that economic integration remains limited, and that financial integration causes difficulties if national authorities remain ultimately responsible for their financial systems.

Market pressure is now forcing fiscal integration, albeit ex post. The recently established crisis management facilities (EFSF, EFSM, and ESM)[1] and the use of the European Central Bank balance sheet to support sovereign bond markets implicitly mutualize some of the fiscal risks in the EMU. Countries that are cut off from private funding at rates deemed to be sustainable have conditional access to official funding at better rates. In essence, EFSF/EFSM/ESM bonds are a form of euro bonds, although perhaps not the most efficient one. Worries about moral hazard are being addressed by applying strict conditionality.

Ex ante fiscal risk sharing is essential for an effectively functioning monetary union, but it will require a strengthening of economic governance. Waiting for a crisis to develop in part of the monetary union before supporting member countries is not an efficient use of economic resources. Invariably, economic dislocations in one country affect the rest of the monetary union, creating contagion and leading to divergence rather than convergence in economic and financial conditions, detracting from the benefits of membership (Figure 2.6.1). Mechanisms to share risk vary from access to common bond issuance to a full-fledged fiscal union with a large federal budget, but they have one thing in common: the surrender of a considerable degree of national fiscal autonomy. In this spirit, the recently adopted Fiscal Compact goes some way toward improving fiscal governance, though a further strengthening of the role of euro area institutions will be essential.

Figure 2.6.1. Spillovers of Distress among Sovereigns, Banks, and the Real Economy



Eurobonds, which provide for common sovereign borrowing with joint and several liability, can be a useful tool for fiscal risk sharing. As such they provide important benefits by helping to prevent crises and insure against contagion:

Risk sharing and resilience to shocks. Joint issuance can prevent sharp increases in borrowing costs due to country-specific shocks or market tremors, thereby providing an implicit transfer from countries not affected by such events. As a result, sovereign yields are less sensitive to swings in risk aversion and multiple equilibria.

Breaking the banking-sovereign feedback loop. At present, financing conditions of the sovereign determine those of the rest of the economy because of national responsibility for financial systems. Moreover, banks and sovereigns are linked in a vicious loop in which their respective weaknesses reinforce each other. During the crisis, banks' stocks plunged in countries where sovereign debt was perceived as riskier, leading to expectations of a public bailout and further increasing the perceived risk in government bonds. Conversely, where banks were weak, their bailout caused difficulties for the sovereign. By allowing banks to switch from country-specific to euro area risk, eurobonds would help reduce the close ties between banks and the risks of individual sovereigns.

Providing a liquidity premium. By trading in a unified sovereign bond market much larger than the market for any single sovereign, eurobonds would deliver a substantial liquidity gain.

Note: Prepared by Esther Perez Ruiz.

[1]European Financial Stability Facility, European Financial Stabilisation Mechanism, and European Stability Mechanism.

Box 2.6. *(continued)*

Existing eurobond proposals promise to deliver to different degrees along these dimensions:

- Under *full eurobonds* (Boonstra, 2005, 2010), all euro area sovereign financing would be raised through common bonds. A joint agency would issue the common bond and distribute the proceeds. Full eurobonds would deliver the highest benefits in terms of lower borrowing costs for distressed sovereigns and improved resilience of the financial system. At the same time, full eurobonds would have the strongest distributional impact among participating members, posing high risks of moral hazard.
- *Partial eurobonds*, in the spirit of the "blue bond" proposal (Delpla and Weizsäcker, 2010), would convert national debt up to a certain share of GDP into eurobonds (the blue bond), with the rest to be issued nationally (the red bond). The safe bond would protect states from an acute funding crisis, while intensified market pressures on the national tranche would provide market discipline, limiting the risk of moral hazard. It would be difficult, however, to preserve the credibility of the ceiling once the blue bond allocation is exhausted. Financial stability benefits of partial eurobonds would be commensurate with the size of the safe component—ranging from 60 percent of GDP in the blue and red proposal to 10 percent of GDP in the eurobills proposal (Hellwig and Philippon, 2011). The wide range illustrates the difficulties in calibrating the strict limit that separates liquidity from solvency issues.
- The *pooling proposal* (Brunnermeier and others, 2011) would limit risk sharing while preserving liquidity benefits. Under this proposal, sovereign bonds would continue to be issued separately, leaving sovereigns subject to market discipline; but a synthetic security would be created with a safe tranche and a risky tranche. The safe tranche would help delink sovereign and banking risks.

A move toward eurobonds faces some political economy obstacles. While it is relatively straightforward to see how eurobonds can operate in a new steady state combined with a different governance structure, it is not obvious how one can move there from the current situation. Some proposals that address the political economy dimension are those of the German Council of Economic Experts (2011) and of Hellwig and Philippon (2011). Meant to be implemented on an experimental basis, both proposals preserve the political status quo and are compatible with current EU Treaty no-bailout provisions. The proposal of the German Council aims to reduce debt overhang by granting a joint guarantee for debt *above* 60 percent of GDP. The approach would have certain similarities to bonds issued by the EFSF, but financing would be an instrument available to all countries outside any crisis context. To ensure sufficient creditworthiness, some additional collateral would be provided by countries.

The euro area must coordinate national macroeconomic policies to ensure an orderly process of deleveraging and rebalancing.

Looming in the background of current market strains is the problem of large-scale imbalances across the euro area—persistently high deficits in some parts mirrored by persistent surpluses elsewhere—that were built up over the previous decade. A sudden stop in flows from savers to borrowers is now imposing harsh retrenchment costs on households and governments in several countries, often reinforced by simultaneous deleveraging in the banking system. Together, these forces could have a contractionary or even a deflationary impact that is self-defeating.

It is thus crucial to cushion the impact of adjustment with other policies geared toward supporting growth. These should include: (1) sufficiently accommodative monetary policy, consistent with the objective of price stability and the recognition that deflationary dynamics, once in train, are particularly difficult to reverse; (2) a sufficiently gradual withdrawal of fiscal support in countries not subject to market pressures; and (3) structural reforms that raise productivity, strengthen competitiveness, and thereby lay the foundation for stronger, sustained growth and more balanced external accounts.

These efforts need to be supported by financial policies aimed at ensuring an orderly deleveraging of the euro area banking system. Although lasting stabilization of government bond markets will go a long way toward

easing the pressures currently weighing on banks, additional targeted measures are needed, including:

- the restructuring of viable banks and the resolution of nonviable banks, whose continued existence allows problems to fester and weighs on the performance of the entire sector;
- funding support for viable banks under pressure through a centralized program of funding guarantees; and
- close macroprudential oversight by the European Systemic Risk Board (ESRB) and EBA along with national authorities to assess the aggregate impact of deleveraging and to alleviate pressure points.

Moreover, with an eye toward implementation of Basel III, supervisors need to ensure that credit institutions maintain adequate capital and liquidity positions beyond the horizon of the current EBA recapitalization exercise, notably by exercising adequate restraint on dividend and remuneration policies and monitoring the quality of instruments qualified as own funds.

These efforts should be set in the context of a move toward a more integrated currency union.

Steps are already under way to strengthen policy discipline and improve economic governance of the euro area. It is critical that future macroeconomic and financial imbalances be addressed and contained in a much more timely fashion. Enforcing a stricter fiscal framework is only one necessary element in that endeavor, as has been rightly recognized in the comprehensive reach of the EU's "six pack" legislation. A key role accrues, in particular, to proactive and countercyclical macroprudential policy, coordinated at the central level via the ESRB, that addresses the buildup of financial imbalances in a timely manner.

Over time, a move toward greater ex ante risk sharing will also be indispensible for a well-functioning monetary union. To this end, the euro area's financial system needs to be dealt with at the euro area level in all aspects that are crucial to financial stability, including supervision, deposit insurance, resolution, and backstopping with a mechanism for ex ante burden sharing. Greater fiscal risk sharing, conditional on more centralized fiscal governance, is equally desirable to prevent individual euro area countries from running into financing difficulties even if their fundamentals are otherwise sound. Committing to both now is essential to break the pernicious link between banks and sovereigns, preserve the benefits of a highly integrated monetary union, and secure the prospect of lasting financial stability.

Important medium-term debt challenges are also looming in other key advanced economies, notably Japan and the United States.

Risks to financial stability are currently concentrated in Europe, but they are not confined there. The fiscal policy challenges facing Japan and the United States easily rival those anywhere in the euro area, yet there is much less progress to date in laying out strategies to address those challenges. Both Japan and the United States require credible multiyear plans of deficit reduction which protect short-term growth but reassure financial markets that debt will return to a sustainable trajectory over the medium term.

In the United States, mortgage debt burdens need to be made sustainable through programs to facilitate principal write-downs (Annex 2.3). The first steps along this path, notably the recent agreement between banks, regulators, and state attorneys general as well as legislation in the Senate, are welcome but insufficient. Targeted reduction of mortgage principal for homeowners with heavy debt burdens would best be encouraged through the passage of legislation permitting mortgage "cramdowns" in personal bankruptcy proceedings. On public debt, American policymakers need to adopt all reasonable means of bringing down deficits in the medium term; these include reform of entitlements and higher revenue through removing unwarranted tax breaks and simplifying marginal rates. Credible measures that deliver and anchor savings in the medium term will help create space for accommodating growth *today*—by allowing a more gradual pace of consolidation.

Derivatives markets could be a channel through which shocks affecting European banks and sovereigns are transmitted to U.S. banks (see Box 2.4 for details). While U.S. banks' net derivatives exposures to European counterparties are small, their large

gross positions are subject to large swings in market value, making the banks vulnerable to margin calls. The potential for destabilizing fire sales of assets is high, since quality collateral is scarce; and with derivatives market making concentrated among few broker-dealers, there is the potential for a failure cascade if a dealer experiences difficulties. The risks are partly offset by the capital buffers of U.S. banks, which a recent Federal Reserve stress test deemed adequate to withstand a global recession and adverse financial conditions (BGFRS, 2012a).

In Japan, policymakers need to take action to ensure the long-run sustainability of the sovereign debt market. Domestic banks have long held large portfolios of government bonds, and they increased those holdings over the past six months as many Japanese investors shifted out of foreign assets. This has compressed yields on government bonds over this period but has increased the longer-term risk of a large price adjustment that could impair bank capital. To reduce this risk, fiscal reform measures—including an increase in the consumption tax—are needed, as are financial reforms to reduce the vulnerability of banks' bond portfolios. A further priority for financial reform is action—already under way—to increase disclosure and monitoring of investment trusts that have recently served as a major conduit of household investment into complex and risky structured products.

Policymakers in emerging markets should stand ready to use their existing policy space to cushion negative external shocks.

For most emerging market economies so far, the deleveraging process that has been related to the actions of EU banks has been manageable. The authorities in these countries should stand ready to provide countercyclical support to their domestic economies within the available policy space identified in Table 2.4. In some cases, notably emerging Europe, this space is less than in 2008. Generally, however, the experience of 2008 shows that countercyclical policies, along with the creative deployment of targeted facilities and instruments, can be effective in sustaining growth in the face of a major external shock.

The scope for easing credit policy in particular is limited, as many emerging markets are already in the advanced stages of the credit cycle, as detailed in the September 2011 GFSR. Easing credit further would, therefore, add to domestic financial vulnerabilities, given that sustained periods of above-trend credit expansion tend to foreshadow higher nonperforming loan rates down the road.

A key challenge will be to control spillovers from the euro area into emerging Europe and elsewhere, notably by averting excessive retrenchment by EU parent banks.

Given existing vulnerabilities in some countries in emerging Europe, a major policy priority should be to ensure that deleveraging in this region does not become disorderly. Parent banks remain strategically committed to the region, but given increasing obstacles to cross-border capital movements and higher funding costs, their business model has seen some of its advantages reduced. To protect banking systems from pressures in the euro area, home and host regulators need to coordinate regulatory regimes to avert excessive home bias. Home regulators must avoid unilateral measures that threaten to accelerate deleveraging, while host regulators need to avoid an uncoordinated race to ring-fence liquidity and capital within national borders to the detriment of other countries. The "Vienna Initiative," which had helped avoid disorderly disengagement of western banks from central and eastern Europe in the crisis of 2008–09, also provides a useful platform to guard against undue home bias. "Vienna 2.0" was launched in January 2012 primarily with a view to stepping up such coordination and cooperation between home and host country supervisors.

Long-lasting stability of the financial system will be supported by progress in implementing the G20 regulatory reform agenda.

Long-lasting stability of the financial system will be supported by progress in implementing the G20 regulatory reform agenda. Priorities for G20 reform include the Basel III framework, policy measures for global systemically important financial institutions, resolution frameworks, and reforms to OTC

derivatives markets. Policy efforts to control the systemic risk from derivatives markets need to be further advanced, and oversight of the shadow banking system should be strengthened (see Box 2.7).

The regulatory reform agenda in the United States remains a work in progress, and while the Dodd-Frank Act is expected to come into force in 2012, much uncertainty remains over its final provisions (see discussion in Box 2.7 on the Volcker Rule). It is essential to move ahead expeditiously in all key areas of financial reform. In particular, the designation of systemically important financial institutions has to be pursued; the migration of risks into the shadow banking system has to be closely monitored; and a proactive approach to surveillance of systemic risk has to be firmly grounded in the Financial Stability Oversight Council. Furthermore, the current juncture calls also for a proactive monitoring of the potential spillovers from Europe. The ongoing Federal Reserve stress tests and the recent call by the Securities and Exchange Commission to broaden the disclosure of European exposures are welcome steps to improve understanding of these spillovers.

In Europe, important progress has been made on the regulatory reform agenda, but more remains to be done. The European Commission proposal for EU-wide legislation (Capital Requirements Regulation/Capital Requirements Directive IV) to implement Basel III is a significant step toward improving regulatory standards. The proposal aims to achieve a common standard, implementing the Basel III requirements with maximum harmonization. Given prevailing balance sheet uncertainties—and in the absence of a common institutional framework, including EU-wide resolution arrangements and a fully unified fiscal backstop—higher standards are needed, and there should be adequate flexibility for prudential policies at the national level while duly taking into account cross-border spillovers and home-host coordination requirements. Furthermore, as the legislation is finalized, there should be an unequivocal commitment to implement the leverage ratio and net stable funding ratio in 2018, as agreed under Basel III.

Policy efforts to control the systemic risk from derivatives markets need to be further advanced, with special emphasis on ensuring consistency among the regulatory regimes across jurisdictions and close cooperation among supervisors. The proposed arrangements—such as central counterparties (CCPs)—are intended to improve price transparency in the market and facilitate better risk management but, to be effective, they require strong operational controls, appropriate collateral requirements, and sufficient capital. Because of the global nature of the derivatives market, supervising CCPs will require close cross-border coordination among national supervisors and regulators.

Box 2.7. Update on Regulatory Reforms

Progress has been made in the regulatory reform agenda since the September 2011 GFSR, but the work is not yet complete, and important implementation challenges remain (Figure 2.7.1). It is critical that the international community remain focused on consistent, timely, and high-quality implementation of the G20 regulatory initiatives. Strong multilateral commitment is key to ensuring the credibility of the reform agenda and avoiding regulatory arbitrage.

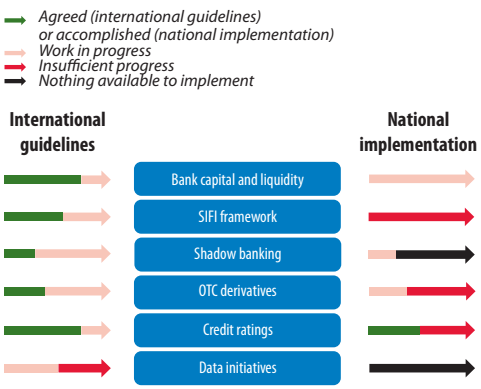
Implementation will be closely monitored and supported, not least through the Coordination Framework for Implementation Monitoring, newly developed through the Financial Stability Board (FSB), which aims at fostering discipline and transparency regarding individual countries' progress. Priority areas include the Basel III capital and liquidity framework, policy measures for global systemically important financial institutions (G-SIFIs), domestic and cross-border resolution frameworks, over-the-counter (OTC) derivatives market reforms, and data gaps.

Basel III

Implementation of the Basel III capital and liquidity framework is under way in several jurisdictions. Australian authorities have completed the first round of consultations on Basel III, while in the EU the Capital Requirements Directive IV (CRDIV) and associated Capital Requirements Regulation draft legislative proposals were issued in July 2011 for European Council and European Parliament action. The EU text assists the member states in meeting the Basel III deadline, though some elements of the initial proposal were not in full conformity with the agreed-upon Basel norms. In addition, the European Commission has launched a new high-level Expert Group to examine structural aspects of the EU's banking sector. Its final report to the Commission is due by end-summer 2012. The Basel Committee on Banking Supervision (BCBS) is monitoring implementation progress through its Standards Implementation Group. Assessing consistency of implementation will be challenging, but it is critical to ensuring that Basel III achieves the desired improvement in the resilience of the global financial system.

Note: Prepared by Ana Carvajal, Michaela Erbenova, Eija Holttinen, and Katharine Seal.

Figure 2.7.1. G20 Regulatory Reform Agenda: Key Elements and Status



Note: OTC = over-the-counter; SIFI = systemically important financial institutions.

G-SIFIs

The policy measures to address G-SIFIs, discussed in the September 2011 GSFR, have now been published (BCBS, 2011). These include the methodology to identify global systemically important banks (G-SIBs) and the details of additional loss absorbency capital requirement to be met with common equity: 1 percent to 2.5 percent of risk-weighted assets, with a potential ("empty bucket") supplemental capital charge of 3.5 percent to discourage any increase in systemic importance. The initial list of 29 G-SIBs has been published. The list will be revised annually and the methodology reviewed periodically. Implementation of the revised G-SIB standards will be phased in from 2016 and apply to the designated G-SIBs in 2014.

SIFI policy work through 2012 will focus on applying the SIFI framework to domestic systemically important banks and to systemically important nonbank financial entities. National implementation of the G-SIFI requirements, including progress on the resolution regimes, will be evaluated by a newly created Peer Review Council.

Resolution Regimes

Implementation of effective domestic and cross-border resolution regimes is a key component of the reform agenda. Following the July 2011 consultation,

Box 2.7. *(continued)*

the FSB in November released standards for effective resolution regimes (FSB, 2011c). It requires jurisdictions to have resolution authorities with a broad range of powers to resolve G-SIFIs (including nonbanks), to reduce impediments to cross-border cooperation, and to ensure that recovery and resolution plans and crisis management groups are in place, at least for banking groups that have been designated as G-SIFIs. Material progress has been achieved by many jurisdictions, including establishing cross-border crisis management groups. Full implementation, however, will depend on strong political commitment, as it will require legislation to, among other things, enhance cross-border cooperation and information sharing and extend the range and scope of resolution powers for financial groups in home and host jurisdictions.

Protecting Retail Banking

Further work is needed before rules and proposals aimed at limiting the scope of large banking groups can be implemented—in the United States, the "Volcker rule"; and in the United Kingdom, the proposals of the Independent Commission on Banking (ICB).

The Volcker rule (section 619 of the Dodd-Frank Act) bans proprietary trading and investments in private equity and hedge funds by U.S. banks, their domestic and overseas affiliates and bank holding companies, and by U.S.-based operations of foreign banks. The affected banks will be able to provide other services, including underwriting, market making, and risk-mitigating hedging activities. A narrow set of securities—debt issued by U.S. federal, state, and municipal governments, government-sponsored enterprises, and federal agencies—remains exempt from the ban on proprietary trading, but non-U.S. government bonds are not exempt. Non-U.S. banks can continue to engage in business activities prohibited by the rule so long as it is conducted outside the United States and does not involve engagement of U.S. residents and personnel. The Volcker rule presents several issues that need careful consideration to ensure a level playing field and avoid unintended consequences. In particular, potential implications for market liquidity and pricing of non-U.S. sovereign debt as well as for the activities of non-U.S. entities need to be further analyzed. Measures should be taken to avoid potential adverse implications, including clarification of the scope and coverage of the rules.

In the United Kingdom, the recommendations of the ICB were released in September 2011. If adopted by the U.K. authorities and if permitted under CRDIV, the proposals would require strict ring-fencing of retail banking to separate it from both global wholesale banking and investment banking for all banks in the United Kingdom; and a minimum level of capital and "bail-inable" debt for ring-fenced banks and G-SIBs of between 10.5 percent and 20 percent of risk-weighted assets, depending on their size and systemic importance. The ICB responded to industry feedback by allowing flexibility on both the timing (with a long phase-in period) and the ring fence (wholesale services for nonfinancial corporations in the European Economic Area can be included in the ring-fenced entity). Separation of retail from investment banking operations will undoubtedly make it easier to resolve the retail bank. However, without accompanying measures for tighter regulation, intensive supervision, and progress on cross-border resolution arrangements, ring-fencing will not be sufficient to ensure the financial stability of the banking groups.

Shadow Banking

Further progress has been achieved in establishing a broad framework for monitoring shadow banking. As broadly defined in an agreement issued in April 2011 (FSB, 2011a), shadow banking consists of all bank-like credit intermediation conducted outside of the banking sector that could give rise to regulatory arbitrage or systemic risk; the bank-like activities include maturity transformation, liquidity transformation, leverage, and risk transfer. Using this broad definition, the FSB's Shadow Banking Task Force in October 2011 set out high-level principles for effective monitoring and a process for mapping shadow banking using a common template for data collection (FSB, 2011d).

Through that report the FSB also committed to conduct annual shadow banking monitoring exercises to assess global trends and risks. The first monitoring exercise will take place in 2012, with

Box 2.7. *(continued)*

the results scheduled to be reported to the G20 in the fall. The October report also set out general principles for the regulation of shadow banking and identified five additional work streams: (1) banks' interactions with shadow banking entities (report due July 2012), (2) money market funds (due July 2012), (3) other shadow banking entities (due September 2012), (4) securitization (due July 2012), and (5) securities lending and repurchase agreements (due end-2012).

OTC Derivatives

The OTC derivatives reform program adopted in 2009 at the G20 Leaders' Pittsburgh Summit has been progressing very slowly. Achieving a sufficient degree of transparency and safety in derivatives markets is crucial for avoiding the destabilizing effects they evidenced in the first years of the crisis. The international standard-setting bodies have intensified work on developing policy and standards in this area: Reports were issued in quick succession in early 2012 by the International Organization of Securities Commissions (IOSCO) on requirements for trading (IOSCO, 2012a) and clearing (IOSCO, 2012b) and, with the Committee on Payment and Settlement Systems, the reporting of derivatives data (CPSS and IOSCO, 2012). In October 2011, the FSB said it would step up its own coordination of international policy work, and it subsequently established a senior-level coordination group.

Several FSB member jurisdictions have reached important legislative and regulatory milestones regarding OTC derivatives: in the European Union, the European Market Infrastructure Regulation (EMIR), approved in early 2012; in the United States, various rules aimed at implementing the Dodd-Frank Act; in Japan, the Financial Instruments Exchange Act (FIEA), revised in May 2010; and in Singapore, the Monetary Authority's consultation paper on the regulation of OTC derivatives (MAS, 2012). The EMIR, the revised FIEA, and the Dodd-Frank Act set out strong measures to improve the transparency, resilience, and regulatory oversight of the OTC derivatives markets; the measures include regulations for a clearing obligation for eligible OTC derivatives with provisions to reduce counterparty credit risk and operational risk for bilaterally cleared OTC derivatives; common rules for central counterparties; and a reporting requirement for OTC derivatives. Both the EMIR and Dodd-Frank provisions are expected to come into force during 2012, although there may be delays in the preparation of implementing measures. In parallel to national implementation, it is essential to ensure sufficient consistency among the various regimes to avoid overlaps, gaps, and conflicts that can be harmful to the achievement of the G20 goals.

Data Gaps

Addressing data and information gaps is necessary to improve the understanding of the global financial architecture and enable better monitoring of emerging risks and vulnerabilities that might threaten financial stability. Work to identify the data gaps and develop common data templates for G-SIBs is under way; key decisions on data requirements are due this year.

Credit Rating Agencies

Improving the regulatory oversight, governance, and transparency of credit rating agencies remains an important priority. The FSB called for reduced regulatory reliance on credit ratings in October 2010, but little progress has been made on this front. Developing alternative credit risk metrics that are objective and verifiable remains a challenge.

Summary

With many important policy goals in initial stages of implementation, the momentum of reform and the coherence of agreed policies must be sustained as implementation progresses. In particular, strong political commitment is essential to strengthen supervision while extending its scope to previously uncovered areas; to develop effective resolution regimes, including for cross-border firms; and to continue to address systemic risk across all financial sectors. The international financial institutions must remain vigilant and steadfast in their support for consistent and timely implementation.

Annex 2.1. Methodology for the EU Bank Deleveraging Exercise

The aim of the EU bank deleveraging exercise conducted for this GFSR was to assess the potential scale of asset reduction at EU banks and the potential impact on lending to the private sector, after taking into account banks' capital generation. The exercise used the balance sheet and profit data of 58 large EU banks included in the 2011 recapitalization exercise of the European Banking Authority (EBA).[20] The scale of deleveraging is assessed by simulating the balance sheet adjustments of the sample banks needed to achieve certain structural targets under three scenarios with varying amounts of cyclical pressure, such as sovereign stress and bank funding strains.

Dataset

The analysis relies on the detailed balance sheet data of the banks in the sample. The main balance sheet items—for both the assets and liabilities side of the balance sheet—plus data on profits and losses come from SNL Financial. Those data are supplemented with a geographic breakdown of loan portfolios and government bond holdings from the 2011 EBA stress test.[21]

For each bank, the total loans provided to a given country or region are divided into direct cross-border lending and lending by the bank's subsidiaries that are incorporated in that country or region. Data on individual subsidiaries in OECD countries and emerging markets are from Bankscope and bank regulators. Cross border lending is estimated as the difference between EBA total exposure of a sample bank to a given country and total loans of its subsidiaries in this country. Table 2.5 shows the key balance sheet items that are used in this exercise. Data on the level of core Tier 1 capital and risk-weighted assets are from the December 2012 EBA recapitalization exercise.[22]

Note: Prepared by Sergei Antoshin, Eugenio Cerutti, Jeanne Gobat, Anna Ilyina, and William Kerry.

[20]The banks are listed at the end of the annex.

[21]If EBA geographical breakdowns for a country or region were not reported for a bank despite its having operations in those areas, the breakdowns were obtained from bank-level data.

[22]Core Tier 1 capital is a subset of Tier 1 capital made up mainly of common shares and retained earnings.

Table 2.5. Selected Bank Balance Sheet Items

Assets	Funding Liabilities
1. Cash and equivalents	**1. Customer deposits**
2. Interbank loans	**2. Interbank deposits**
3. Securities	**3. Short-term debt**
Nongovernment securities Government bonds *Of which,* Issued by country 1 Issued by country 2 . . . etc. Other financial assets	*Of which,* Held by U.S. money market funds
4. Customer loans	**4. Term debt**
In country 1 *Of which* **Direct cross-border loans** **Subsidiaries loans** Residential mortgages Other consumer credit Commercial loans Other credit ***In country 2*** . . . etc.	*Of which,* Covered bonds Senior unsecured Subordinated debt

Framework

Scenarios

Three scenarios—underpinned by assumptions about the policy response to the euro area crisis—are considered.

- In the *current policies* scenario, sovereign spreads remain elevated and funding market pressures persist. Some banks are unable to roll over some of their term funding or are unable to access short-term U.S. dollar funding. A few institutions face a continuation of deposit outflows—although they are cushioned by the impact of the ECB's December and February three-year LTROs. Bank profits also remain under some pressure. The scenario also includes a trend toward a progressive increase in home bias within the euro area, characterized by diminished cross-border flows and increasing financial fragmentation along national lines.
- In the *complete policies* scenario, policymakers fully implement a comprehensive solution to the euro area debt crisis. This leads to a sharp tightening in sovereign spreads, a pronounced easing of funding market pressures, an increase in bank capital from private or public sources as funding markets fully open, and greater bank profits through a lowering of loan losses.

- In contrast, sovereign spreads increase in the *weak policies* scenario, and funding pressures intensify, overwhelming the two LTROs. Banks are unable to roll over a greater portion of debt coming due; they face further pressures in short-term markets and increased deposit outflows. Loan losses mount, reducing bank profitability. Markets also force banks to compress the time over which they reach structural targets, which amplifies deleveraging forces.

In each scenario, bank deleveraging is driven by a combination of structural targets and cyclical factors.

Structural Targets

The *structural* targets in this exercise reflect the key structural forces that are likely to shape banks' balance sheets over the medium term. These targets include : (1) stronger capitalization, modeled through a 9 percent core Tier 1 ratio; (2) lower reliance on less-stable (short-term, wholesale) sources of funding, proxied with an estimated net stable funding ratio (NSFR); and (3) other adjustments in banks' business models to adapt to the new regulatory and market environment (proxied by announced bank business plans).

The 9 percent core Tier 1 capital target. The target is based on the data published by the EBA for its recapitalization exercise that are consistent with Basel 2.5 methodology. Information on bank capital raising, liability management, and risk-weighted optimization has been used where available.

The NSFR. This target is estimated in line with the methodology used in Chapter 2 of the April 2011 GFSR. The NSFR is defined as a bank's available stable funding (ASF) divided by its required stable funding (RSF). In the scenarios, banks target an NSFR of 100 percent. The NSFR sets the proportion of long-term assets that should be funded by long-term, stable funding. The NSFR calculation is underpinned by a number of assumptions, including on the weights used for each of the components, which are set to broadly reflect the liquidity of banks' balance sheets (Table 2.6).

Bank business plans. Plans were collected from various sources, including banks' annual reports and presentations to investors (see Box 2.2).

The simulations cover September 2011 to December 2013, though banks are allowed varying time horizons to meet the structural targets. The core Tier 1 target is to be met in 2012 (in line with the EBA schedule), the restructuring plans in 2013, and the NSFR in 2018. For announced bank plans that extend beyond 2013, the exercise includes, pro rata, only the portion up to 2013. For the NSFR target, banks are assumed to adjust linearly, that is, 2/7 of the total required adjustment takes place during 2012–13 in the *current policies* and *complete policies* scenarios. This adjustment is accelerated in the *weak policies* scenario.

Cyclical Factors

Assumptions vary across the scenarios regarding two key cyclical factors: (1) bank funding conditions, and (2) bank capital generation. The latter incorporates retained earnings, which are a function of the degree of sovereign stress, macroeconomic conditions, and bank capital raising.

Funding pressures. These vary in the three scenarios through differing assumptions about strains in funding markets. Table 2.7 presents the weighted average rollover rates for banks in the scenarios for

Table 2.6. Weights Used in Calculation of the Net Stable Funding Ratio

Available Stable Funding	Weight	Required Stable Funding	Weight
Equity	1.00	Cash	0.00
Demand deposits	0.80	*Customer loans*	0.75
Savings and term deposits	0.85	*Residential mortgages*	1.00
Interbank deposits	0.00	*Corporate loans*	0.85
Repurchase agreements	0.00	*Interbank loans*	0.00
Short-term debt	0.00	*Trading and AFS securities*	0.20
Trading liabilities	0.00	Held to maturity	1.00
Other term debt maturing in 1 year or less	0.85	*Net derivative assets*	1.00
Term debt maturing in more than 1 year	1.00	*Other assets*	1.00
Other reserves	1.00	Reserves for NPL	1.00

Note: Weights for items in italics are IMF staff judgments. AFS = available for sale. NPL = nonperforming loans.

Table 2.7. Average Rollover Rates for Bank Funding under Three Policy Scenarios
(In percent)

Scenario	Customer Deposits	Interbank Deposits and Repurchase Agreeements	Short-Term U.S. Dollar Funding	Other Short-Term Funding	Unsecured Term Funding (due 2012–13)	Covered Bonds (due 2012–13)
Complete policies	100	100	100	100	100	100
Current policies	99	100	85	100	70	100
Weak policies	95	95	50	95	40	98

Source: IMF staff estimates.

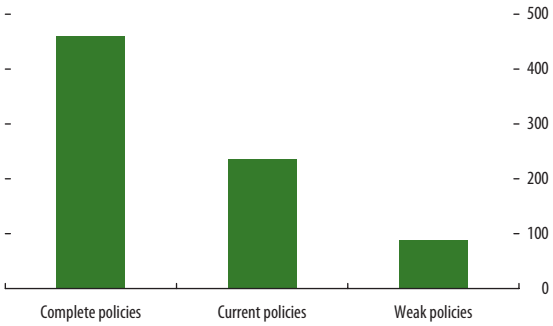
both wholesale and deposit funding. The average rollover rates in the current policies scenario have been informed by prevailing market conditions. The rollover rates applied in the scenarios vary across the banks in the sample. These funding strains are netted off against increases in bank capital over the two years, as well as against net liquidity from the December and February three-year LTROs used by banks to offset maturing debt. This netting also accounts for banks repaying the LTROs funding.

Bank capital generation. Profits and losses are based on a model that links retained earnings to macroeconomic conditions. Using dynamic panel models for various components of the income statement, we forecasted retained earnings on the basis of GDP growth.

In the *complete policies* scenario, profits are increased through an easing in sovereign pressures as gains are recorded on holdings of government bonds. Conversely, in the *weak policies* scenario, profits are adversely affected by the rise in sovereign stress. Mark-to-market gains and losses are calculated according to the evolution of sovereign spreads in the euro area countries between the spot rates in 2011:Q3 and the forward rates for 2013:Q4, calculated as of March 2012. The mark-to-market gains and losses are computed for sovereign and interbank exposures and are also channeled through the loan book as additional gains and losses on other private sector exposures (as described in Chapter 1 of the September 2011 GFSR).

In all three scenarios, the level of capital increases not only through retained earnings, but also through capital raising and liability management exercises that have occurred this year or are planned over the scenario horizon (Figure 2.54). In the *complete policies* scenario, banks are also able to raise capital to meet the core Tier 1 ratio target. The three scenarios also account for risk weight optimization when information is available.

Figure 2.54. Capital Generation under Three Policy Scenarios
(In billions of U.S. dollars)



Source: IMF staff estimates.
Note: For a sample of 58 large EU banks.

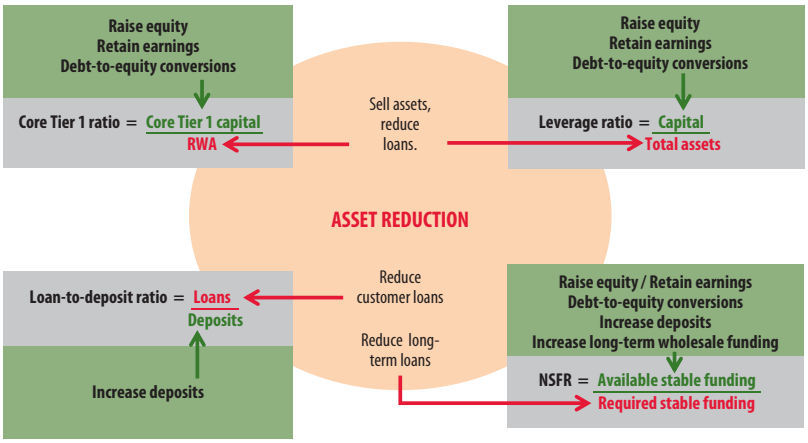
Amount of Deleveraging

Banks can strengthen their capital ratios by raising equity, retaining more earnings, or conducting liability management exercises (the green boxes in Figure 2.55). Similarly, banks can improve their structural funding ratios by shifting toward more stable sources of funding, such as deposits and more long-term wholesale funding. In an environment in which such measures are difficult or costly, banks may opt to reduce assets in order to achieve their structural targets.

Negative cyclical factors, such as bank funding conditions and sovereign stress, can lead to further deleveraging pressures (for example, some banks may be forced to scale back their activities because of the high cost of U.S. dollar funding or their inability to roll it over). If positive, cyclical factors can reduce deleveraging pressures.

For each sample bank, the total *required deleveraging* (asset reduction, after taking into account banks

Figure 2.55. How Can Banks Improve Capital and Liquidity Ratios?



Source: IMF.
Note: NSFR = net stable funding ratio.

capital generation) is determined by comparing the amounts and time frame of required deleveraging to achieve each of the structural targets (described above), as well as to close a (potential) funding gap.

The deleveraging is then implemented according to a bank-specific business plan, if such plan is available, or through a generic deleveraging strategy.

Deleveraging Strategy

In the absence of detailed information on restructuring plans, banks are assumed to follow a generic deleveraging strategy. Under that strategy, banks are assumed to reduce assets according to a predetermined *pecking order* (Table 2.8) in which they consider selling nongovernment securities and foreign government securities before turning to loans. With regard to the loan portfolio, the deleveraging strategy is assumed to have a built-in home or regional bias. This means that loan books are first reduced outside the advanced EU economies, then in advanced EU economies (outside the home country), and finally in the home country. Within each of these country "buckets", the deleveraging order depends on risk weights—higher risk weight exposures are reduced before lower risk weight exposures (Table 2.8). The latter means that banks seek to achieve their capital targets through minimal reduction in total assets. Furthermore, the strategy is designed to protect consumer lending in general and domestic lending in particular, as it forces banks to reduce other assets first.

The deleveraging strategy is based on observed bank behavior. The assumed pecking order for securities and commercial banking activities reflects what has happened to date—with a number of European banks scaling back their noncore and dollar-funded activities and banks publicly announcing their business plans—as well as banks' likely reaction to the increase in risk weights under Basel 2.5. The regional or home bias is visible, to some extent, in the evolution of banks' private sector foreign claims during 2011:Q3 (see Figure 2.25).

To ensure that banks continue to hold a minimum level of liquid assets for microprudential purposes, it is assumed that securities and interbank loans are reduced in proportion to total assets. In addition, to ensure that there are no discounts or premiums on asset sales (and hence, no second-round effects on other banks), the cutbacks in securities and interbank claims are capped as a percentage of exposures for each bank (Table 2.8). Thus, banks with large investment banking activities have more room to reduce assets before getting to the loan portfolios.

Finally, when deciding on the reduction of foreign loan books, banks take into account their funding

Table 2.8. Bank Deleveraging Strategy

Pecking Order—Highest to Lowest Priority	Action
1. Nongovernment securities	Reduce in proportion to total assets up to 10 percent of nongovernment securities
2. Foreign government bonds	Reduce up to 10 percent of foreign government bonds
3. Interbank loans	Reduce in proportion to total assets up to 10 percent of total interbank loans
4. Noncore assets	Sell up to 100 percent of noncore assets
5. Customer loans[1]	
5.1. Cross-border loans outside advanced EU economies 5.2. Subsidiaries' loans outside advanced EU economies 5.3. Cross-border loans to advanced EU economies (outside home country) 5.4. Subsidiaries' loans in advanced EU economies (outside home country)	Roll off maturing loans, but only up to the point at which the rolloff amount is less than or equal to loans minus deposits. For cross-border loans, this calculation is performed at the parent bank level. For subsidiaries' loans, the calculation is performed at the subsidiary level.[2]
5.5. Domestic loans	Roll off maturing loans

[1]The order in which country exposures are considered within each of the categories is based on risk weights computed using the Basel II standardized approach. Higher risk-weight exposures are reduced first.

[2]In cases where loan rolloffs are insufficient to meet the deleveraging target, the bank can consider selling subsidiaries before reducing domestic loans, provided that such sale does not lead to a reduction in the bank's capital ratio given bank valuations prevailing in the local market (i.e., the price-to-book ratio of the banking equity index in a given country).

structure—that is, a stock of loans, x percent of which is funded by local deposits, cannot be reduced by more than (100 – x) percent.

Impact on EU Country Credit

Although the exercise is based on a sample of large EU banks, the results shown in Figures 2.32 and 2.33 are extended to the entire banking system so that they can be compared with macroeconomic data. This extension was done as follows:

- Compute the *out-of-sample credit* for each country. Out-of-sample credit in country X = domestic credit in country X – (sample credit in country X – cross-border credit in country X).
- Compute the *impact of out-of-sample banks* on domestic credit in each country using a weighted average of representative sample banks' percentage cut in credit to the level of out-of-sample credit.
- Compute the impact of *out-of-sample banks* on cross-border credit on a borrowing country. Apply the "average sample bank's" percentage reduction in cross-border credit to the level of out-of-sample cross-border credit for the same borrower country or region.
- Compute the final *impact on credit* in each country. Impact on credit in country X = change in sample bank credit (both domestic and cross-border) in country X + change in out-of-sample domestic credit in country X + change in out-of-sample cross-border credit in country X.

Banks Included in the Exercise

Austria
Erste Group Bank AG
Raiffeisen Zentralbank Österreich AG

Belgium
Dexia SA
KBC Group NV

Cyprus
Marfin Popular Bank Public Company Limited
Bank of Cyprus Public Company Limited

Denmark
Danske Bank A/S
Jyske Bank A/S
Sydbank A/S

Finland
OP-Pohjola Group Central Cooperative

France
BNP Paribas SA
Crédit Agricole SA
BPCE
Société Générale SA

Germany
Deutsche Bank AG
Commerzbank AG
Landesbank Baden-Württemberg
Deutsche Zentral-Genossenschaftsbank AG
Bayerische Landesbank
NORD/LB Norddeutsche Landesbank Girozentrale
WestLB AG
HSH Nordbank AG
Landesbank Berlin Holding AG
DekaBank Deutsche Girozentrale
Westdeutsche Genossenschafts-Zentralbank AG

Hungary
OTP Bank Nyrt

Ireland
Allied Irish Banks Plc
Bank of Ireland

Italy
Intesa Sanpaolo SpA
UniCredit SpA
Banca Monte dei Paschi di Siena SpA
Banco Popolare Società Cooperativa
Unione di Banche Italiane SCpA

Luxembourg
Banque et Caisse d'Epargne de l'Etat, Luxembourg

Netherlands
ING Bank N.V.
Rabobank Group
ABN AMRO Group NV
SNS Bank NV

Poland
PKO Bank Polski SA

Portugal
Caixa Geral de Depósitos SA
Banco Comercial Português SA
Banco Espírito Santo SA
Banco BPI SA

Slovenia
Nova Ljubljanska Banka d.d.
Nova Kreditna banka Maribor d.d.

Spain
Banco Santander SA
Banco Bilbao Vizcaya Argentaria SA
BFA BANKIA
Caja de Ahorros y Pensiones de Barcelona
Banco Popular Español SA

Sweden
Nordea Bank AB
Skandinaviska Enskilda Banken AB
Svenska Handelsbanken AB
Swedbank AB

United Kingdom
Royal Bank of Scotland Group Plc
HSBC Holdings Plc
Barclays Plc
Lloyds Banking Group Plc

Annex 2.2. Sovereign Risk in the United States, Japan, and Germany—Signals from the Markets

This annex summarizes financial market indicators used by investors to assess sovereign risk, from January 2009 to the present for the United States (Figure 2.56), Germany (Figure 2.57), and Japan (Figure 2.58). For each country, it also compares current readings with those for a recent crisis period relevant to that country: September 2011 for the United States, January 2010 for Germany, and mid-March to mid-April 2011 for Japan. Although markets can understate or overstate risk, and prices may sometimes reflect short-term technical factors rather than fundamentals, these measures as a group provide a snapshot of broad financial market sentiment regarding the sovereign risk of these countries.

United States

U.S. sovereign risk concerns have eased significantly since the budget crisis of 2011: Investors treated U.S. markets as a safe haven in the midst of the EU crisis, and U.S. assets outperformed most peers globally last year. The relative strength of recent U.S. economic activity reinforced this sanguine view. However, significant risks remain, as medium-term fiscal reforms remain unresolved, and political gridlock persists.

Overall, risk levels have declined since the beginning of September 2011 (Figure 2.56). Fixed income indicators such as cash and forward yield curve spreads have fallen as fears related to the budget crisis subsided, and yields on Treasury inflation-protected securities (TIPS) indicate that investors are not worried about either inflationary or deflationary scenarios at present. The spread between 10-year Treasuries and the bund is higher, but this reflects heavy flight-to-quality buying of bunds in response to the EU crisis rather than a negative view of the United States relative to Germany. In derivatives markets, long- and short-dated CDS spreads have fallen, and the interest rate swap curve has flattened. The dollar has strengthened, and gold has fallen from its peak of last year. Funding markets are calm, Treasury auctions have proceeded smoothly, and liquidity has been good.

Note: Prepared by Sanjay Hazarika and Martin Edmonds.

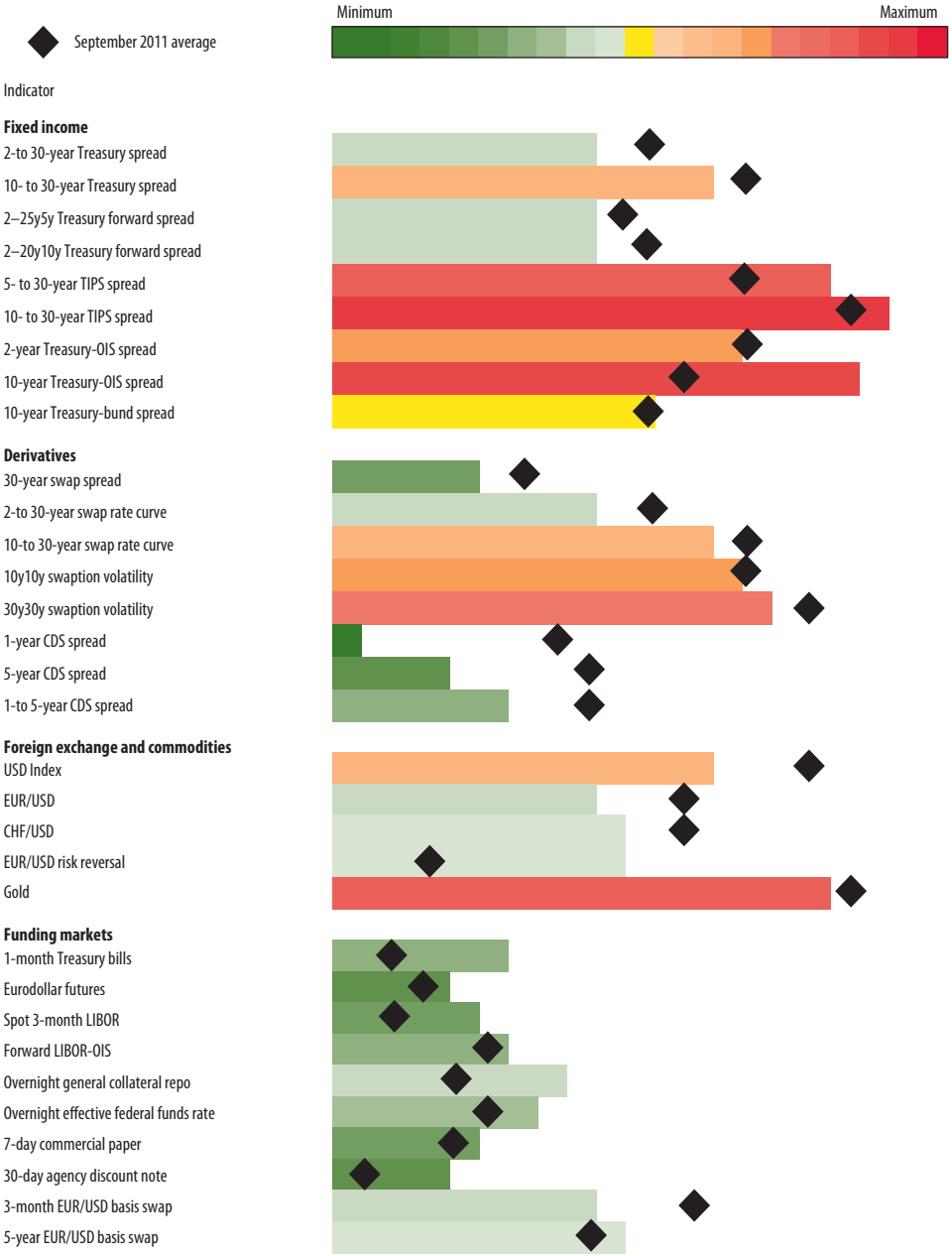
Nevertheless, significant risks remain. The lack of progress on medium-term fiscal consolidation (especially tax reform and reining in health care and pension costs) is a continuing concern (see Chapter 1, Table 1.1, which compares indebtedness in selected advanced economies; and Table 2.1 for sovereign vulnerability indicators). The Bush-era tax cuts will expire on December 31, and a range of automatic spending cuts are scheduled to kick in, which could derail the economic recovery. Low interest rates and falling unemployment may create a false sense of security and cause partisan gridlock to persist. Elevated long-dated swaption volatilities hint at continued worries about tail risks.

Germany

In November and December 2011, during the height of the euro area turmoil, German markets were a safe haven for investors, and local fixed-income markets outperformed their peers. The ECB's announcement of its three-year LTROs on December 8 led to a recovery in markets for sovereign securities from the periphery of the euro area. But German spreads remain at tight levels, and rates remain very low, indicating that Germany remains a safe haven and that fears about policy persist. However, as investors' attention moves to the future, there is a risk that if Germany broadens its support for the peripheral euro area, it could drive speculation about its own fiscal stability and thus pressure its own markets (see Tables 1.1 and 2.1).

Current market levels present a generally positive picture relative to January 2010 (the pre-EU crisis period), with most sectors indicating lower risk levels (Figure 2.57). Interest rates are generally lower across the board because the market for German government bonds has benefited from large safe haven flows. Derivatives present a more mixed picture: Interest rate swap rates are lower and the swap curve flatter in response to ECB policy, but swaptions volatility remains high in response to market worries about the EU reform package. In addition, German CDS spreads are higher, although they have recovered from the wide levels seen last year, and the euro remains under pressure. However, local funding conditions are nearly back at precrisis levels, and dollar funding has improved.

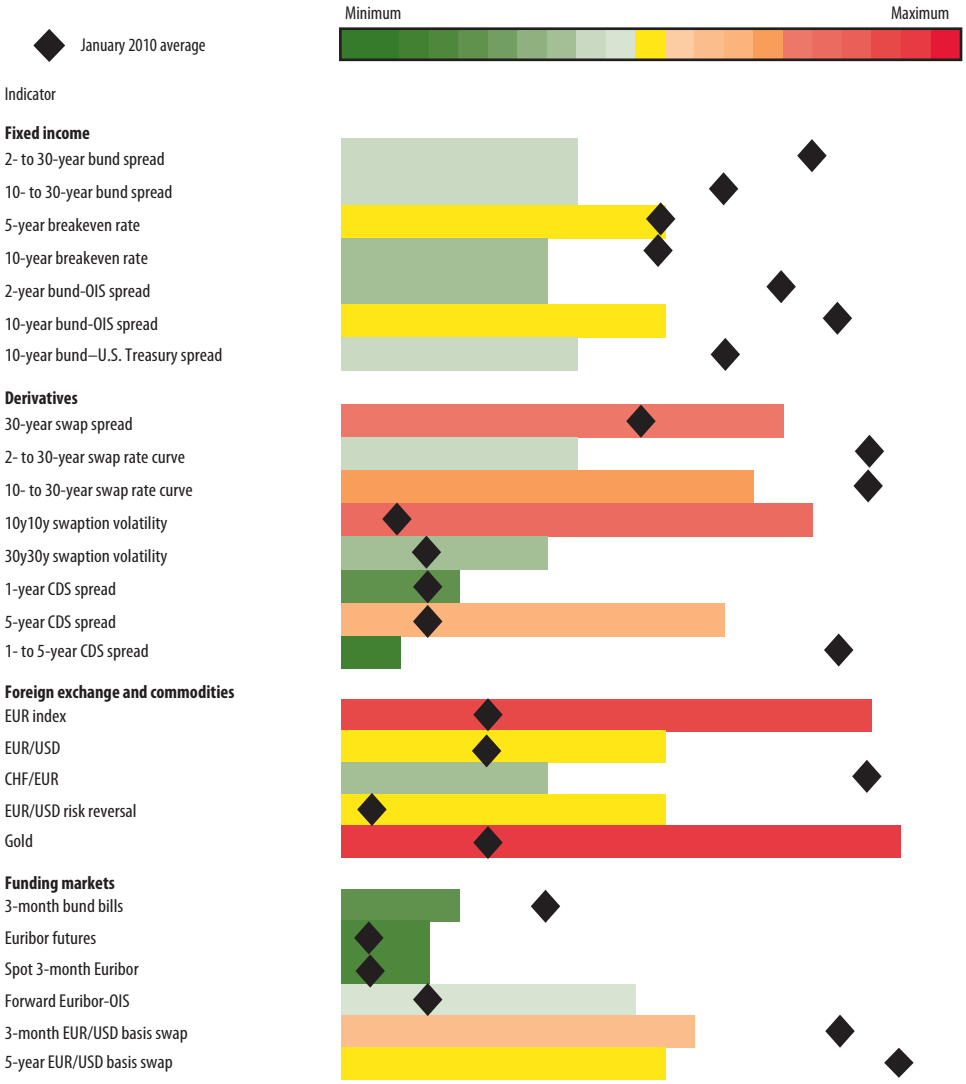
Figure 2.56. United States: Sovereign Market Indicators, March 2012



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

Note: For each indicator of sovereign risk, the color of the bar shows its current market value (the average for the month from mid-February to March 13, 2012) in relation to the range of daily readings it took during the *reference period* from January 1, 2009, to the same end date. The reference period roughly covers the transformation of the financial crisis into more of a sovereign credit crisis, and hence the indicators during that period registered a wide range of values for perceptions of sovereign risk. Shades of green signify that the current value is closer to the reference-period level that represented the greatest complacency regarding sovereign risk; shades of red signify a current value closer to the reference-period level representing the greatest alarm. CDS = credit default swaps. LIBOR = London interbank offered rate. OIS = overnight indexed swap. TIPS = Treasury inflation-protected securities.

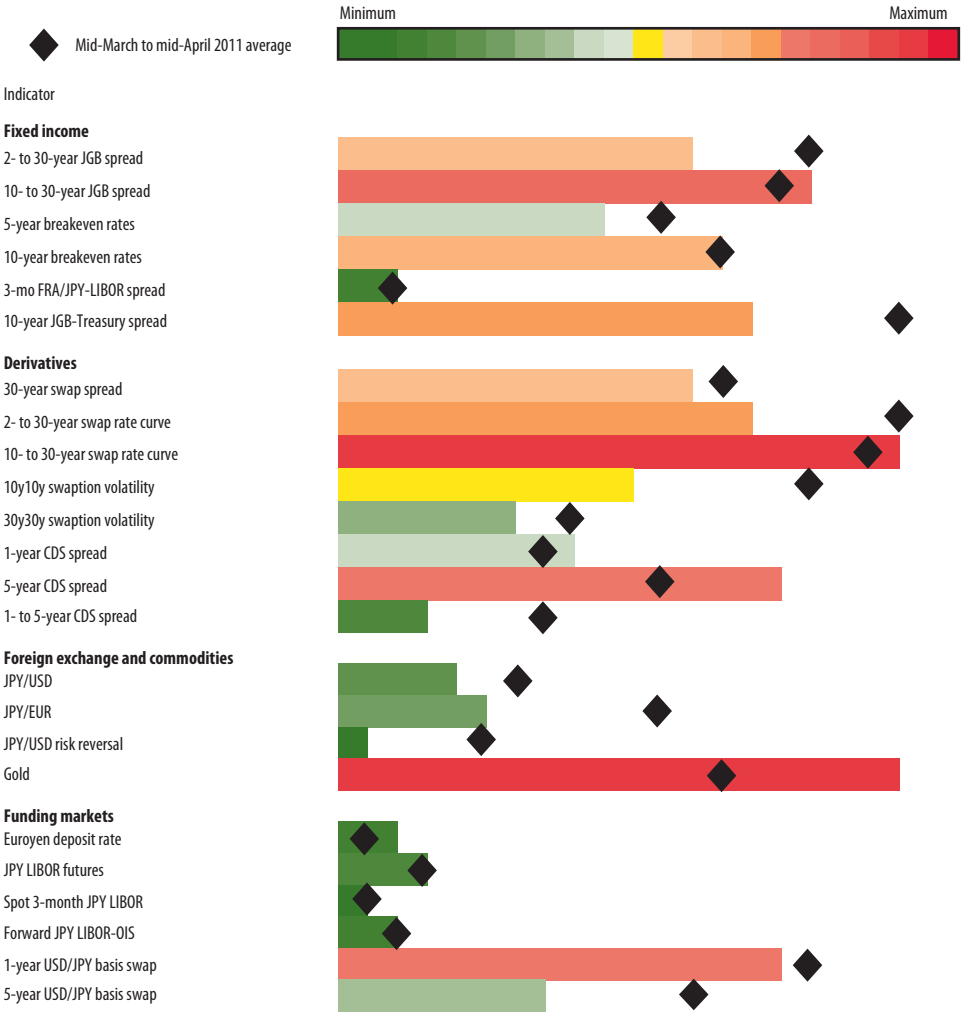
Figure 2.57. Germany: Sovereign Market Indicators, March 2012



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

Note: For each indicator of sovereign risk, the color of the bar shows its current market value (the average for the month from mid-February to March 13, 2012) in relation to the range of daily readings it took during the *reference period* from January 1, 2009, to the same end date. The reference period roughly covers the transformation of the financial crisis into more of a sovereign credit crisis, and hence the indicators during that period registered a wide range of values for perceptions of sovereign risk. Shades of green signify that the current value is closer to the reference-period level that represented the greatest complacency regarding sovereign risk; shades of red signify a current value closer to the reference-period level representing the greatest alarm.CDS = credit default swaps. Euribor = euro interbank offered rate. OIS = overnight indexed swap.

Figure 2.58. Japan: Sovereign Market Indicators, March 2012



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

Note: For each indicator of sovereign risk, the color of the bar shows its current market value (the average for the month from mid-February to March 13, 2012) in relation to the range of daily readings it took during the *reference period* from January 1, 2009, to the same end date. The reference period roughly covers the transformation of the financial crisis into more of a sovereign credit crisis, and hence the indicators during that period registered a wide range of values for perceptions of sovereign risk. Shades of green signify that the current value is closer to the reference-period level that represented the greatest complacency regarding sovereign risk; shades of red signify a current value closer to the reference-period level representing the greatest alarm. FRA = forward rate agreement. JGB = Japanese government bonds. LIBOR = London interbank offered rate. OIS = overnight indexed swap.

The primary risk comes from perceptions that euro area stability actions adopted by the EU may raise concerns about the fiscal position of Germany itself. The potential for credit downgrades and a reversal of safe haven flows from Germany out of the euro area altogether (that is, to the United States or Japan) could lead to pressure on German government bonds and related markets.

Japan

Events in Japan over the past year were obviously dominated by its reaction to and recovery from the earthquake. Overall economic performance has yet to recover, and equity markets remain well below the levels seen before the tragedy; but the relatively benign state of fixed-income and derivatives markets suggests that there are few immediate concerns. The key short-term risk is a continued strengthening of the yen, while concern about the overall debt level remains a medium-term risk.

In fixed-income markets, the spread to U.S. Treasuries has declined from the time of the earthquake (mid-March to mid-April 2011), while the Japanese government bond yield curve has flattened (except at the very long end) (Figure 2.58). Derivatives market signals are also generally positive, although CDS spreads have widened along with those of Germany, the United States, and other countries. The yen is a key concern due to its effect on prospects for exporters, as continued yen strength is believed to exacerbate the headwinds caused by the earthquake. From a longer-term perspective, the overall government debt level remains a worry, and Japanese markets remain vulnerable to a sharp rise in bond yields (see Tables 1.2 and 1.3).

Annex 2.3. Developments in U.S. Housing Markets

The depressed U.S. housing market has weighed significantly on the overall economy. Implementation of more-effective housing policies would help reduce foreclosures and hasten the recovery of both the housing market and the broader economy.

Instead of powering the economy as it has done after past recessions, the U.S. housing market has remained depressed since the Great Recession. This persistent weakness reflects the difficulty of adjustment after years of excessive increases in homeownership and home building. The number of excess housing units is currently estimated to be about 2 million, down from 5 million in 2008 because of anemic construction rates over the period.

Beyond its direct effect on GDP, lower residential investment has also affected the overall recovery through the worsening of household balance sheets and the accumulation of mortgage-related losses by banks and other investors.

Downside risks to housing remain elevated in light of a still-unsettled economic outlook and a large shadow inventory of homes.[23] An estimated 3.7 million properties now in the shadow inventory could end up in distress sales within three to four years. Foreclosed properties often sell at a discount of as much as 27 percent (Campbell, Giglio, and Pathak, 2011), and foreclosed properties dampen neighboring prices by 1½ to 2 percent (Hartley, 2011). A recent legal settlement that resolved claims about improper foreclosures and lending abuses could imply more foreclosures in the short run due to an inventory of pending cases. Over the longer term, however, the settlement could lead to a nontrivial reduction in foreclosures through as much as $17 billion in relief for struggling homeowners.[24]

The likelihood of only a slow recovery in the housing market, even under a favorable economic scenario, warrants policies to prevent a lengthy period of high foreclosure rates and elevated uncertainty on house prices. The existing federally sponsored programs to support the housing market—the Home Mortgage Modification Program (HAMP) and the Home Affordable Refinancing Program (HARP)—have so far had only a muted impact on the foreclosure crisis; but recent actions and proposals could potentially enhance their effectiveness.

The modification program, HAMP, is aimed at reducing delinquent and at-risk homeowners' monthly mortgage payments through modifications of the terms of their home mortgage. It has resulted in only about 0.95 million permanent modifications since its inception in April 2009. The authorities recently announced forthcoming enhancements to the program. Analysts judge that these enhancements could produce about 0.5 to 1 million additional modifications, which would have an appreciable impact on the foreclosure rate.[25] Incentives to lenders to offer principal reductions will be tripled and will be extended to the government-sponsored enterprises (GSEs) Fannie Mae and Freddie Mac, whose participation would make the impact of the program much more significant.

The refinancing program, HARP, is aimed at homeowners whose mortgages have high loan-to-value (LTV) ratios and are guaranteed or owned by the GSEs. The program has generated about 1 million refinancings since April 2009; but an estimated 8 million homeowners in the United States still have underwater mortgages (the market value of the property is less than the outstanding loan balance) at above-market interest rates. While the GSEs made some enhancements to the program in December 2011 to broaden its reach, the new measures appear insufficient to stimulate a large increase in refinancing.

More recently the Obama administration announced a legislative proposal to broaden access to refinancing for both non-GSE and GSE mortgages.[26] If effectively implemented, the expansion could potentially lead to additional refinancings

Note: Prepared by Jihad Dagher.

[23]The shadow inventory comprises homes not listed for sale that either have mortgages that have been delinquent for more than 60 days or have severely underwater mortgages that are at a high risk of delinquency.

[24]Under the settlement, banks should allocate at least $10 billion toward principal reduction. Depending on how this is allocated between modifying own loans and private-label loans they service, the overall impact could range between $10 billion and $34 billion in principal reduction.

[25]See IMF (2011) for a discussion of the potential impact of expanded modification programs on foreclosures and house prices.

[26]The proposal would refinance non-GSE loans through a streamlined program operated by the Federal Housing Administration and financed through a fee on the largest financial institutions (at an estimated $5–$10 billion in total cost).

of about 5 million loans. That would create about $10 billion in savings on mortgage payments in the first year and potentially stem more than 150 thousand foreclosures; together, those effects could result in appreciable improvement in house prices of between ½ and 1 percent by 2014.[27] However, the proposal in its current form is not expected to be approved by Congress.

[27]According to Remy, Lucas, and Moore (2011), an expansion of the refinancing program to GSE borrowers could result in about 3 million incremental refinancings. According to a recent Federal Reserve white paper on housing (BGFRS, 2012a), 1–2½ million non-GSE borrowers with high LTV ratios could qualify for refinancing if HARP were to be expanded to the non-GSE universe.

The Federal Housing Finance Agency (the regulator of the GSEs), also aiming to relieve downward pressures on housing, is setting up a program that helps transition foreclosed houses into rental housing, in the hope that this will minimize the negative impact of foreclosures on neighboring properties. This will also help expand the stock of rental housing at a time when demand for rental units is on the rise.

Finally, a further policy that could be considered would be to allow mortgages to be modified in courts ("cramdowns"). Cramdowns would help reduce foreclosures also by inducing voluntary principal reduction by banks (see IMF, 2011).

Annex 2.4. The ECB's LTROs: Keeping the Benefits and Avoiding the Pitfalls

The ECB's recent longer-term refinancing operations (LTROs) stemmed the escalation of market tensions in the euro area and bought valuable time to put in place a more durable stability. The LTROs were effective in removing systemic liquidity and funding pressures, bringing sovereign yields down, and avoiding a potential bank failure. Like any powerful medicine, the LTROs have some drawbacks and side effects, but there is also scope for mitigating these risks. The main risk is a sense of complacency, which could tempt governments to ease the pace and depth of needed fiscal, financial, and structural reforms.

In late 2011, the euro area and the global financial system were facing strong pressures. With interbank funding essentially frozen and sovereign yields widening to record high levels, a full-blown bank crisis was in the making. The consequences could have exceeded those experienced in the aftermath of the Lehman bankruptcy in 2008, threatening to bring capital markets and the international banking system to a halt and raising the specter of a global economic downturn.

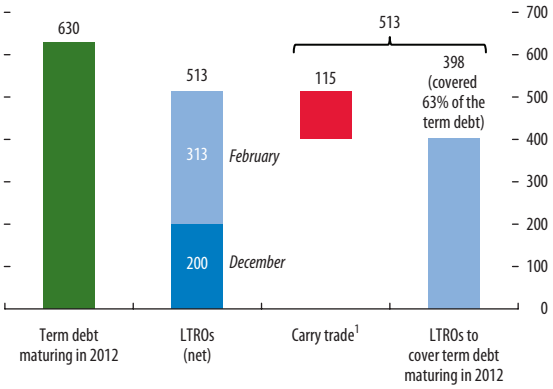
The ECB's LTROs helped to prevent the escalation of the crisis and have bought valuable time to establish a more durable stability. In the absence of adequate institutional firewalls and backstops, the ECB stood out as the only institution with the credibility and means to prevent a financial meltdown. By providing €1 trillion in funding to banks, it helped stabilize markets and prevented a systemic crisis by:

- *Easing bank funding pressures and enabling euro area banks to refinance maturing debt.* LTRO funding covers more than 60 percent of banks' debt maturing in 2012 (Figure 2.59). More importantly, as funding pressures have eased, bank funding markets have partly reopened. Euro area banks were able to place €22 billion in senior unsecured debt during January 2012, and even some mid-tier peripheral banks were able to raise funding. The easing of collateral requirements ensured that small and medium-sized banks could also benefit from access to ECB funding. With funding pressures receding, the risk of a sudden reduction in credit growth hurting the real economy has decreased substantially. Some 800 banks participated in the most recent LTROs, giving cause for optimism that this second round of increased liquidity would find its way into the real economy, particularly for small and medium-sized enterprises.
- *Driving sovereign yields down (Figure 2.60) and reducing the likelihood of generalized bank runs.* Banks in the peripheral euro area, especially Italy and Spain, have used some of the proceeds from the first liquidity injection (reportedly also from the second round of LTROs) to purchase their own domestic sovereign debt, supporting bank earnings and helping to compress yields. Euro area banks' holdings of government securities increased by about €115 billion from end-November 2011 to February 2011 (Figure 2.59), or about one-fifth of the total LTROs over that period.
- *Restoring market confidence by reassuring market participants that the ECB has both the resources and the will to contain the crisis.* Risk assets—equities and corporate credit—rallied following the LTROs allotments.

Like a powerful medicine, the LTROs have side effects and thus are subject to a health warning.

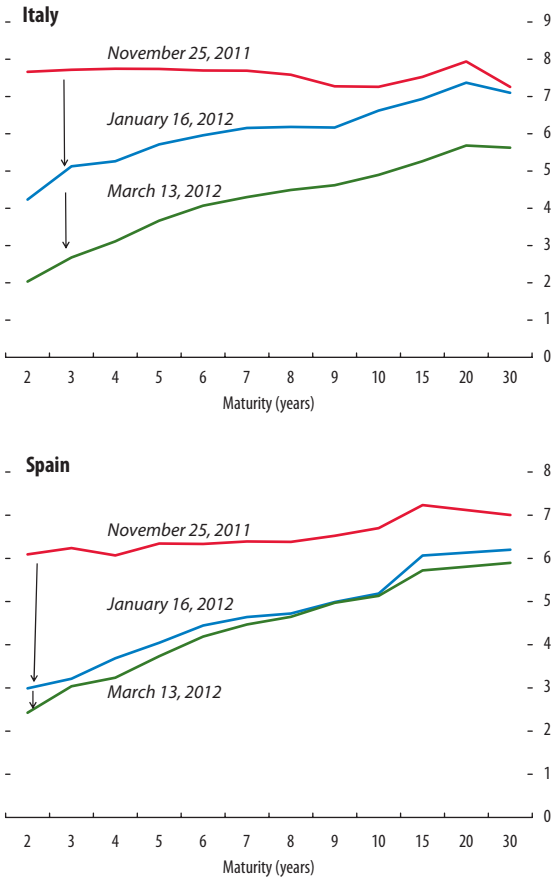
Note: Prepared by Jorge A. Chan-Lau, Tommaso Mancini Griffoli, Mark Stone, Giovanni Dell'Ariccia, Luc Laeven, Alasdair Scott, and Nico Valckx.

Figure 2.59. ECB LTROs and Bank Term Funding
(In billions of euros)



Sources: Dealogic; ECB; and IMF staff estimates.
Note: LTROs = longer-term refinancing operations.
[1]The change in euro area monetary and financial institutions' holdings of government bonds from end-November 2011 to February 2012.

Figure 2.60. Sovereign Bond Yields for Italy and Spain
(In percent)



Source: Bloomberg L.P.

The main drawbacks of the LTROs are listed below, along with the possibilities for mitigating them.

- *Reinforcing linkages between banks and sovereigns*. As noted, banks have used LTROs financing (about one-fifth of it) to purchase sovereign bonds (and tending to do so in their own national markets). As a consequence, exposure to sovereign bonds has increased. This risk would be less of a concern if sovereign yields remained at sustainable levels and bank funding normalized—in other words, in the complete policies scenario discussed in this GFSR.
- *Supporting weak banks that have nonviable business models instead of resolving them*. This effect could undermine credit growth, and ultimately GDP growth, and perpetuate risks to sovereign solvency. But rigorous and detailed supervision and resolution regimes, both at the euro area and national level, should mitigate this risk and ensure that support goes to solvent institutions undergoing liquidity problems. The importance of strengthening supervision and resolution should not be underestimated, as it would facilitate the orderly unwinding of ECB funding when economic and financial conditions normalize.
- *Concerns that the large expansion of the ECB balance sheet will lead to inflation*. However, the relatively large output gap, well-anchored inflationary expectations, and the temporary nature of the LTROs mean that this risk is not material at present; and it is unlikely to be significant for some time, given weak prospects for demand growth in the euro area because of widespread fiscal consolidation and deleveraging. The ECB also has ample fine-tuning instruments available to respond to any emerging inflationary pressures.

Potentially a more serious concern is policy complacency. Any sense of "mission accomplished" could weaken the resolve to undertake reforms necessary to address the underlying causes of the crisis. Policymakers and private sector financial institutions should continue to focus their efforts on strengthening banks' balance sheets to gradually reduce dependence on central bank funding.

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