

*Financial stability has broadly strengthened in advanced economies. However, as the U.S. transitions to a less accommodative monetary policy stance, global financial conditions are tightening, which poses new challenges and reveals vulnerabilities in some emerging market economies. Those potential spillovers could, in turn, wash back onto the shores of advanced economies. The key challenge in this environment is to make a successful transition from policy accommodation to self-sustaining, investment-driven growth while minimizing spillovers that threaten financial stability.*

In the wake of the global financial crisis, policy-makers in most countries established a supportive macroeconomic environment to facilitate the repair of over-leveraged balance sheets that were exposed by the crisis. Accommodative monetary and liquidity policies have been an essential element of this response, aimed at minimizing the economic damage wrought by impaired financial systems, weakened companies, and stressed sovereign balance sheets.

But the scaling back of certain extraordinary policy supports has not been accompanied by adequate preparations for a new environment of normalized, self-sustaining growth. Many advanced economies have been unable to sufficiently reduce precrisis debt loads—indeed, in general they have increased public indebtedness (Box 1.1). In the United States, green shoots are evident from the economic recovery under way, holding out the promise of self-sustaining growth, but further medium-term fiscal consolidation is required, as noted in the April 2014 *Fiscal Monitor*. Japan needs to complement its central bank's additional monetary stimulus by enacting structural reforms to

boost growth and reduce debt-related risks (Box 1.2). Emerging market economies face growing domestic vulnerabilities along with a heightened sensitivity to global conditions, and the euro area is confronted by the headwinds from the continued weakness of some corporate and bank balance sheets.

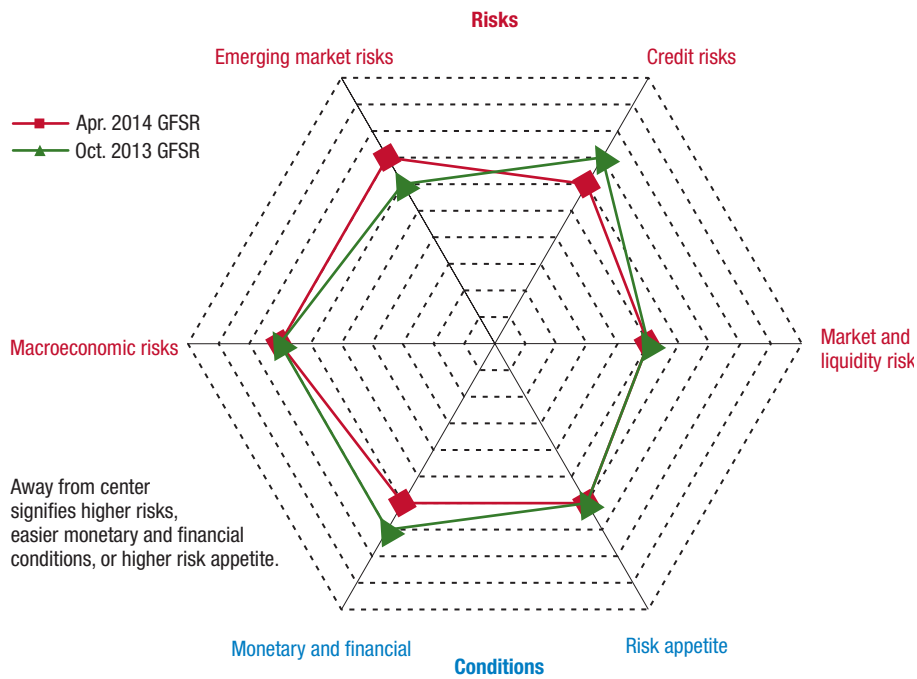
After reviewing changes in overall global financial stability since the October 2013 *Global Financial Stability Report* (GFSR), this chapter examines the ongoing transition challenges confronting the global financial system. The next section considers stability risks in light of the gradual normalization of monetary policy in the United States and the possibility of international spillovers. The third section examines three key challenges faced by certain emerging market economies. First, after a prolonged period of inflows and rising credit, private and public balance sheets have become more debt-laden and thus more sensitive to changes in domestic and external conditions. Second, macroeconomic imbalances have increased in a number of economies, including China, where credit has risen sharply over the past five years. Increased foreign investor participation in domestic bond markets exposes some emerging market economies to an additional source of capital outflow pressures. Third, changes in underlying market structures have reduced market liquidity, which could act as a powerful amplifier of volatility in the event of renewed turbulence. The final section shows that, in the euro area, the incomplete repair of bank balance sheets and the corporate debt overhang in some economies are hampering both financial integration and the flow of credit to the real economy.

### Financial Stability Overview

Since the October 2013 GFSR, financial stability has improved in the advanced economies and deteriorated somewhat in emerging market economies. As described in the April 2014 *World Economic Outlook*, global activity strengthened in the second half of 2013 along the path broadly projected, primarily driven by recovery in the advanced economies. In the United States, improving domestic demand continues to strengthen

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**Figure 1.1. Global Financial Stability Map**



the growth outlook. In the euro area, a pickup in growth has brightened prospects, although high debt, low inflation, and financial fragmentation still present downside risks. However, the growth outlook for emerging market economies has been somewhat lowered by tightening external conditions coupled with some tightening of policy rates amid rising domestic vulnerabilities. Together, these developments leave *macroeconomic risks* unchanged (Figures 1.1 and 1.2).

The firming up of the recovery in the United States has allowed the Federal Reserve to begin scaling back monetary stimulus. As a result, overall *monetary and financial conditions* have tightened, especially in emerging market economies, as real interest rates have increased.

Tighter external conditions and rising risk premiums now confront emerging market economies as a number of them address macroeconomic weaknesses and shift to a more balanced and sustainable framework for financial sector activity. Box 1.3 highlights the periods of turbulence experienced in emerging market economies since May 2013, which reflect a general repricing of external conditions and domestic vulnerabilities in the wake of changing expectations about U.S. monetary policy. Against this backdrop, *emerging market risks* have risen as external conditions have tightened and the tide of liquidity has turned.

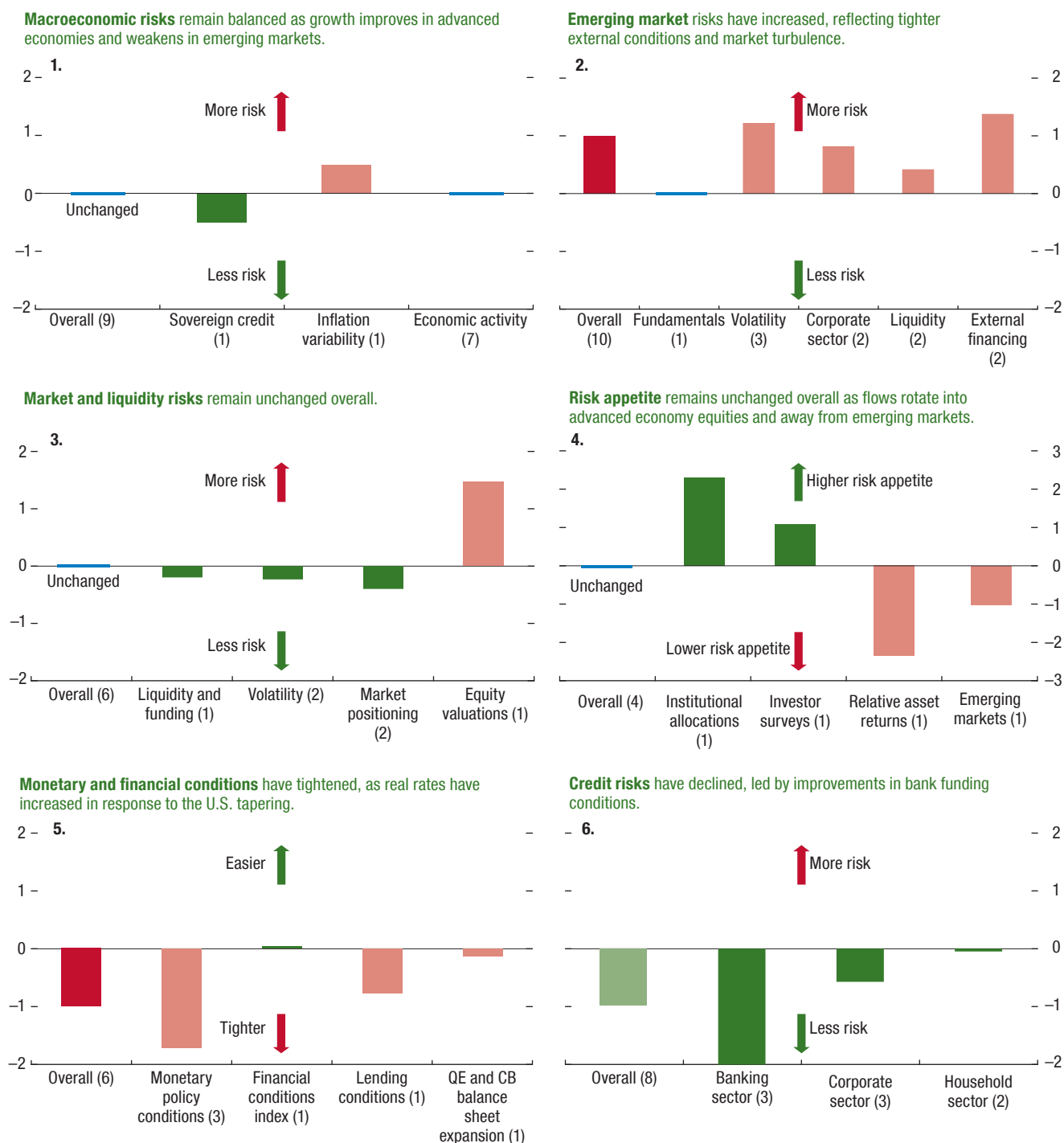
*Credit risks* have declined as vulnerabilities in banking systems have been reduced. In the euro area, banks have strengthened their capital positions amid ongoing deleveraging, resulting in higher price-to-book ratios and tighter spreads on credit default swaps. Despite a moderate deterioration in overall corporate credit quality, corporate spreads have narrowed.

Better central bank communication regarding the process of normalizing U.S. monetary policy has helped quell the associated market volatility. With improved access to market funding for banks and non-financial corporations, *market and liquidity risks* remain broadly unchanged. The appetite for credit instruments and other risk assets remains firm, but the decline of demand for emerging market assets leaves overall *risk appetite* unchanged.

### Normalizing U.S. Monetary Policy—A “Goldilocks” Exit?

*The United States faces several challenges to financial stability. The Federal Reserve’s tapering of its bond buying is setting the stage for a transition from liquidity-driven to growth-driven markets, but the search for yield is increasing, with rising leverage in the corporate sector and weakening underwriting standards in some*

**Figure 1.2. Global Financial Stability Map: Assessment of Risks and Conditions**  
*(Notch changes since the October 2013 GFSR)*



Source: IMF staff estimates.

Note: Changes in risks and conditions are based on a range of indicators, complemented with IMF staff judgment (see Annex 1.1. in the April 2010 GFSR and Dattels and others (2010) for a description of the methodology underlying the Global Financial Stability Map). Overall notch changes are the simple average of notch changes in individual indicators. The number next to each legend indicates the number of individual indicators within each subcategory of risks and conditions. For lending standards, positive values represent a slower pace of tightening or faster easing. CB = central bank; QE = quantitative easing.

### Box 1.1. Deleveraging Trends in Selected Advanced Economies

Since the global financial crisis, advanced economies have made uneven progress in deleveraging private balance sheets while generally increasing their public indebtedness.

Table 1.1.1 shows current debt levels; Table 1.1.2 shows the varying degrees of progress in reducing debt loads from their postcrisis peaks; and Figure 1.1.1 shows sectoral debt during the past 10 years relative to 2008. The broad results are as follows:

- Financial institutions have generally been the most successful in reducing their debt ratios. Debt has declined most sharply in Greece, Ireland, the United Kingdom, and the United States. But debt levels continue to be at the upper end of the range for the sample in Ireland, Japan, and the United Kingdom. Bank capital positions have improved in stressed euro area economies, but credit conditions remain strained, in part due to the incomplete state of bank balance sheet repair.
- Households have sharply reduced their debt levels (as a share of GDP) since 2009, especially

Prepared by Reinout De Bock and Xiangming Fang.

**Table 1.1.1. Indebtedness and Leverage in Selected Advanced Economies**  
(Percent of 2013 GDP, unless noted otherwise)

	Canada	Japan	United Kingdom	United States	Euro area	Belgium	France	Germany	Greece	Ireland	Italy	Portugal	Spain
<b>Government</b>													
Gross debt	89	243	90	105	95	100	94	78	174	123	133	129	94
Net debt	39	134	83	81	72	82	88	56	168	100	111	118	60
Primary balance	-2.6	-7.6	-4.5	-4.1	-0.4	0.4	-2.2	1.7	1.5	-3.4	2.0	-0.7	-4.2
<b>Household liabilities</b>													
Gross financial <sup>1</sup>	94	73	95	81	71	58	68	58	71	109	56	98	84
Net financial	-155	-261	-195	-292	-137	-217	-140	-126	-74	-91	-181	-138	-90
<b>Nonfinancial corporates<sup>2</sup></b>													
Gross debt <sup>3</sup>	47	78	73	54	68	...	68	43	66	115	78	118	99
Debt to equity (%)	54	69	50	48	47	...	31	55	130	...	87	67	64
<b>Financial institutions</b>													
Gross debt <sup>4</sup>	51	196	242	83	153	101	165	95	24	699	105	45	109
Bank capital to assets (%) <sup>5</sup>	5.0	5.5	5.0	12.0	...	6.2	5.2	5.2	7.3	7.3	5.5	6.9	5.7
<b>External liabilities</b>													
Gross <sup>6</sup>	146	88	597	158	208	439	322	209	240	2,060	157	294	233
Net <sup>6</sup>	4	-64	-6	25	13	-46	21	-46	117	108	29	117	98
Current account balance	-3.2	0.7	-3.3	-2.3	2.3	-1.7	-1.6	7.5	0.7	6.6	0.8	0.5	0.7

Sources: ECB; national statistics; IMF: International Financial Statistics database, Financial Soundness Indicators (FSIs), and World Economic Outlook database; and IMF staff estimates.

Note: Table shows most recent data available. Color coding is based on cross-country sample since 2009. Cells shaded in red indicate a value in the top 25 percent of a pooled sample of all countries since 2009. Green shading indicates values in the bottom 50 percent, yellow in the 50th to 75th percentile.

<sup>1</sup>Household debt includes all liabilities and not just loans.

<sup>2</sup>Includes an adjustment for estimated intercompany loans, where necessary.

<sup>3</sup>Some large multinational enterprises have group treasury operations in financial centers (e.g., Ireland), increasing corporate debt.

<sup>4</sup>High gross debt in Ireland in part reflects its role as an international financial services center.

<sup>5</sup>Data from IMF Financial Soundness Indicators database. Treatment of derivatives varies across countries.

<sup>6</sup>Data from IMF International Financial Statistics database.

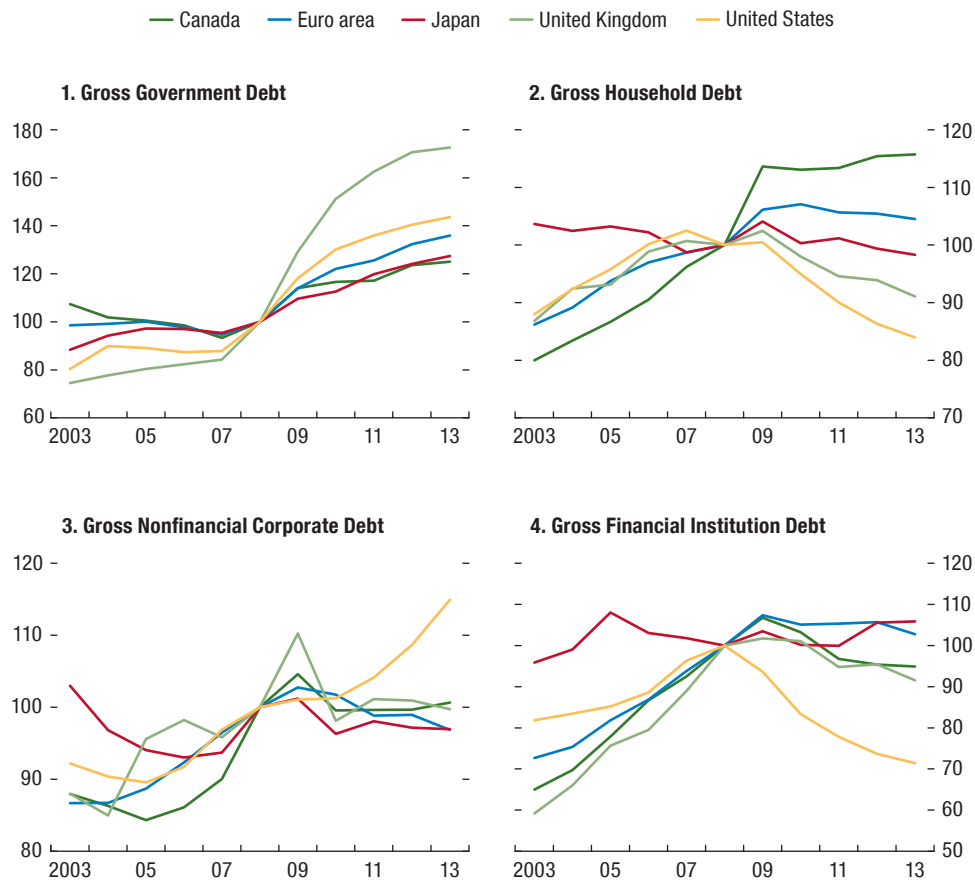
**Table 1.1.2. Reduction in Gross Debt Levels in Selected Advanced Economies from the 2009–13 Peak**  
(Percent of GDP)

	Canada	Japan	United Kingdom	United States	Euro area	Belgium	France	Germany	Greece	Ireland	Italy	Portugal	Spain
Government	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.4	0.0	0.0	0.0	0.0	0.0
Household	0.0	6.3	12.3	16.3	1.8	0.0	0.6	6.9	5.0	22.7	0.6	7.7	8.6
Nonfinancial corporates	2.9	4.7	9.8	0.0	5.6	...	1.1	6.6	7.3	9.8	4.7	1.3	21.1
Financial institutions	6.4	4.0	40.4	35.6	7.5	25.7	13.8	38.1	51.2	50.1	4.9	24.1	16.7
External liabilities	0.0	0.0	167.3	10.0	8.2	48.6	0.0	27.6	0.0	24.4	1.1	18.1	5.1

Sources: ECB; national statistics; IMF: International Financial Statistics database, Financial Soundness Indicators (FSIs) and World Economic Outlook database; and IMF staff estimates.

Box 1.1 (continued)

**Figure 1.1.1. Trends in Indebtedness in Selected Advanced Economies since the Crisis (Index: 2008 = 100)**



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

in program countries as well as in Japan, the United Kingdom, and the United States. But gross household debt remains high in Ireland, Portugal, and the United Kingdom. Despite optimism in banks and sovereigns, the net asset position of households remains weak in Greece, Ireland, and Spain.

- Although leverage among nonfinancial firms has come down from its peak in many economies, the corporate sector in parts of the euro area is still highly leveraged because countries have been slow to address the corporate debt overhang. In the United States, while corporate leverage is relatively low, companies have increased their borrowing in recent years.

- Current account deficits have reversed sharply in southern Europe amid rapid import compression and improving competitiveness, even with significant public borrowing needs. But net foreign liabilities remain high in Greece, Ireland, Portugal, and Spain.
- The substantial progress made in repairing private balance sheets has come at the cost of public indebtedness (Figure 1.1.1), which is now at peak levels for many major economies. With the exception of Germany, government debt levels trended higher in 2013 for most economies. Among the sample economies, it remained highest in Greece, Italy, Japan, and Portugal even as Greece and Italy posted primary surpluses.

**Box 1.1 (continued)**

In sum, still-high debt leaves balance sheets in some cases weak and less resilient to the higher interest rates that will come with monetary normalization. The corporate debt overhang in parts of the euro area needs to be resolved to complete the transition from financial

fragmentation to integration. Emerging market economies that releveraged in the wake of the global financial crisis may now find it difficult to bring their financial systems in balance as volatility rises, growth slows, and exchange rates come under pressure.

*pockets of credit markets. Weaker market liquidity and the rapid growth of investment vehicles that are more vulnerable to redemption risk could amplify financial or economic shocks. Policymakers must carefully manage these growing risks to ensure stability and help achieve a smooth exit from unconventional monetary policies. The eventual path of the exit could have important international spillovers. Emerging market economies are especially vulnerable if U.S. term premia or expected short rates rise faster than expected.*

*Managing the transition from liquidity-driven to growth-driven markets*

To achieve a smooth exit from unconventional monetary policy, the extraordinary monetary accommodation and liquidity conditions supporting markets must give way to increased corporate investment, higher employment, and self-sustaining growth. So where is the United States along this path of recovery? As discussed in the April 2014 *World Economic Outlook*, green shoots are becoming apparent: credit conditions have eased as bank balance sheets have strengthened, corporate loan demand has increased, and corporate investment appears set to increase (Figure 1.3).

However, the current credit cycle differs from previous cycles in important ways (Figure 1.4). Debt issuance is much higher because corporations are borrowing opportunistically to take advantage of low interest rates and lengthening their debt maturities and pushing out refinancing risk to take advantage of investor appetite for debt. Balance sheet leverage has also risen via debt-financed buybacks of equity to boost shareholder returns. Thus, increased borrowing has not yet translated into higher investment by nonfinancial corporations, whose depressed capital expenditures are taking up a smaller share of internal cash flows than in previous cycles. Corporate leverage (the ratio of net debt to

GDP) is higher at this point of the cycle than during previous episodes, yet corporate default rates remain low (Figure 1.5).<sup>1</sup> These characteristics of corporate balance sheets are typically seen at a much later stage of the credit cycle, suggesting that firms are more vulnerable to downside risks to growth than in a normal credit cycle.

*How much are side effects from accommodative monetary policies growing?*

The prolonged period of accommodative policies and low rates has led to a search for yield, which boosts asset prices, tilts the market balance in favor of borrowers, and sends funds into the nonbank financial system (FSB, 2013). All of these developments are part of the intended effects of extraordinary monetary policies, designed to support corporate and household balance sheet repair and promote the recovery. But these developments also have the potential side effect of elevating credit and liquidity risks. How large have these side effects become?

Robust risk appetite has pushed up U.S. and European equity prices. U.S. equity prices are in line with the long-term trend of the regular price/earnings (P/E) ratio, but they are becoming stretched as measured by the Shiller P/E ratio (Figure 1.6). The largest contribution to the strong U.S. equity returns in 2013 came from a decline in the equity risk premium (Figure 1.7). In contrast, equities in emerging market economies stagnated, and in Japan, yen depreciation boosted earnings and returns. Further liquidity-driven boosts in asset prices could force overvaluation and lead to the development of bubbles. Looking ahead, markets risk disappointment—especially in an environment of rising interest rates—unless equity valuations become

<sup>1</sup>Corporate leverage indicators based on other metrics show the same trend.

**Box 1.2. Is the Japanese Financial System Rebalancing, and What Are the Financial Stability Implications?**

When the Bank of Japan initiated its program of quantitative and qualitative monetary easing (QQE) in April 2013, it expected the program to affect the financial system through three channels: a further decline in long-term interest rates (“interest rate channel”); a rise in expected inflation (“expectations channel”); and a shift in the portfolios of financial institutions from Japanese government bonds to other assets, such as loans, stocks, and foreign securities (“portfolio rebal-

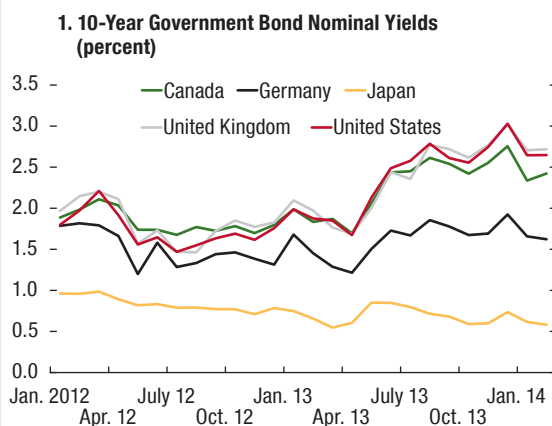
ancing channel”). This box assesses progress in these channels, especially the portfolio rebalancing channel.

The QQE program has so far had more success in the interest rate and expectations channels than in the portfolio channel. Yields on Japanese government bonds (JGBs) have remained low despite the rise in bond yields in other advanced economies (Figure 1.2.1, panel 1). Near-term inflation expectations have risen over the last year, although long-term expecta-

Prepared by Serkan Arslanalp.

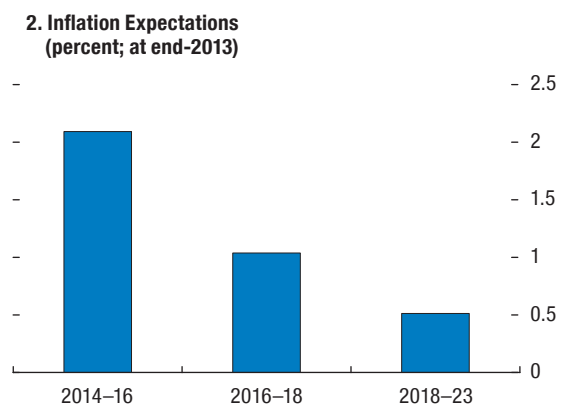
**Figure 1.2.1. Japanese Financial System**

JGB yields have remained low despite the rise in bond yields in other advanced economies.



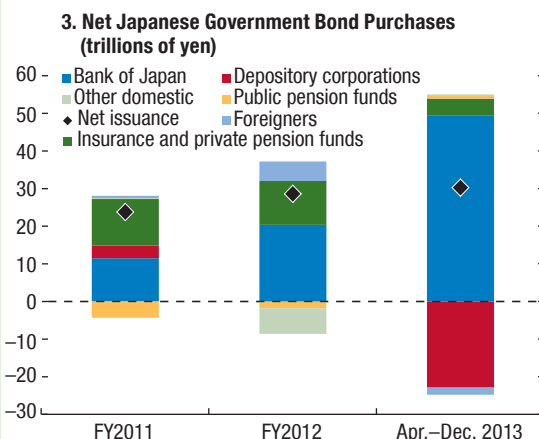
Source: Bloomberg L.P.

Near-term inflation expectations have risen, although long-term expectations are still below 2 percent.



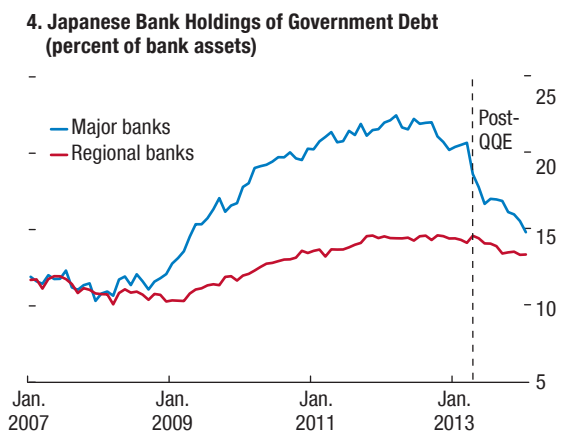
Sources: Bloomberg L.P.; and IMF staff estimates. Note: Estimated as difference between breakeven rates of 3-, 5- and 10-year inflation-indexed bonds.

Japanese banks have become net sellers of JGBs, as Bank of Japan now purchases more than net issuance of JGBs....



Sources: Bank of Japan, *Flow of Funds*; and IMF staff estimates. Note: Fiscal year ends at end-March of following year. JGB = Japanese government bond.

... reducing bank holdings of government debt and weakening sovereign-bank linkages.



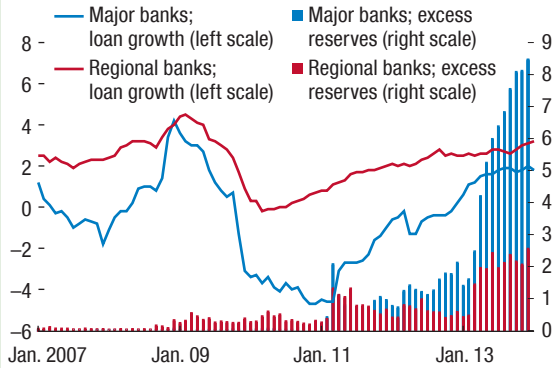
Sources: Bank of Japan; and IMF staff estimates. Note: Government debt includes Japanese government bonds and treasury discount bills. QQE = quantitative and qualitative monetary easing.

**Box 1.2 (continued)**

**Figure 1.2.1. Japanese Financial System (continued)**

Meanwhile, banks are accumulating significant excess reserves, while domestic lending is picking up.

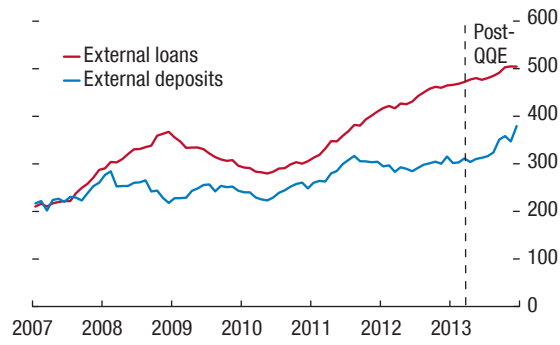
**5. Japanese Banks: Excess Reserves and Domestic Lending (excess reserves as a percent of bank assets; year-over-year percent changes in loans)**



Sources: Bank of Japan; and IMF staff estimates.  
Note: Domestic loans indicate bank lending to resident nonfinancial corporations and households.

External bank loans continue to rise in excess of external deposits, adding to foreign exchange funding risks.

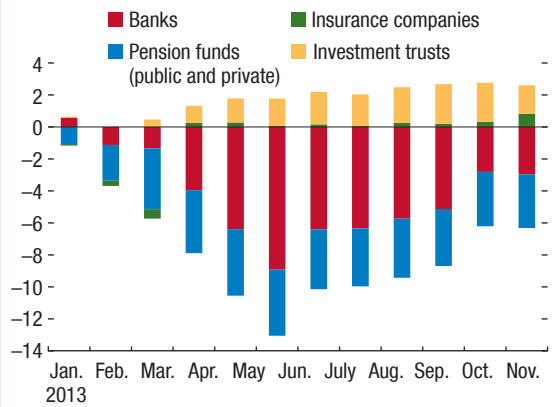
**6. Japanese Banks: External Loans and Deposits (billions of U.S. dollars)**



Sources: Bank of Japan; and IMF staff estimates.  
Note: QQE = quantitative and qualitative monetary easing.

Outward portfolio investments increased in the second half of 2013, driven by banks...

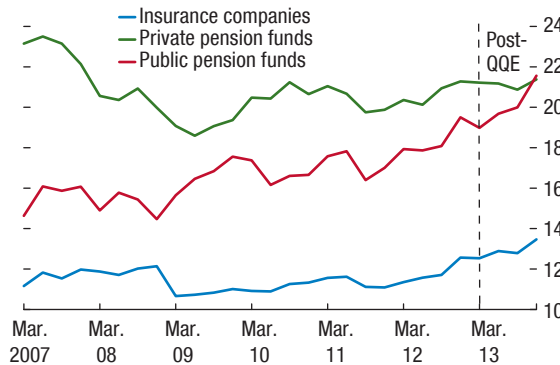
**7. Cumulative Outward Portfolio Investment of Selected Investors (trillions of yen; since end-2012)**



Sources: Bank of Japan; and IMF staff estimates.  
Note: Pension fund flows are estimated from cross-border transactions in trust accounts of banks.

... as home bias remains broadly in place for insurance companies and private pension funds.

**8. Japanese Insurance and Pension Funds: Foreign Security Holdings (percent of total assets)**



Sources: Bank of Japan, *Flow of Funds*; and IMF staff estimates.  
Note: QQE = quantitative and qualitative monetary easing.

tions are still below the central bank's 2 percent target (Figure 1.2.1, panel 2). But progress on portfolio rebalancing remains incomplete.

Although JGB purchases by the Bank of Japan (BoJ) have helped major domestic banks shift out of JGBs

and have reduced interest rate risk, both major and regional banks have accumulated large excess reserves at the BoJ, which could undermine their profitability. Moreover, outward portfolio investments (that is, net purchases of foreign securities) have picked up since



**Box 1.2 (continued)**

mid-2013, but so far the trend appears to be limited mainly to banks and public pension funds. Japanese insurance companies and private pension funds continue to maintain a strong home bias and appetite for JGBs.

**Banks**

Under QQE, domestic banks have been the main sellers of JGBs to the central bank (Figure 1.2.1, panel 3). Japanese banks sold about 20 trillion yen of JGBs between March and December 2013, according to the latest Flow of Funds data. All of Japan's top three banks reduced their JGB portfolios during this period, and more recent data suggest that the selling continued through January. The resulting decline in holdings of government debt by the major banks weakened bank-sovereign linkages, as envisaged in the October 2013 GFSR (Figure 1.2.1, panel 4). Regional banks' government debt holdings have also begun to decline, although regional banks rely on the income from JGBs more than major banks, and as a result, their duration risk remains high.

Domestic lending is picking up, having risen during 2013 by 2 percent for major banks and 3 percent for regional banks. As lending picks up further, this could partly pare banks' excess reserves at the BoJ, which are accumulating especially quickly for the major banks at a near zero interest rate (Figure 1.2.1, panel 5).

Japanese banks continue to expand their overseas loan portfolios (Figure 1.2.1, panel 6), which exceed \$500 billion for the first time in 15 years. Most of the rise in overseas loans reflects expansion into Association of Southeast Asian Nations countries, including Indonesia and Thailand. About 60 percent of external loans are financed through external deposits; the rest are financed through foreign-currency-denominated bonds and short-term lending instruments, such as foreign exchange swaps, to hedge foreign exchange risk.

Banks are increasing their outward portfolio investments after having repatriated foreign assets in the first half of 2013 (Figure 1.2.1, panel 7). A significant portion of their portfolios include U.S. Treasury securities, whose yields now significantly exceed those of JGBs; the trend toward foreign bonds could continue if such differentials remain high.

**Pension and insurance funds**

Insurance and private pension funds maintain a strong home bias and an appetite for JGBs (Figure 1.2.1, panel 8). Outward portfolio investments by

insurance companies have not risen substantially since March 2013 (Figure 1.2.1, panel 7). But they have risen for public pension funds, spurred by the recent shift in the asset allocation targets of the largest pension fund—the Government Pension Investment Fund—from JGBs to foreign securities, which portends further such investments (Figure 1.2.1, panel 8).<sup>1</sup>

**Financial stability implications**

Should they persist, these trends have three major implications for financial stability. First, the rapid growth of excess reserves could create a substantial drag on bank profitability. This risk is more prominent for major banks, which already have 8 percent of assets in excess reserves earning near-zero interest rates. But the risk also exists for regional banks, whose profitability was low to begin with. A further pickup in lending would partly offset this drag, but such a pickup depends on raising credit demand in the economy, including through structural reforms.

Second, the increase in cross-border activity of Japanese banks is welcome but poses foreign exchange funding risks and cross-border supervisory challenges. Further progress in securing stable and long-term foreign exchange funding is needed for Japanese banks to reduce their reliance on foreign exchange hedges.

Third, the recent outward orientation of the largest public pension fund is a positive step. But, at \$2 trillion, assets in all public pension funds are only one-third the size of assets held by private pension funds and insurance companies. QQE could become much more effective if those private sector asset managers were also to reduce their home bias and contribute to an overall portfolio rebalancing. Moreover, such an expansion of rebalancing could significantly boost the capital inflows of the recipient countries, especially if it were directed to those with relatively small markets. For example, a 1 percentage point shift of allocations by Japanese private sector asset managers to emerging market economies could boost their capital inflows by \$60 billion.

<sup>1</sup>In late 2013, the Government Pension Investment Fund (with more than \$1 trillion in assets under management) changed the portfolio weight of foreign securities from 17 percent to 23 percent. Over time, this could lead to capital outflows of more than \$60 billion.

**Box 1.3. Recent Periods of Turbulence in Emerging Market Economies**

Emerging market economies have suffered bouts of market turbulence since May 2013 (Figure 1.3.1). This turbulence reflects a general repricing of external conditions and domestic vulnerabilities, as well as the new uncertainties for growth.

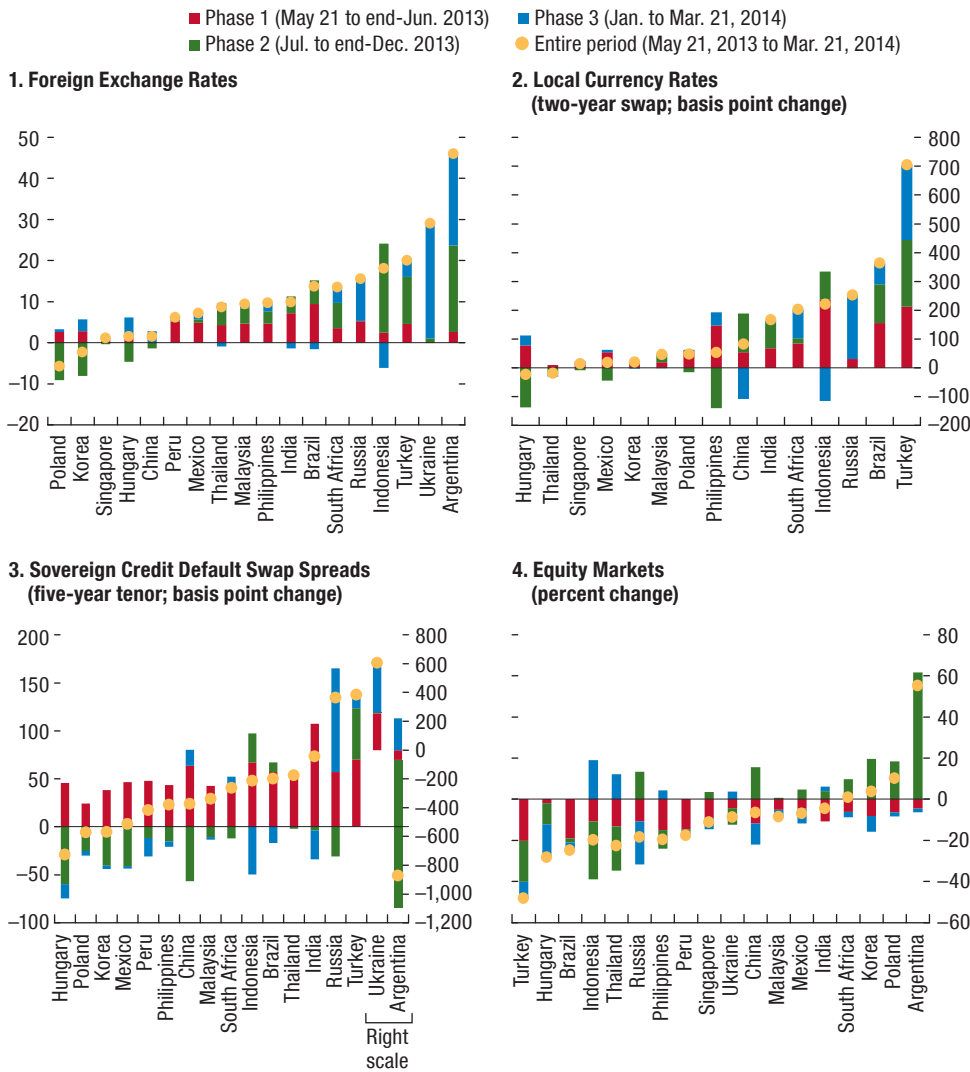
**Impact of U.S. monetary policy (Phase 1, May 21 to end-June 2013).** Last May, as the Federal Reserve signaled steps toward normalizing monetary policy,

changes in term premiums and in expectations about the path and timing of adjustment in U.S. rates had a profound impact on global markets. Exchange rates depreciated and interest rates rose sharply. Credit default swap (CDS) spreads jumped broadly across emerging markets—no one was spared from the anticipation of exit from extraordinary monetary policies in the United States.

**Emerging market economies with macroeconomic imbalances under strain (Phase 2, July**

Prepared by Peter Dattels and Matthew Jones.

**Figure 1.3.1. Asset Class Performance**  
(Percent change)



Sources: Bloomberg L.P.; Morgan Stanley Capital International.

**Box 1.3 (continued)**

**to end-December 2013).** This period gave way to greater differentiation among economies as investors narrowed their focus to those economies with large external financing needs and/or other macroeconomic imbalances. Much of the attention was on Brazil, India, Indonesia, South Africa, and Turkey. Sovereign CDS spreads generally reversed, partly as a result of improved communication by the Federal Reserve.

**Idiosyncratic risks (Phase 3, January to mid-March 2014).** Mid-January 2014 saw an outbreak of additional turmoil, this time triggered by idiosyncratic factors and several country-specific vulnerabilities. For instance, there were no broad-based market moves that would suggest increased concerns because the Federal Reserve had started to taper its bond purchases, nor did CDS markets signal a new round of emerging market credit stress. What stands out are market concerns about credit risk, a repricing of political risks in Thailand, concerns about policy vulnerabilities in Argentina, political risks in Turkey, and further pressure on South African markets. Importantly, though, countries that had taken policy actions since May 2013 showed increased resilience, with little pressure on India and Indonesia, for example.

**Growth worries?** Equity markets are signaling continuing concerns about growth prospects in emerging market economies. Initially, the downturn related to concerns about tighter external conditions, but in more recent periods the focus has shifted to greater uncertainty surrounding growth prospects, even as the U.S. economy recovers and U.S. equities are in positive territory.

**Geopolitical risks in Russia and Ukraine have so far had limited spillovers to broader markets.** The financial impact of these political tensions has largely been confined to local markets, triggering an increase in Russian and Ukrainian sovereign credit risk, a sharp depreciation of the ruble and the hryvnia, and a rise in local bond yields. As direct economic and financial linkages of most European countries with Russia and Ukraine are limited outside the energy sector, spillovers have been modest so far. However, CIS countries, and to a lesser extent the Baltics, have strong links through trade, remittances, FDI, and bank flows to Russia and are likely to see a more significant impact. Greater spillovers to activity beyond neighboring trading partners could emerge if further turmoil leads to a renewed bout of increased risk aversion in global financial markets, or from disruptions to trade and finance.

**Impact on advanced economy markets.** The recent bouts of turmoil in emerging markets have reverberated in mature markets, through several channels. Outflows have supported some safe haven assets—such as U.S. Treasury securities and Japanese government bonds—while advanced economy equity markets and inflows to the euro area have appeared to respond to emerging market weakness (notably in May–June 2013 and January–February 2014). The strength of these responses suggests that policymakers in advanced economies will increasingly need to take into account the spillover of their policies to emerging markets and the potential impact of these spillovers on their own economies.

better supported by rising earnings, capital investment, and aggregate demand.

The search for yield has allowed U.S. companies, including those rated as speculative, to refinance and recapitalize at a rapid pace. High-yield issuance over the past three years is more than double the amount recorded in the three years before the last downturn. This trend is accelerating, with gross issuance of high-yield corporate bonds reaching a record \$378 billion in 2013. Similarly, \$455 billion in institutional leveraged loans were issued in 2013, far exceeding the previous high of \$389 billion in 2007 (Table 1.1). As a result, U.S. high-yield bonds and leveraged loans reached \$1.8 trillion outstanding at end-2013.

In the face of such strong demand and favorable pricing, issuers have more frequently been able to issue debt with less restrictive conditions and fewer protec-

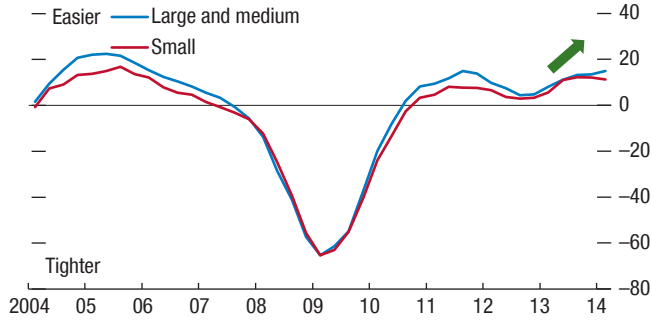
tions for lenders. The proportion of bonds with lower underwriting standards (such as covenant-lite and second-lien loans) is on the rise, as it was before the financial crisis (Figure 1.8), and this could contribute, as it did then, to higher default rates and lower recoveries as the credit cycle turns. The normal risk premium of 30–35 basis points for covenant-lite loans has dwindled; despite their lower historical recovery rates, they now trade on par with comparable loans with stronger protections (OFR, 2013). Debt in highly leveraged loans now amounts to almost seven times EBITDA (earnings before interest, taxes, depreciation, and amortization), close to levels last seen in the 2006–08 period (Figure 1.9). U.S. bank regulators have publicly expressed concern about the increased incidence of leveraged loans with weaker underwriting standards, and market participants report increased

**Figure 1.3. Federal Reserve Lending Survey and Institute for Supply Management New Orders: Green Shoots?**

Corporate lending standards are loosening...

**1. Corporate Lending Standards**

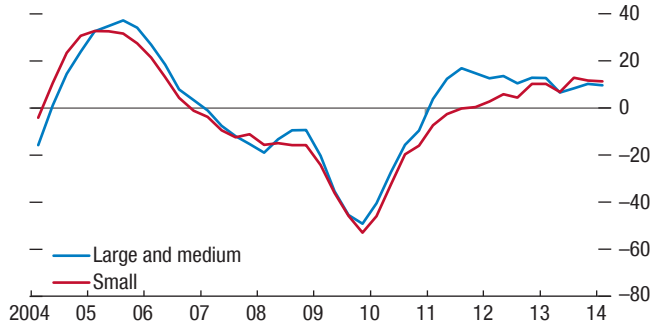
(net percent of respondents reporting loosening standards; four-quarter moving average)



...while corporate loan demand is rising...

**2. Corporate Loan Demand**

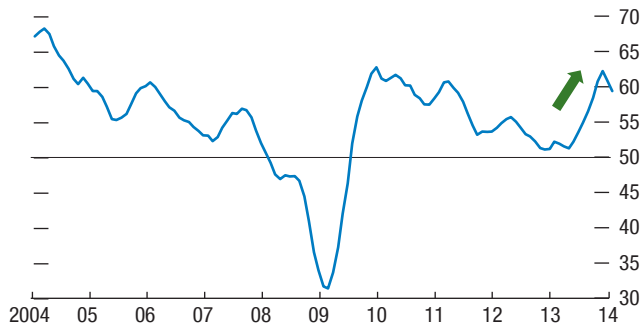
(net percent of respondents reporting stronger demand; four-quarter moving average)



... and new orders are growing at a faster pace.

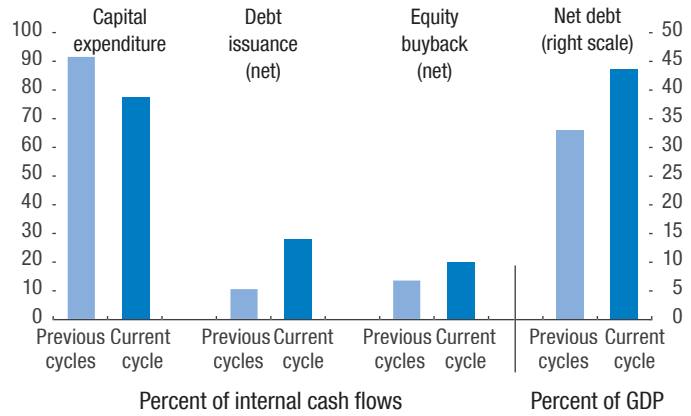
**3. ISM New Orders Index**

(six-month moving average; >50 indicates expansion)



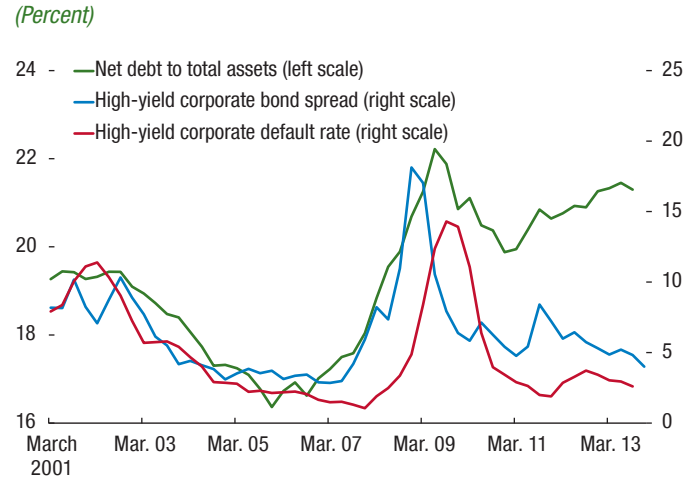
Sources: Federal Reserve; Institute for Supply Management; and IMF staff estimates.  
Note: ISM = Institute for Supply Management.

**Figure 1.4. U.S. Nonfinancial Corporations: Credit Cycle Indicators**



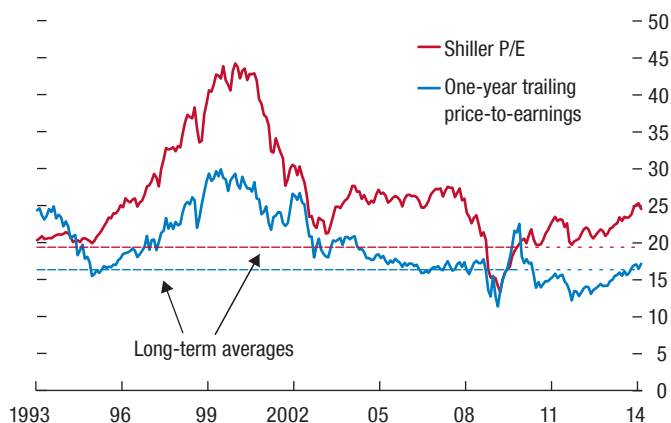
Sources: Bank of America Merrill Lynch; Federal Reserve; and IMF staff estimates. Note: Credit cycles are identified based on actual default rates. They start when the default rate on high-yield corporate bonds, tracked by Bank of America Merrill Lynch, peaked in June 1991, January 2002, and October 2009, and cover the four-year period afterward. All variables are measured against internal cash flows over the four-year period, except for net debt, which is measured against GDP at end of the period.

**Figure 1.5. U.S. Nonfinancial Corporations: Key Financial Indicators (Percent)**



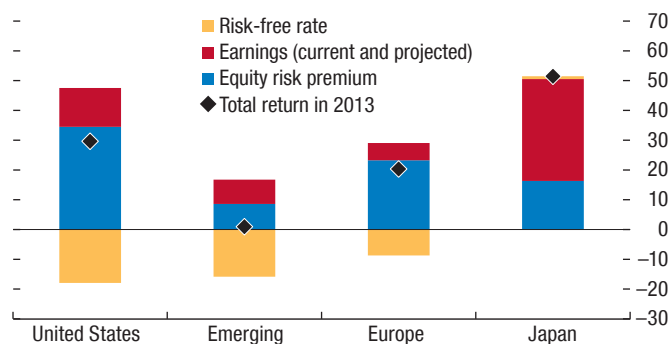
Sources: Bank of America Merrill Lynch; Federal Reserve; and IMF staff estimates.

**Figure 1.6. S&P 500 Price-to-Earnings Ratio**



Sources: Haver Analytics; and IMF staff estimates.

**Figure 1.7. Decomposition of Equity Market Performance**  
(Percent contributions in 2013)



Sources: Bloomberg L.P.; International Broker's Estimate System; and IMF staff estimates.

Note: Based on a three-stage dividend discount model.

**Table 1.1. Issuance Trends for U.S. High-Yield Bonds and Loans**  
(Billions of U.S. dollars)

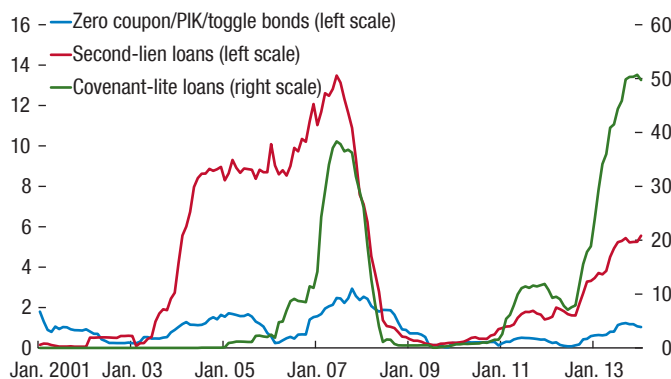
	High-Yield Bond Ratings					Weaker Underwriting of High-Yield Bonds			Leveraged Loans	Weaker Underwriting of Leveraged Loans			CLOs
	BB	B	CCC	NR	Total	Zero Coupon	PIK Toggle	Total	Total	Second-lien	Covenant-lite	Total	Total
2007	31.8	67.0	50.6	4.4	153.9	0.5	17.5	18.0	388.8	30.2	115.2	145.3	93.1
2008	14.1	25.7	12.9	2.5	55.2	0.5	6.6	7.1	72.4	3.0	2.5	5.5	18.0
2009	58.9	103.5	14.9	2.2	179.5	0.0	1.9	1.9	38.3	1.5	2.7	4.3	0.6
2010	80.1	177.7	39.3	6.6	303.7	0.3	0.9	1.2	158.0	4.9	8.0	12.9	4.2
2011	80.4	131.9	39.8	5.3	257.4	1.0	3.7	4.6	231.8	7.0	59.1	66.1	13.2
2012	103.6	195.5	57.3	9.3	365.7	0.0	7.0	7.0	295.3	17.2	97.5	114.7	55.5
2013	128.8	172.4	72.9	4.2	378.3	0.0	15.2	15.2	454.9	28.9	279.1	308.0	82.2

Sources: Bank of America Merrill Lynch; and IMF staff estimates

Note: CLOs = collateralized loan obligations; NR = not rated; PIK = payment-in-kind.

**Figure 1.8. U.S. High-Yield Bond and Leveraged Loan Issuance with Lower Standards**

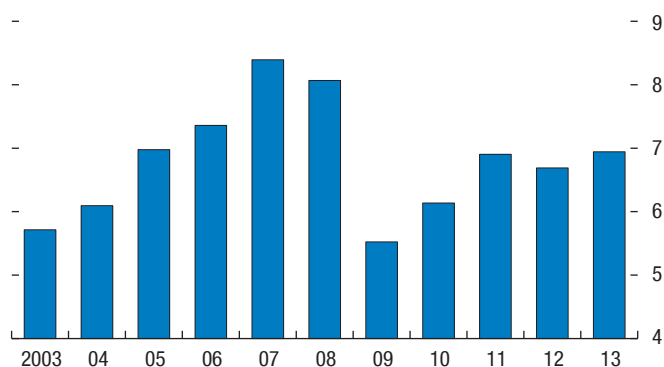
(12-month issuance as a percent of market size)



Sources: Bank of America Merrill Lynch; and IMF staff estimates.

Note: PIK = payment-in-kind.

**Figure 1.9. Leveraged Loans: Debt-to-EBITDA Ratio for Highly Leveraged Loans**



Sources: S&P Capital IQ.

Note: Highly leveraged loans are defined as the top fifth of leveraged loans by initial Debt/EBITDA, with EBITDA over \$50 million. EBITDA = earnings before interest, taxes, depreciation, and amortization.

regulatory scrutiny of loans to borrowers with debt in excess of six times EBITDA.<sup>2</sup>

*Rising liquidity risks could amplify shocks and complicate the exit from extraordinary monetary policies*

Two liquidity-related trends could also pose stability risks: weaker market liquidity caused by reduced dealer inventories; and a significant shift in credit markets toward the involvement of investment vehicles that are more vulnerable to redemption risk. The confluence of these forces, combined with the increased prominence of the nonbank financial sector in credit provision, could complicate the Federal Reserve's goal of achieving a smooth exit (Figure 1.10, panel 1).

As described in previous editions of the GFSR, market making at banks has shrunk as they have become less willing to commit balance sheet resources to trading activity. Liquidity in the corporate bond market has thus declined, and investors find it increasingly difficult to execute large trades.

Of more structural significance is the related increase in credit market investments via mutual funds and exchange-traded funds (ETFs). In their search for yield, investors have increased their demand for corporate credit exposure. Given the reduced inventory at banks, the share of corporate bonds and syndicated loans held by households, mutual funds, and ETFs now exceeds the share that traditional institutional investors such as insurance companies and pension funds hold directly or hold indirectly through collateralized loan obligations (CLOs) (Figure 1.10, panels 2 and 3).

The concern is that if investors seek to withdraw massively from mutual funds and ETFs focused on relatively illiquid high-yield bonds or leveraged loans, the pressure could lead to fire sales in credit markets (Stein, 2013). Indeed, heavy outflows from corporate bond mutual funds and ETFs in May–June 2013 was accompanied by a rise in high-yield corporate bond spreads, in contrast with previous episodes when rising Treasury yields were accompanied by lower credit spreads (Figure 1.10, panels 4 and 6). Further liquidity risks could arise because leveraged loan mutual funds rely on bank lines of credit (LOCs) to meet redemptions, as loan sales typically take 20–25 days to settle. Banks that extend these lines to loan funds may also

<sup>2</sup>According to the Federal Reserve's January Senior Loan Officer Opinion Survey, banks are reporting tighter debt-to-EBITDA restrictions on leveraged loans in response to the supervisory guidance issued in March 2013 ([www.federalreserve.gov/boarddocs/snloansurvey](http://www.federalreserve.gov/boarddocs/snloansurvey)).

have their own exposure to leveraged loans via balance sheet holdings, CLO warehouses, or total return swaps. In case of a disruption to the leveraged loan market, banks could be more likely to reduce LOCs, generating an adverse feedback loop.

Mutual funds and fixed-income ETFs also have a liquidity mismatch with the over-the-counter assets they reference (Figure 1.10, panel 5). Occasionally, this liquidity mismatch creates a feedback loop between the funds and the underlying assets that can exacerbate selloffs, particularly when dealer inventories are too lean to act as a buffer.<sup>3</sup> This feedback was seen in high-yield bonds in 2008. There is a risk that fire sales in illiquid markets could spill over to other sectors of the bond market and to a broader range of investors, particularly if it affects highly leveraged investors (such as mortgage real estate investment trusts and hedge funds), which rely on short-term funding.

*Managing a smooth exit from extraordinary monetary policies*

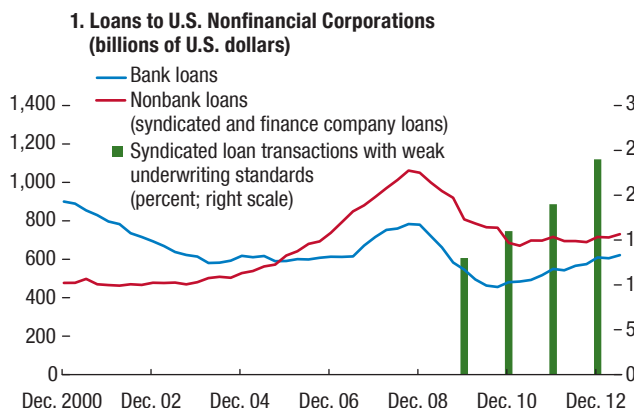
The previous discussion examined some of the pitfalls of current extraordinary monetary policies. Those aside, what are the inherent challenges of exiting from such policies?

In May 2013, global markets were plunged into turmoil by the Federal Reserve's announcement of its plans to taper the bond purchases that constituted one element of its extraordinary policies—quantitative easing. U.S. Treasury yields surged, and expectations for the eventual liftoff of the target policy rate were foreshortened. Global rates and volatility spiked, and emerging market economies came under substantial pressure. Since then, the Federal Reserve has persuaded markets that its decisions to reduce quantitative easing are independent of any decisions to hike policy rates. The improved communication reduced market volatility in the United States even as Treasury yields rose, and short-term rates somewhat decoupled from long rates (Figure 1.11, panel 1). Indeed, during the

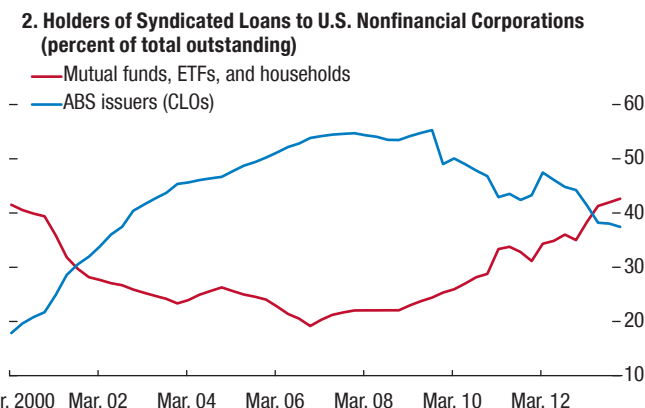
<sup>3</sup>Flight-prone investors can reduce their exposures to exchange-traded products by selling ETFs and mutual funds. However, with market participants unable to trade large blocks of high-yield bonds, and dealers unwilling or unable to use their balance sheets to make markets, high-yield bond investors may find their portfolios depreciating rapidly with no way to meaningfully reduce their holdings. Under these circumstances, some investors may choose to hedge their high-yield bond portfolios by shorting the corporate bond ETF; that exacerbates selling pressure, which, in turn, necessitates additional ETF shorting to stay hedged.

**Figure 1.10. U.S. Nonfinancial Corporations: Market-Based Financing**

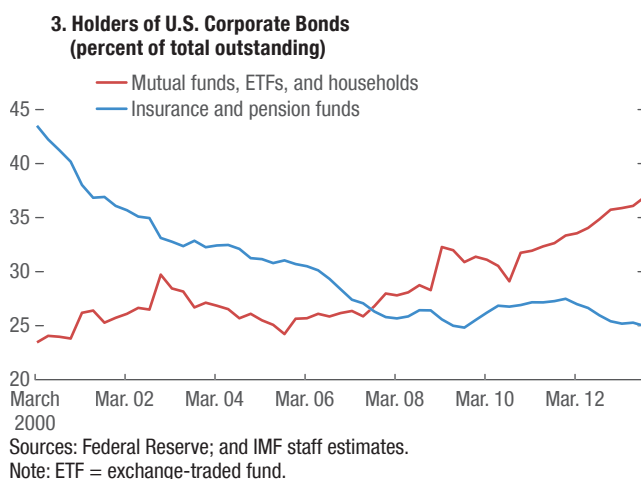
Underwriting standards are weakening for syndicated loans to U.S. corporations...



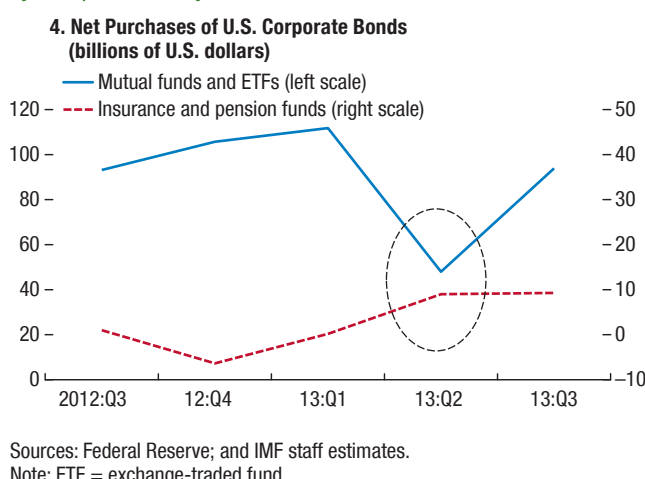
... that are increasingly distributed through mutual and exchange-traded funds, rather than collateralized loan obligations.



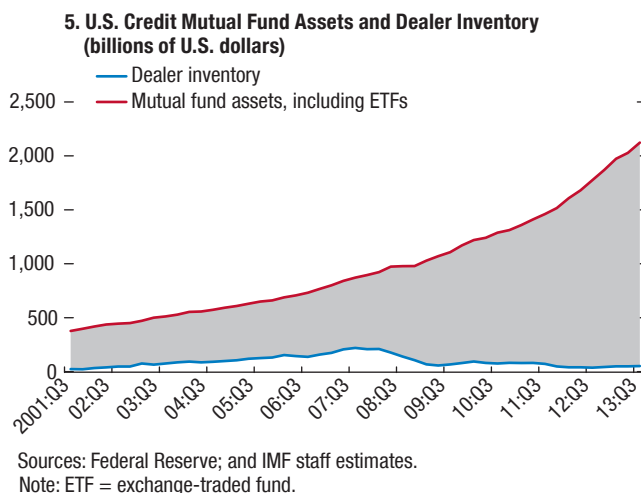
Similarly, corporate bonds are increasingly held through mutual funds and ETFs.



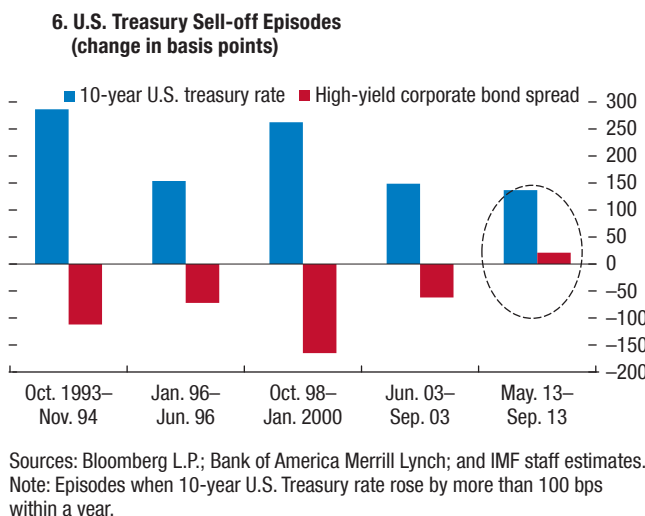
These investment vehicles have more redemption risk, as suggested by the episode in May–June 2013.



As dealers have reduced inventories, investment vehicles with redemption risk have grown...

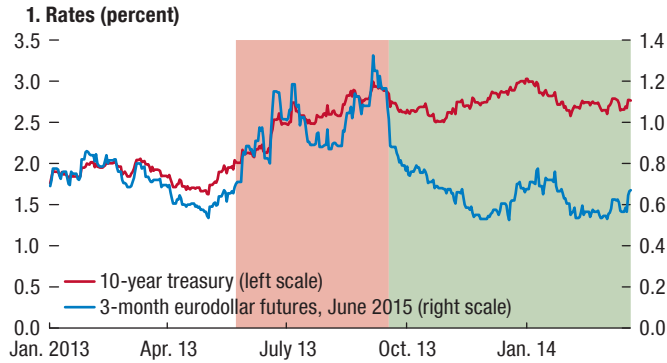


... pushing up liquidity risk and leading to distortions in stress situations.

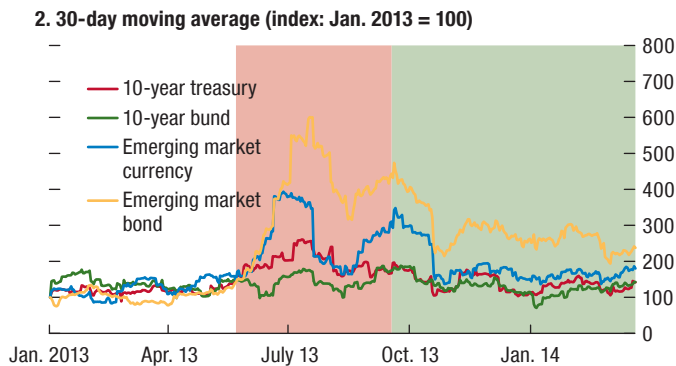


**Figure 1.11. Federal Reserve Guidance Gaining Credibility?**

Short-term rates decouple from long-term rates...



...while volatility subsides.



Sources: Bloomberg L.P.; JPMorgan Chase & Co.; and IMF staff estimates.  
Note: Emerging market economies are Brazil, China, India, Indonesia, Mexico, Russia, South Africa, and Turkey. Red shading is from May 22 to September 18; green shading is from September 19 to March 21.

first few months of 2014, volatility in emerging market economies was driven more by local conditions than by concerns about Federal Reserve tapering (Figure 1.11, panel 2).

As the turbulence of last May demonstrated, the timing and management of exit is critical. Undue delay could lead to a further build-up of financial stability risks, and too rapid an exit could jeopardize the economic recovery and exacerbate still-elevated debt burdens in some segments of the economy. These trade-offs can be illustrated with three scenarios involving the pace and causes of exit.

*Scenario 1: Smooth Exit (falling stability risks).* A sustained upturn in growth leads to a gradual normalization of monetary policy without undue financial stability risks or global spillovers. This is the baseline (most likely) scenario.

*Scenario 2: Bumpy Exit (short-term stability risks).* This adverse scenario, which is not the baseline, could be produced by higher-than-expected inflation, or growing concerns about financial stability risks. The result would likely be a faster rise in policy rates and term premia, widening credit spreads, and a rise in financial volatility that spills over to global markets, potentially exacerbated by a sudden shift in market perceptions of the Federal Reserve's intended policy stance.

*Scenario 3: Delayed Exit (rising stability risks).* This adverse scenario assumes that the Federal Reserve stops tapering its bond purchases after a few months because the real economy fails to gain traction; green shoots die, and markets become volatile while remaining trapped in a liquidity-driven mode. With the resulting extension of extraordinary monetary accommodation, potential financial stability risks build further.

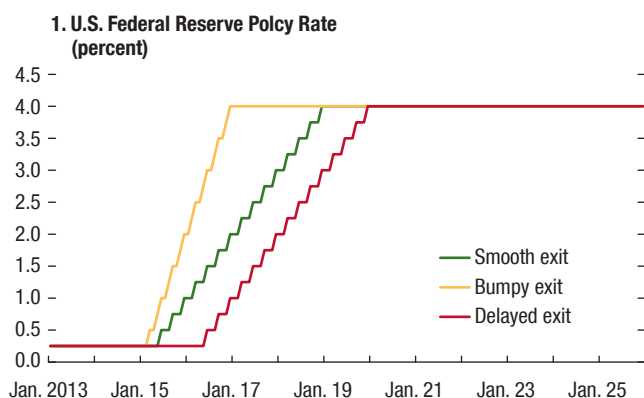
Under the smooth (baseline) exit scenario, the first hike in the target policy rate is assumed to take place in the second quarter of 2015, the timing of which is broadly in line with market expectations and the projections issued in conjunction with the March 2014 meeting of the Federal Reserve's Federal Open Market Committee.<sup>4</sup> The target policy rate is assumed to rise thereafter at a measured pace over 3½ years. However, unexpected developments may result in either the faster exit scenario (in which the liftoff in policy rates starts one quarter earlier than in the baseline) or the delayed exit scenario (in which liftoff starts a year later). Based on these assumptions, the expected short-term rate (defined as the average target policy rate over the next 10 years) and the nominal constant maturity 10-year Treasury rate would evolve as in Figure 1.12. These expectations are highly sensitive to incoming data and changes in the perception of how the Federal Reserve may react to them.

<sup>4</sup>The projections are based on the median values in the summary of economic projections made by participants in advance of the March 2014 Federal Open Market Committee (FOMC) meeting; the participants' projections are not voted on by the FOMC. The full summary of projections is appended to the meeting minutes ([www.federalreserve.gov/monetarypolicy/files/fomcprojtab120140319.pdf](http://www.federalreserve.gov/monetarypolicy/files/fomcprojtab120140319.pdf)). FOMC voting members are a subset of FOMC participants. Participants are all seven members of the Federal Reserve Board (the Governors) and all 12 Federal Reserve Bank presidents; at a given FOMC meeting all Governors and five of the 12 presidents vote (one permanently and four on an annually rotating basis).

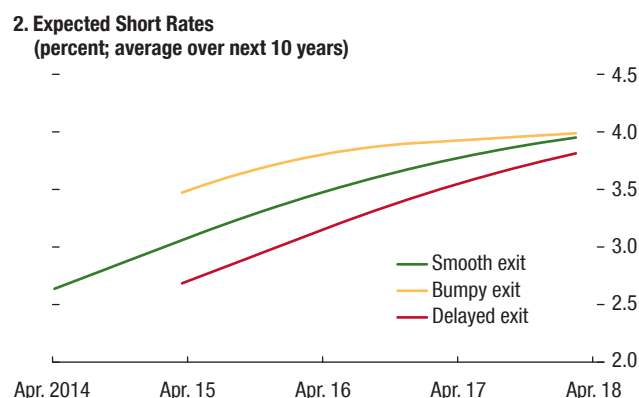


**Figure 1.12. Ten-Year U.S. Treasury Rate Projections Based on Exit Scenarios**

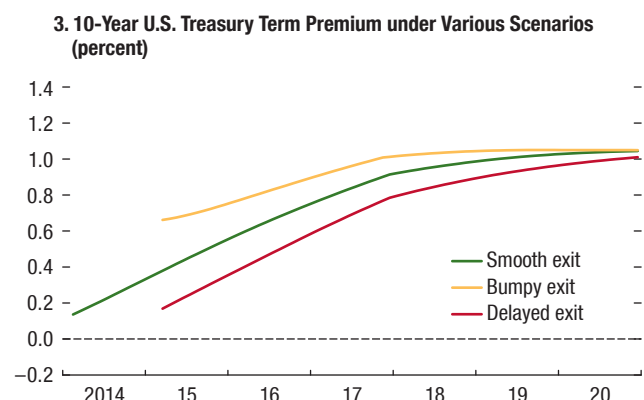
Our assumed path for U.S. policy rates...



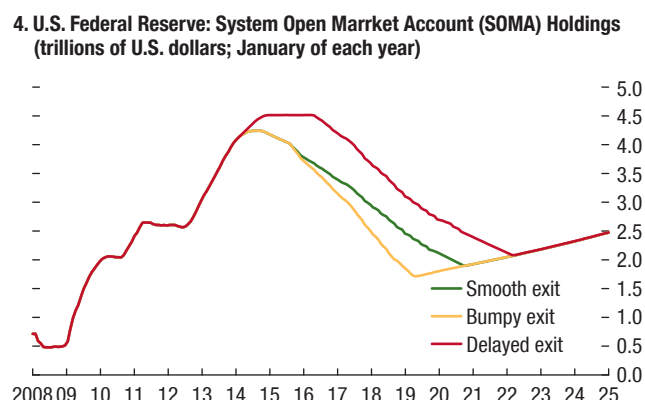
...determines the path of expected short rates...



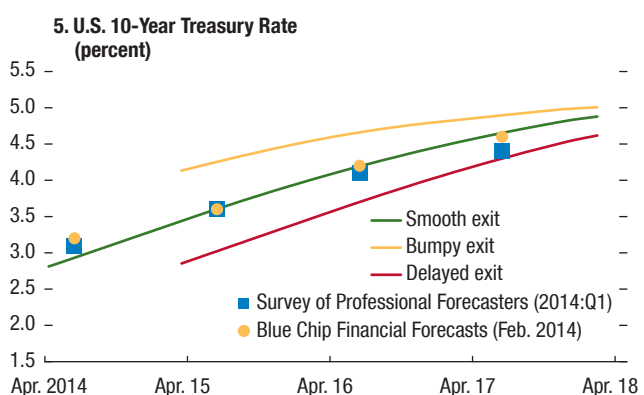
...and an econometric model of the term premium...



... based on the Fed's SOMA holdings...



... drives our projections for long-term U.S. Treasury rates.



Source: IMF staff projections.

Note: Projections assume that the term premium component of the nominal 10-year constant maturity rate on Treasury securities reverts to its precrisis mean by 2020. Term premium projections are based on the size of the Federal Reserve's balance sheet (its System Open Market Account holdings) and other macro-financial variables, as described in the October 2013 GFSR and in Wu (forthcoming). Projections of the target policy rate under the baseline scenario (smooth exit) assume that the Federal Open Market Committee (FOMC) initially increases the target rate by 25 basis points at a meeting in 2015:Q2 and follows up with equal increases at every second meeting until the rate reaches 4 percent. Under the bumpy (or delayed) exit scenario, the initial rise in the target policy rate starts one quarter earlier (or one year later). Moreover, under the bumpy exit scenario, the target rate rises by 25 basis points at every FOMC meeting rather than at every second meeting. The policy rate projections under the smooth exit scenario for end-2015 and end-2016 are broadly in line with the median values of the March 2014 economic projections of FOMC participants (appended to the minutes of the March 2014 FOMC meeting, [www.federalreserve.gov/monetarypolicy/files/fomcprojtabl20140319.pdf](http://www.federalreserve.gov/monetarypolicy/files/fomcprojtabl20140319.pdf)).

*What are the implications of exit scenarios for longer-term interest rates?*

During May–December 2013, most of the rise in the nominal 10-year Treasury rate reflected an increase of 100 basis points in the term premium (Figure 1.13, panel 1).<sup>5</sup> A return to historical norms for the premium could entail a further 100 basis point increase from its still depressed level of 10 basis points in February 2014.<sup>6</sup> A model of the U.S. term premium and its impact on long-term rates indicates that, in each of the three exit scenarios, the premium rises to about 100 basis points but at a pace that differs across the scenarios (Figure 1.13, panel 2).<sup>7</sup>

*The pace of U.S. monetary normalization is likely to significantly affect other economies*

Ten-year government bond yields tend to be highly correlated across major advanced economies, except for Japan (Figure 1.13, panel 3). The relationship is especially strong during periods of rapid increases in the U.S. rate (Table 1.2 and Figure 1.13, panel 4).<sup>8</sup> A similar analysis for major emerging market economies shows a high degree of transmission from higher U.S. Treasury rates to local-currency bond yields, including during the selloff in 2013.

Historical correlations and other statistical analysis for several advanced economies (Table 1.3 and Figure 1.13, panel 5) suggest that term premiums play a role in the transmission of interest rate shocks and that causation runs from the United States to the other economies. (See Annex 1.1 for details on the estimation of cross-country term premiums.)

Hence, even if major central banks outside the United States can fully control expected short-term rates through

<sup>5</sup>Thus, the rise in the term premium accounted for two-thirds of the 150-basis-point increase in Treasury rates in 2013, according to an update of U.S. term premium estimates in Kim and Wright (2005).

<sup>6</sup>The 10-year U.S. Treasury term premium averaged about 130 basis points from 1990 to 2007 and 80 basis points from 2000 to 2007.

<sup>7</sup>The term premium model was also used in the October 2013 GFSR. The baseline scenario, which is broadly in line with the Federal Reserve's current guidance on asset purchases, assumes that the central bank's peak purchases of \$85 billion per month in agency mortgage-backed securities and longer-term Treasuries will taper in \$10 billion increments to zero, after which its holdings of those securities will roll off as they mature.

<sup>8</sup>Nonetheless, the impact varies by country and its degree of real and financial integration with the U.S. economy. Transmission has typically been highest for Canada, followed by the United Kingdom, Germany, and Japan.

forward guidance, these estimates suggest that normalization of the U.S. term premium could put upward pressure on long-term bond yields in other economies (Figure 1.13, panel 6, in which all changes in long-term bond yields come from changes in the term premium).<sup>9</sup> Of course, an increase in both the term premium and expected short-term rates would have an even larger impact.

This changing external environment also has important implications for emerging market economies. A faster normalization of interest rates in advanced economies that is driven by faster growth could have positive spillovers, but very rapid normalization accompanied by a rise in volatility could be destabilizing. These issues are discussed in more detail in the next section, and the potential impact of various tapering scenarios on emerging market economies is discussed in Chapter 1 of the April 2014 *World Economic Outlook*.

*Navigating through the exit: key risks and policies*

The withdrawal of monetary accommodation by the Federal Reserve may be setting the stage for a smooth transition from liquidity-driven to growth-driven markets, but pockets of vulnerabilities may be emerging in credit markets.

Potential shocks include a repricing of credit risks, a sudden increase in policy rate expectations, and a term premium shock. Potential amplifiers of these shocks could include weak market liquidity and redemption runs arising from an implicit mispricing of liquidity risks. These shocks are not independent; they could combine to produce an overshooting of rates and credit spreads and wider spillovers that would block a smooth transition.

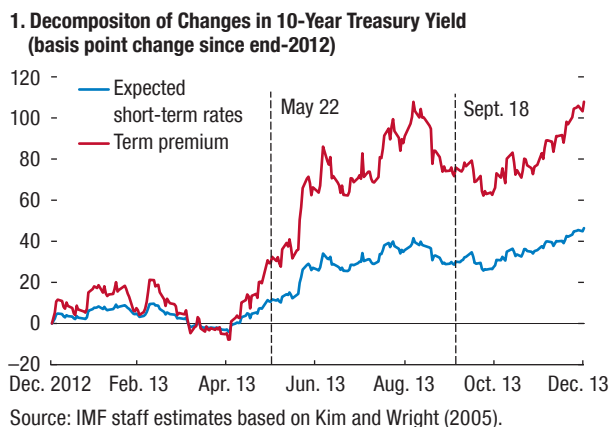
These risks argue for continued vigilance on the part of U.S. policymakers as they watch for possible deterioration on numerous fronts, including a weakening of underwriting standards in high-yield and leveraged loan markets, the increasing participation of investors with higher redemption risk in credit products, and a thinning of market liquidity buffers needed to absorb shocks in the event of a widespread market selloff.<sup>10</sup> Macroprudential policies can help reduce excessive risk taking in the high-

<sup>9</sup>These scenarios are consistent with the analysis in Chapter 3 of the April 2014 *World Economic Outlook*, which shows that real interest rates are likely to rise moderately from their very low current levels.

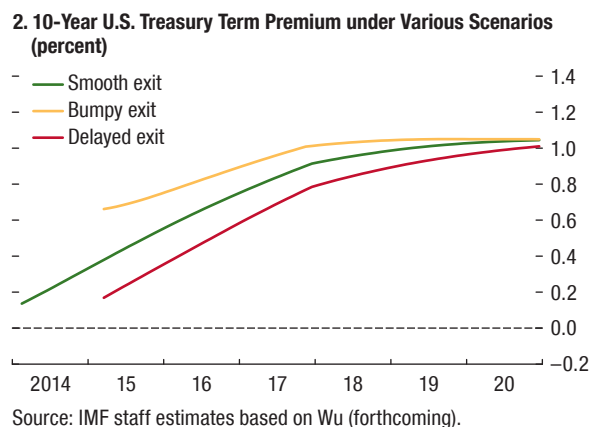
<sup>10</sup>These and related issues have been discussed in a number of recent reports, including the 2013 annual report of the Financial Stability Oversight Council, the 2013 annual report of the Office of Financial Research, the latter's 2013 report on asset management, and in speeches by some Federal Reserve Governors.

**Figure 1.13. Global Interest Rate Scenarios**

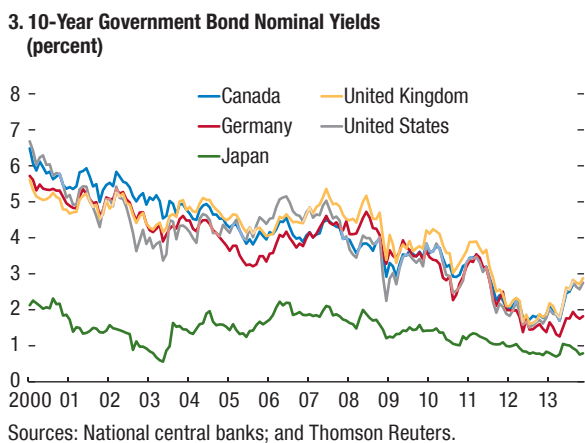
The rise in 10-year U.S. Treasury yields since May 2013 mainly reflects a rise in the term premium...



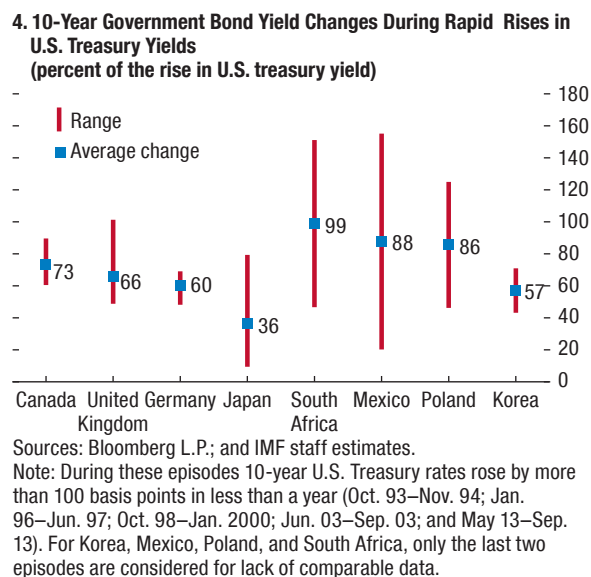
... which is still below historical norms and is expected to rise further as the Fed exits from asset purchases.



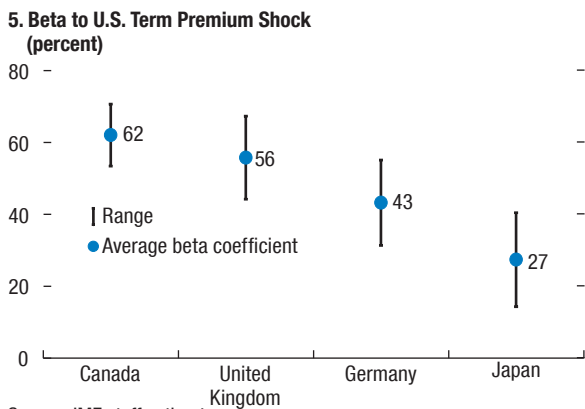
Long-term government bond yields are correlated across a number of major advanced economies despite differences in economic circumstances.



They tend to rise when U.S. Treasury rates rise, although the impact varies by economy.

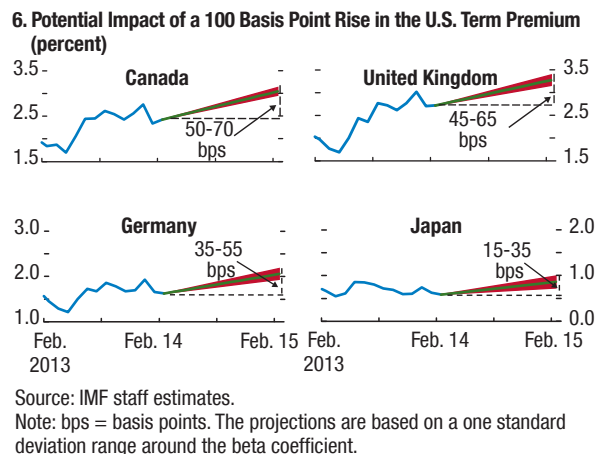


Part of the transmission channel is through the term premia, suggesting monetary normalization in the United States could put...



Note: Beta is the coefficient of the U.S. 10-year government bond term premium in the following regression:  $\Delta T_{i,t} = \alpha_i + \beta \times \Delta T_{10,t} + \epsilon_{i,t}$  in which  $i =$  Canada, United Kingdom, Germany, and Japan. Range showing two standard deviations.

... upward pressure on bond yields in other economies, even if their central banks can fully control expected short-rates.



**Table 1.2. Change in 10-Year Government Bond Yields**  
(Percent of change in U.S. 10-year rate)

Episode (start)	Episode (end)	Length (months)	Canada	Germany	Japan	Korea	Mexico	Poland	South Africa	United Kingdom
Oct. 1993	Nov. 1994	13	90	60	37	...	...	...	...	67
Jan. 96	Jun. 96	5	60	48	9	...	...	...	...	51
Oct. 98	Jan. 2000	15	73	69	39	...	...	...	...	49
Jun. 2003	Sep. 03	3	60	59	79	43	20	46	47	59
May 13	Sep. 13	4	83	64	16	71	155	125	151	101
<i>Average</i>			<i>73</i>	<i>60</i>	<i>36</i>	<i>57</i>	<i>88</i>	<i>86</i>	<i>99</i>	<i>66</i>

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

**Table 1.3. Correlation and Beta between the Term Premium in the United States and Other Major Advanced Economies**

	Canada	Germany	Japan	United Kingdom
Correlation	0.89	0.71	0.50	0.80
Beta	0.62	0.43	0.27	0.56
Beta standard deviation	0.04	0.06	0.07	0.06

Source: IMF staff estimates.

yield and leveraged loan markets and encourage more prudent underwriting of new credit products (Box 1.4), although regulators should be mindful of possible unintended consequences of financial regulatory reform, such as reduced liquidity in bond and repo markets.

Through their Shared National Credits monitoring program, U.S. supervisors should continue to review the credit quality of large syndicated loans, including leveraged loans.<sup>11</sup> Moreover, although the size of U.S. mortgage real estate investment trusts has modestly declined over the past year, authorities should continue their close oversight of them. As highlighted in the October 2013 GFSR, these leveraged vehicles could pose financial stability risks in an environment of sharply rising interest rates. Meanwhile, some of the new characteristics of the commercial real estate market, such as increased issuance of interest-only loans and subordinated debt, could pose risks if the housing recovery stalls.

Supervisors should remain alert to any aggressive expansion of lending to riskier borrowers, particularly because such loans are often made with the intention of selling them. Financial sector turmoil can produce a rapid decline in risk appetite, as was the case in the global

<sup>11</sup>The updated supervisory guidance issued in March 2013 should help banks use more prudent underwriting standards when originating leveraged loans regardless of whether they intend to hold or distribute them. Indeed, the Federal Reserve's January 2014 Senior Loan Officer Opinion Survey suggests that banks tightened lending standards in the leveraged loan market following the updated supervisory guidance.

financial crisis, leaving banks unable to sell their riskiest loans and unprepared to warehouse them for an extended period. Therefore, banks must limit the overall amount of high-risk loans in their syndication pipelines and ensure that their management information systems provide a continuous and accurate picture of their credit exposures.

More broadly, U.S. supervisors should continue seeking a clearer view of bank-like activities in the more lightly regulated segments of the financial sector (shadow banking) that could pose a threat to the banking system. Entities such as business development companies and even hedge funds are increasingly providing credit to larger corporations but often lack access to official sources of liquidity. Existing supervisory frameworks may need updating to allow an expansion of efforts to identify and quantify such nonbank entities, some of which may grow sufficiently to warrant being designated as systemically important, and legal changes may be required to provide them with emergency liquidity. Regulators should also be prepared to identify financial products that may have become systemically important and to assess their stability implications.

### Emerging Markets: External Risks and Transition Challenges

*Emerging market economies have benefited from favorable external financing conditions and strong credit growth, but these tailwinds have now reversed. Several emerging market economies facing market pressure took appropriate policy actions last year to facilitate macroeconomic rebalancing and preserve financial stability. The challenges facing many emerging market economies as they adjust to tighter external financing conditions and greater domestic vulnerabilities vary considerably from economy to economy but can be generally summarized as follows. First is the greater leverage on private and public balance sheets. Second is the increase in*

### Box 1.4. Macroprudential Policy in the United States

*The U.S. Federal Reserve has, since the global financial crisis, taken a range of policy actions to increase the resilience of the U.S. banking system. A key plank of this strategy is the Comprehensive Capital Analysis and Review program introduced in late 2010. This program builds on the Supervisory Capital Assessment Program initiated in the midst of the crisis. It subjects the largest banking groups to annual stress tests and holds these banks to capital requirements beyond the regulatory minimums. The Federal Reserve has also announced that large bank holding companies will need to have a leverage ratio above the Basel minimum and has established an Office of Financial Stability Policy and Research to strengthen its internal macroprudential analysis and policy development.*

At the onset of the global financial crisis, neither the Federal Reserve nor any other regulatory agency had a full overview or the tools to reach all aspects of the highly complex U.S. financial system. The principal legislative response was the establishment, through the 2010 Dodd-Frank Act, of the Financial Stability Oversight Council (FSOC), chaired by the Secretary of the Treasury. The FSOC brings together all federal financial regulators, including the Federal Reserve and the Securities and Exchange Commission, to collectively examine and mitigate financial stability threats. Its work is supported by an independent Office of Financial Research (OFR), which assesses and reports on threats to financial stability, as well as a subcommittee at the deputy level and several standing committees that bring together staff from the member agencies.

The FSOC has strong powers to designate individual banks, nonbank institutions, and market infrastructures as systemically important.<sup>1</sup> The designation subjects such entities to oversight by the Federal Reserve for adherence to heightened prudential standards. The FSOC also has the power to recommend that one or more regulatory agencies take action and can ask each recipient to “comply or explain”—that is, take the recommended action or explain why it will not do so. Although these arrangements were established fairly recently, some potential strengths and weaknesses can be discerned when compared with established IMF criteria (IMF 2013a and 2013b).

This box was prepared by Erlend Nier.

<sup>1</sup>See Chapter 3 of the GFSR for more details on measures to address the too-important-to-fail issue.

A key strength of the Dodd-Frank framework is that it establishes the OFR as an agency mandated by statute to provide an independent assessment of financial stability risks. The OFR is also being given adequate resources (annual budget: \$86 million) and has rapidly built up considerable expertise to fulfill its task. In line with recommendations by the Government Accountability Office (GAO, 2013), the OFR has developed a prototype Financial Stability Monitoring Framework, published in its 2013 annual report (OFR, 2013). The monitoring framework aims to identify key system vulnerabilities in a structured and comprehensive way and to assess how risk factors have evolved.

A potential weakness of the arrangements is that the regulatory structure remains fragmented (IMF, 2010). Differences in those agencies’ perspectives can make it hard to reach agreement on key priorities and slow decision making. They can also impede implementation when agreement is reached, particularly if agreement was only by majority vote and not by consensus. Given that the ultimate power to take regulatory action rests with the agencies, FSOC recommendations may not develop traction in such cases, causing delay in implementation. An example of such tension is the protracted debate over reform of money market mutual funds. The relevant agencies followed the FSOC’s recommendations on the matter only partially and with considerable delay. These difficulties suggest that the process of issuing recommendations to member agencies could be too cumbersome if an important and time-sensitive systemic threat is identified (FSB, 2013).

A way to partially overcome the structural implementation problems is for the FSOC to more extensively designate systemically important nonbank financial institutions, thereby moving primary supervisory oversight of them to the Federal Reserve. The FSOC used this power in 2013, when it designated three nonbank financial firms as systemically important.

However, its designation power applies only to individual entities. Hence, it may not be the appropriate policy tool when systemic risk arises from products offered by a class of institutions, such as real estate investment trusts, or from the activities of a diverse range of nonbank institutions, such as the provision of leveraged loans. Few of the entities involved in such cases are likely to be individually systemically important; rather, it is their actions collectively that pose systemic risk.

**Box 1.4 (continued)**

Overall, therefore, although the U.S. macro-prudential policy framework has clear strengths, a number of issues merit consideration. For instance, as a means to further increase traction of FSOC recommendations, thought could be given to providing the FSOC with a “back-up” power to designate as sys-

temically important well-defined classes of nonbank intermediaries that might collectively pose systemic risks. In addition, consideration could be given to strengthening constituent agencies’ existing powers to regulate products offered in wholesale and retail financial markets.

*macroeconomic imbalances for a number of economies, including in China’s nonbank financial sector, and the greater tendency of investors to differentiate between and reprice assets according to these imbalances. Third is the additional capital flow pressures from the increased presence of foreign portfolio investors together with changes in underlying market structures that have reduced market liquidity. Geopolitical risks related to Ukraine could also pose a more serious threat to financial stability if they were to escalate.*

*Emerging market economies must rebalance as external conditions tighten*

Since 2009, the unconventional monetary policies and low interest rates in the advanced economies have accelerated the increase in global portfolio allocations to emerging market economies above its pre-2008 trend (Figure 1.14, panel 1). Through 2013, the stock of portfolio investment to emerging market fixed-income markets from advanced economies continued to increase, rising to an estimated \$1.5 trillion (\$1.7 trillion including valuation effects), or \$480 billion above the extrapolated 2002–07 trend. The reach for yield by international investors has produced a steady decline in risk premiums and lowered the costs of financing in many emerging market economies. The rise in corporate debt issuance has been particularly striking.

The global recovery from the financial crisis was supported by strong credit growth and public spending in emerging market economies, particularly in Asia, which helped strengthen private demand (Figure 1.14, panel 2). Credit growth has slowed since 2009 but still remains above GDP growth (Figure 1.14, panel 3). Nonetheless, as economic growth slows, the largest emerging market economies (Brazil, China, India, and Russia) have reached the late stage of the credit cycle, which is marked by deteriorating asset quality, increased leverage, and peaking asset prices (Figure

1.14, panel 4). In 2013, as asset returns adjusted to the prospect of slower growth and a less favorable external environment, the performance of fixed-income securities and equities in those four economies lagged that in the United States for the first time in 10 years.

These changing circumstances pose a number of challenges for emerging market economies.

First, the greater debt on private and public balance sheets makes them more sensitive to an increase in interest rates, a slowdown in earnings, and a depreciating currency.

Second, macroeconomic imbalances, which have increased in a number of economies, in part because of previous accommodative policies, are now more difficult to finance because risk premiums have risen. In China, rapid growth of nonbank lending as part of the postcrisis credit stimulus now presents new challenges to stability and growth.

Third, increased foreign investor participation exposes some economies to an additional source of capital outflow pressure. Reductions in liquidity from changes in underlying market structures could act as a powerful amplifier of volatility in the event of renewed bouts of market turbulence.

The remainder of this section examines these challenges in detail and discusses the policies and adjustments that will help emerging market economies make the transition to more balanced financial sector growth.

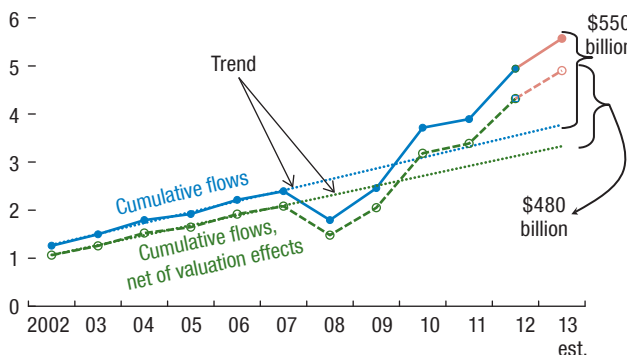
*Many emerging market economies face larger debt stocks and higher leverage*

Since the global financial crisis, strong investor demand and the desire to support investment and growth have boosted private and public sector debt in many emerging market economies. As noted in the April 2014 *Fiscal Monitor*, average debt levels in emerging market economies are relatively low, but important pockets of vulnerability between economies

**Figure 1.14. Bond Flows to Emerging Market Economies and Domestic Credit in the Face of Tighter External Conditions**

Inflows to emerging market bonds accelerated after 2009 and have increased to above-trend levels.

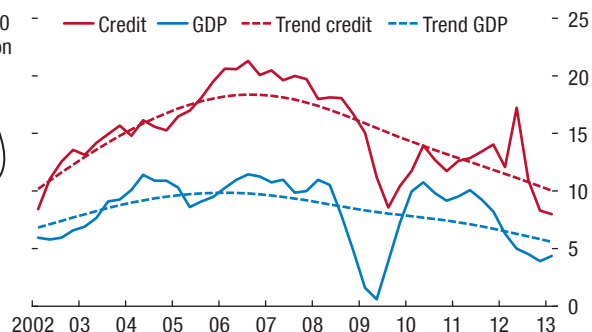
**1. Bond Flows from Advanced to Emerging Market Economies (percent of advanced economies' GDP)**



Sources: IMF, Consolidated Portfolio Investment Survey; JPMorgan Chase & Co.; and IMF staff calculations.  
 Note: The long-term trends were extrapolated from 2002–07. Flows for 2013 were calculated using the trend of 2009–12 and estimates on 2013 portfolio flows from balance of payments data. Valuation effects are removed by calibrating against returns in associated fixed income indices.

Rapid credit creation contributed to fast output growth over the last 12 years...

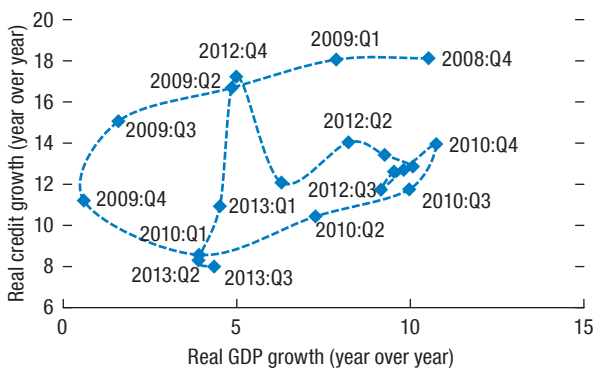
**2. Credit and GDP Growth Trends in Emerging Market Economies (percent)**



Sources: Haver Analytics; IMF, Electronic Data Sharing System; and IMF staff calculations.  
 Note: Calculated for the following 21 economies: Brazil, Bulgaria, Chile, China, Colombia, Hungary, India, Indonesia, Latvia, Lithuania, Malaysia, Mexico, Peru, Philippines, Poland, Romania, Russia, South Africa, Thailand, Turkey, and Ukraine.

...but credit and GDP growth have slowed sharply.

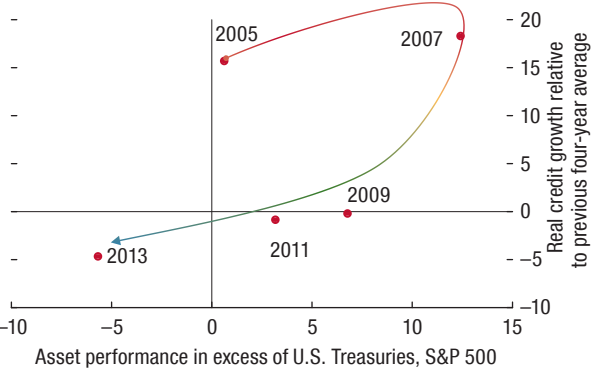
**3. Real Credit and Real GDP Growth in Emerging Markets (percent)**



Sources: Haver Analytics; IMF, Electronic Data Sharing System; and IMF staff calculations.  
 Note: Calculated for the following 21 countries: Brazil, Bulgaria, Chile, China, Colombia, Hungary, India, Indonesia, Latvia, Lithuania, Malaysia, Mexico, Peru, Philippines, Poland, Romania, Russia, South Africa, Thailand, Turkey, and Ukraine.

Asset performance in major emerging market economies has deteriorated against slower growth and higher leverage.

**4. Credit Cycle and Asset Performance in Brazil, China, India, Russia (percent)**



Sources: Bloomberg L.P.; JPMorgan Chase & Co.; IMF, International Financial Statistics database; and IMF staff calculations.  
 Note: Real credit growth is GDP weighted. Asset performance is asset class and country weighted in line with the MSCI EM and JPMorgan EMBI Global (diversified), CEMBI (diversified), and GBI-EM (broad diversified). CEMBI = Corporate Emerging Markets Bond Index; GBI-EM = Government Bond Index-Emerging Markets; MSCI EM = Morgan Stanley Capital International Emerging Markets Equity Index.

remain. In addition, public debt has risen in tandem with private sector indebtedness.

Indeed, households in Asia and parts of Latin America increased their debt levels after 2008. Household debt in Brazil, China, Singapore, Thailand, and Turkey has increased more than 40 percent since 2008 (Figure 1.15, panel 1, and Tables 1.4 and 1.5), and in the second quarter of 2013 it accounted for more than 60 percent of GDP in Malaysia, Singapore, and Thailand. Countries in emerging Europe saw the fastest increase of household debt in the period leading up to the global financial crisis, and some are still dealing with the challenges of ongoing deleveraging.

The nonfinancial corporate sector in several emerging market economies took advantage of the low rates and strong demand for their bonds since the crisis. As a result, median country-level balance sheet leverage for nonfinancial corporations has increased for some economies and has remained high in others. This sustained period of re-leveraging may have built up vulnerabilities that will be exposed by slower domestic growth and tighter financial conditions (Figure 1.15, panel 2).

#### *Macroeconomic adjustment and rising risk premiums*

Emerging market economies have begun adjusting to a gradual normalization of monetary conditions in advanced economies and the maturing of their own credit cycles. The adjustment is likely to last several years and may be punctuated by bouts of volatility. Macroeconomic and financial vulnerabilities are generally country specific, and the risk of a bumpy adjustment is higher where rebalancing and policy adjustment is judged by markets to be insufficient.

Some emerging market economies still have large external current account imbalances and real interest rates that are still below precrisis levels (Figure 1.16). The less benign external environment will tend to make it more difficult to finance these imbalances, suggesting that further adjustments to the real rate and the macroeconomy may be required in these cases. Markets are also pricing in policy rate increases in economies where inflation rates are expected to remain above target levels (Figure 1.17). Turkey stands out because the market does not expect significantly more monetary policy tightening over the next 12 months, having frontloaded its monetary policy adjustment in January. In addition, Turkey's external financing position for 2014 has increased meaningfully in relation to

its international reserves (Figure 1.18), and its reliance on portfolio flows to finance the current account in the absence of foreign direct investment presents adjustment challenges (Figure 1.19).

#### *Could external and macroeconomic adjustments crystallize vulnerabilities in the corporate sector?*

Against the backdrop of low global interest rates and ample liquidity, net issuance of emerging market corporate debt tripled from 2009 to 2013 (Figure 1.20, panel 1). Although strong economic growth prevented aggregate leverage ratios from growing excessively in most economies, the ratios of corporate debt to GDP appear high in Bulgaria, China, Hungary, and Malaysia, at 100 percent of GDP or more (Figure 1.20, panel 2). In China and Malaysia, corporate leverage is mostly funded from domestic banking and capital markets, thus rendering firms there more sensitive to domestic factors. In contrast, firms in Bulgaria and Hungary are more dependent on external financing, mostly from foreign direct investment.

Slowing growth prospects are beginning to pressure corporations' profitability and their capacity to service debt. Debt has grown faster than earnings in several economies, as shown by the increase in the ratio of net debt to EBITDA (Figure 1.20, panel 3).<sup>12</sup> Even as low interest rates have enabled firms to reduce overall borrowing costs, higher debt loads have led to growing interest expense. In 2012, the annual growth rate of interest expense surpassed the five-year average in many economies (Figure 1.20, panel 4). As a result, debt servicing capacity has deteriorated, and the share of total corporate debt held by weak firms has risen since 2010 (Figure 1.20, panel 5).<sup>13</sup> Debt at risk—the share of corporate debt held by weak firms—is even higher now than in the period following the September 2008 collapse of Lehman Brothers, and it is well above precrisis levels in Asia and in emerging Europe, the Middle East, and Africa.

<sup>12</sup>Net debt is computed as total debt less cash and cash equivalents. EBITDA, which refers to earnings before interest, taxation, depreciation, and amortization, accounts for capital outlays, particularly by large firms. The ratio shows how many years it would take to repay current debt at the present level of EBITDA. As total debt is reported based on accounting records of on-balance-sheet borrowings and excludes financial guarantees and other contingent liabilities, leverage as a whole may be understated in some firms.

<sup>13</sup>Weak firms are those whose interest coverage ratios (EBITDA divided by interest expense) are less than two.



**Table 1.4. Debt, Leverage, and Credit in Selected Emerging Market Economies**  
(End-2013 or latest available; percent of GDP, unless otherwise noted)

	Brazil	China	India	Indonesia	Malaysia	Mexico	Poland	Russia	Singapore	South Africa	Thailand	Turkey
<b>General Government Debt</b>												
Gross	66	22	67	26	58	46	57	13	104	45	45	36
Net	34	...	...	...	...	40	29	...	...	39	...	27
<b>Household Debt</b>												
Gross	26	32	8	17	81	14	35	14	73	45	80	20
Debt to Income (percent)	...	71	12	29	...	23	58	27	159	78	118	27
<b>Nonfinancial Corporate Debt</b>												
Bank Credit	30	141	48	19	...	11	43	36	71	31	52	42
Debt to Equity (percent)	77	50	83	66	39	59	39	60	46	32	57	47
<b>Banking Sector</b>												
Credit to Nonfinancial Private Sector <sup>1</sup>	70	133	51	33	128	16	51	47	114	67	117	54
Assets to Total Capital (multiples)	11	16	14	8	11	9	11	9	12	13	9	9
Bank Claims on Public Sector	23	7	18	7	...	18	...	-9	...	-1	18	...

Sources: Bank for International Settlements; CEIC; Economist Intelligence Unit; IMF, Financial Soundness Statistics, International Financial Statistics database, World Economic Outlook database; national authorities; and IMF staff calculations.

<sup>1</sup>BIS series on "credit to nonfinancial private sector" includes domestic and cross-border bank credit (loans and debt securities).

**Table 1.5. Change in Gross Debt Levels in Selected Emerging Market Economies**  
(Change since end-2008 through end-2013 or latest available; percentage points of GDP)

	Brazil	China	India	Indonesia	Malaysia	Mexico	Poland	Russia	Singapore	South Africa	Thailand	Turkey
Government	2.9	5.4	-7.8	-7.1	16.9	3.6	10.4	5.5	7.4	18.0	8.0	-4.1
Household	8.2	13.6	-1.8	4.2	20.1	0.8	5.0	3.6	6.6	-5.4	24.1	7.1
Bank Credit to Nonfinancial Firms	7.2	42.0	2.8	2.3	...	1.4	2.3	3.4	1.5	-3.2	1.1	11.4
Banking Sector Credit	22.8	28.8	0.5	5.7	20.9	1.1	3.6	5.4	18.3	-12.7	20.6	24.2

Sources: Bank for International Settlements; CEIC; IMF, World Economic Outlook database; national authorities; and IMF staff calculations.

Note: Change in nonfinancial bank credit for South Africa is since June 2009.

Higher debt loads and lower debt-servicing capacity render the corporate sector more sensitive to tighter external financing conditions and to a reversal of capital flows that could precipitate a rise in borrowing costs and fall in earnings. A sensitivity analysis of a sample of large and small companies in selected emerging market economies suggests that a combination of a 25 percent increase in borrowing costs and a 25 percent decline in earnings could lead to an increase in the number of weak firms and their debt levels. Debt at risk—which is the amount of debt of firms with less than two times interest coverage after the shocks—appears high in a number of countries (Figure 1.20, panel 6). The share of weak firms after the shocks is highest in Argentina, Turkey, India, and Brazil, where they could account for more than half of all firms (Figure 1.20, panel 7).<sup>14</sup> Within the sample of 15 countries, the debt at risk of weak firms that are highly leveraged could increase by \$740 billion, rising to 35 percent of total corporate debt.<sup>15</sup>

<sup>14</sup>These shocks are consistent with high-stress events experienced in emerging markets in the past 10 years.

<sup>15</sup>Highly leveraged weak firms are defined as those with net debt-to-EBITDA above 3, and interest coverage below 2.

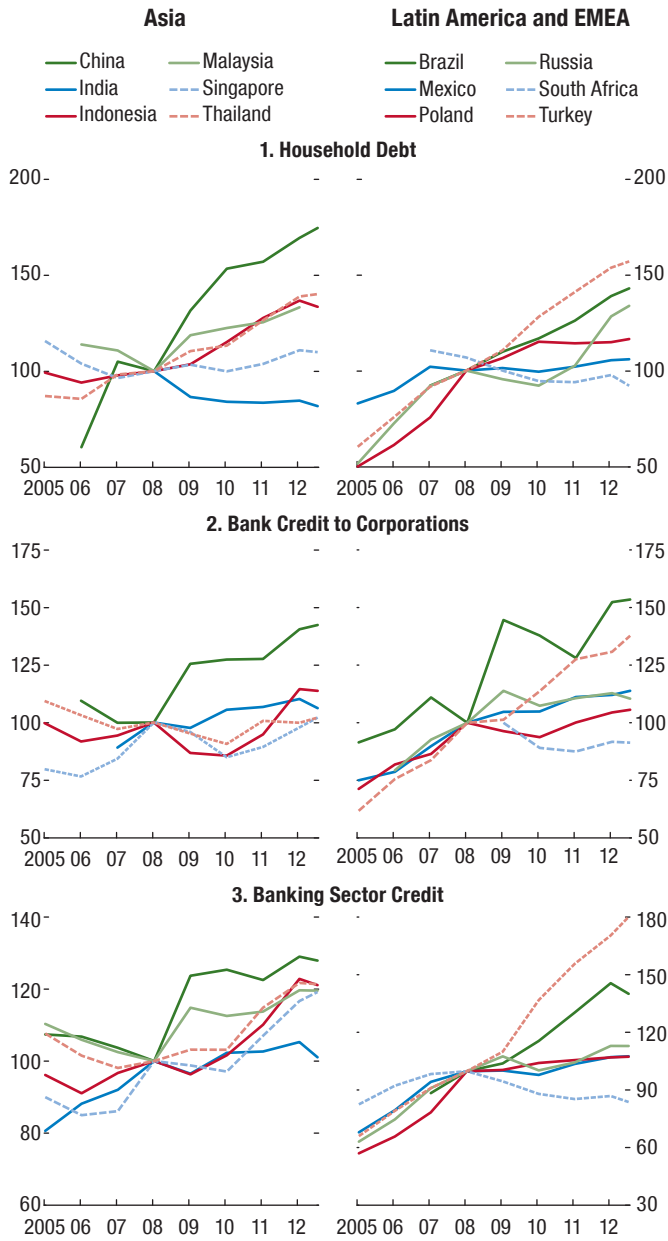
### *How exposed are firms in emerging market economies to exchange rate and foreign currency funding risks?*

External debt accounts for more than one-fourth of total corporate debt in a number of emerging market economies (Figure 1.20, panel 8), which means that firms in those countries may be susceptible to exchange rate and foreign currency funding risks. The sensitivity of such economies to foreign currency shocks is highest when the corporate sector mostly depends on portfolio flows for its external funding. Economies with a significant proportion of corporate external debt from affiliates and direct investment, such as Bulgaria, Hungary, and Poland, are less sensitive to exchange rate volatility.

Currency depreciation in an environment of rising global uncertainties could lead to higher payments of principal and interest on foreign currency debts and thus to a further erosion of profitability. The impact of currency depreciation on firms depends on the size of buffers, comprising natural hedges from overseas revenues and financial hedges from currency hedging.

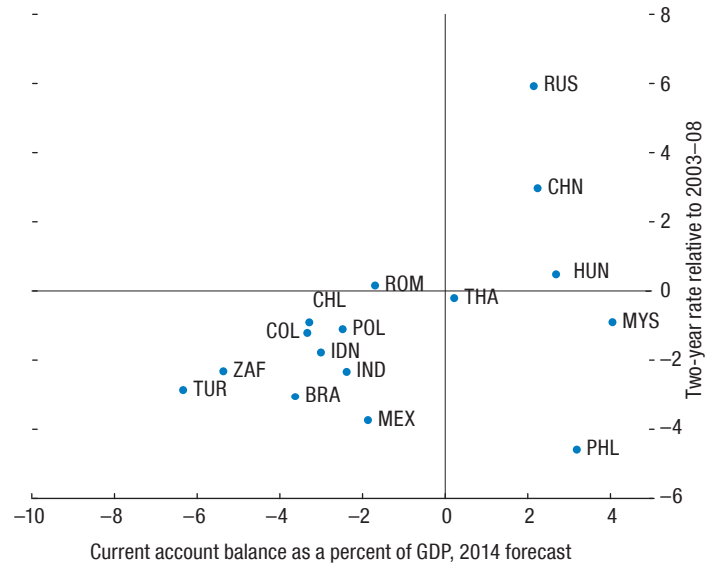
To gauge the sensitivity of earnings to exchange rate changes, a 30 percent depreciation in the exchange rate

**Figure 1.15. Private Sector Gross Debt and Credit in Selected Emerging Market Economies**  
(Percent of GDP; normalized at 2008 = 100)



Sources: Bank of International Settlements; CEIC; IMF World Economic Outlook database; national authorities; and IMF staff calculations.  
Note: Bank credit to corporations for South Africa was normalized at 2009 = 100 because of missing data in 2008. EMEA = Europe, the Middle East, and Africa.

**Figure 1.16. Current Account Balance and Real Rates Now and Before the Financial Crisis**



Sources: Bloomberg L.P.; national authorities; and IMF, World Economic Outlook database.

Note: Real rates are calculated as two-year nominal swap rates as of March 24, 2014 minus latest annual inflation data. The 2003–08 period refers to January 2003 (wherever real rates are available) through June 2008.

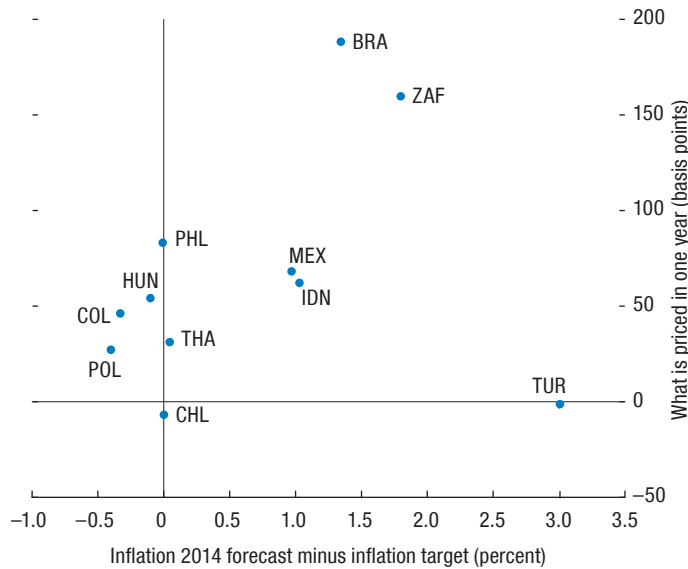
BRA = Brazil; CHL = Chile; CHN = China; COL = Colombia; HUN = Hungary; IDN = Indonesia; IND = India; MEX = Mexico; MYS = Malaysia; PHL = Philippines; POL = Poland; ROM = Romania; RUS = Russia; THA = Thailand; TUR = Turkey; ZAF = South Africa.

is applied to aggregate corporate foreign currency debt levels.<sup>16</sup> Where foreign currency liabilities are largely hedged through natural hedges, foreign exchange losses could amount to 20–30 percent of earnings in India, Indonesia, and Turkey (Figure 1.20, panel 9). If half of the remaining foreign currency liabilities are hedged through currency hedges, the residual foreign exchange losses would be reduced to 10–15 percent of earnings in these economies and lower still in other economies.<sup>17</sup> The effectiveness of hedges should be carefully considered. In past episodes of turbulence, natural hedges fell short of expectations, as overseas revenues declined in tandem with depreciating currencies. Moreover, some currency hedges with “knock-out”

<sup>16</sup>As information on financial hedging is sparse, this sensitivity analysis assumes that at least 50 percent of these debts are hedged after netting out natural hedges.

<sup>17</sup>The April 2014 Regional Economic Outlook: Asia and Pacific also concluded that the corporate sector may be more vulnerable to interest rate and profitability shocks than the aggregate data would suggest as firms that are highly leveraged tend to have lower profitability, lower interest coverage ratios, and are less liquid.

**Figure 1.17. Policy Space**  
(Market expectations of policy rate changes versus inflation gap)



Sources: Bloomberg L.P.; IMF, World Economic Outlook database; and IMF staff calculations.  
Note: "What Is Priced In" is the market-implied (inferred from interest rate swaps) expectation for policy rate changes over the next 12 months as of March 24, 2014. BRA = Brazil; CHL = Chile; COL = Colombia; HUN = Hungary; IDN = Indonesia; MEX = Mexico; PHL = Philippines; POL = Poland; THA = Thailand; TUR = Turkey; ZAF = South Africa. For countries with inflation target bands, the center of the band is considered as the inflation target.

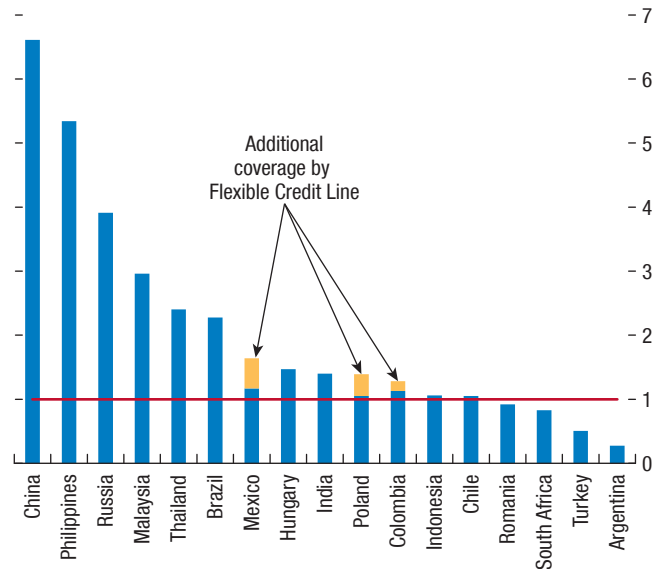
options may terminate at specific exchange rate levels that render them worthless if large depreciations were to occur.

How are financial markets pricing these balance sheet risks? The pricing of corporate emerging market bond index (CEMBI) spreads reflects a view of vulnerabilities similar to those presented in Figure 1.20, panels 6 and 7. Corporate bond spreads remain elevated in Brazil, Indonesia, the Philippines, Russia, South Africa, and Turkey (as shown by the average CEMBI spread levels in Figure 1.20, panel 10). These economies are also vulnerable on the basis of interest coverage (measured either as debt at risk or firms at risk).

Model-based estimates of corporate bond spreads suggest varying degrees of sensitivity to external and balance sheet shocks.<sup>18</sup> Leveraged firms in China,

<sup>18</sup>The model for corporate bond spreads explains the country-level CEMBI spreads against the VIX equity volatility index and the following median balance metrics for all country firms in the S&P Capital IQ samples: interest coverage ratio (EBIT to interest expense), leverage (net debt to total common equity), working capital to total assets, retained earnings to total assets, and cash levels to

**Figure 1.18. Ratio of International Reserves to 2014 External Financing Requirements**  
(Multiples)



Sources: IMF International Financial Statistics database, and World Economic Outlook database.  
Note: External financing requirements = short-term total external debt plus short-term portion of medium- and long-term total external debt minus current account balance. Reserves are as of end-2013 or latest. Colombia, Mexico, and Poland renewed their Flexible Credit Lines for two years in June 2013, December 2012, and January 2013, respectively.

Hungary, and Russia are more vulnerable to balance sheet shocks than to external shocks (Figure 1.20, panel 10, where the balance sheet portion of the bar is larger than the VIX portion).<sup>19</sup> But for firms in countries that also exhibit some macroeconomic or external financing vulnerabilities, such as Brazil, Indonesia, South Africa, and Turkey, the external shock may have a larger impact on spreads than a deterioration of balance sheet variables.

*Banks remain resilient to a rise in corporate stress*

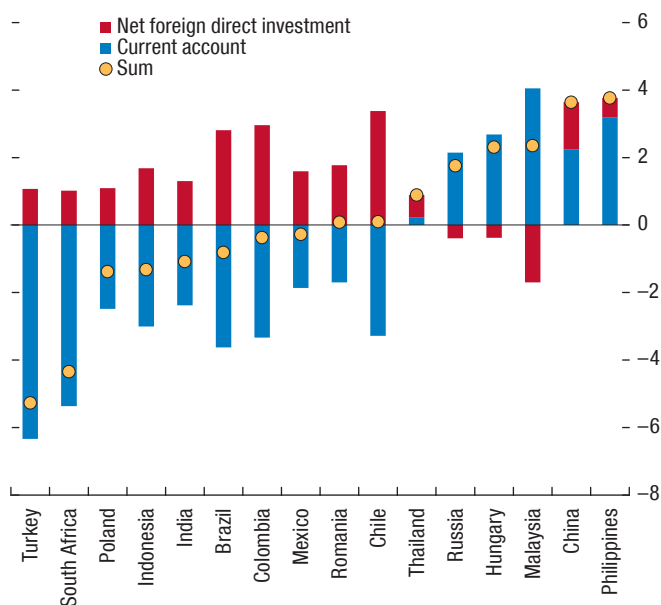
Slower economic growth and increasing pressures in the corporate sector could lead to a rise in nonper-

total assets. The panel regression for the 17 countries in Figure 1.20, panel 10 is performed on log-transformed quarterly data starting in 2003 or the earliest possible date thereafter.

<sup>19</sup>The greater vulnerability of these countries to balance sheet shocks is indicated in the model results after a deterioration in balance sheet metrics by two standard deviations and a 10 percentage point increase in the VIX equity volatility index, which correspond to roughly the same order of magnitude of shocks in previous episodes of risk aversion.

**Figure 1.19. Coverage of Current Account by Foreign Direct Investment**

(2014 forecast; percent of GDP)



Source: IMF, World Economic Outlook database.

forming loans, thereby straining banks' balance sheets. Banks in most countries have reported healthy levels of Tier 1 regulatory capital, but in some cases lax recognition of doubtful assets and loan forbearance may mask the true extent of asset quality risk. In such cases, loan losses in a severe downturn could overwhelm what were thought to be adequate levels of balance sheet equity capital and loan loss buffers. Relative to regional peers, loan loss provisioning appears low in Hungary, India, Indonesia, Malaysia, and South Africa (Figure 1.21, panel 1), suggesting that any potential credit quality deterioration may need to be absorbed by equity capital.

What losses could banks absorb before capital ratios fall below Basel III's minimum requirements? Most countries are able to meet the Basel III minimum Tier 1 capital requirement of 6 percent. However, when capital conservation buffers are included, Hungary and India have the lowest loss-absorbing buffers, followed by Chile and Russia, although buffers in these last two countries meet Basel III requirements<sup>20</sup> (Figure 1.21, panel 2).

<sup>20</sup>Regulatory risk-weights vary across countries with some imposing stricter weights that could result in larger risk-weighted assets (RWA).

Banks are also exposed to funding pressures, particularly when wholesale funding becomes challenging during periods of global turmoil. Currently, loan-to-deposit ratios are high, at 100 percent and above, particularly in Latin America and EMEA (Figure 1.21, panel 3).

Another source of funding risk emanates from excessive reliance on externally supplied credit. The share of external funding as a percentage of total assets is high in EMEA, especially in Hungary, Romania, and Turkey (Figure 1.21, panel 4). Moreover, more than 20 percent of EMEA banks' debts maturing this year are in foreign currency, four times the corresponding shares in Asia and Latin America (Figure 1.21, panel 5). The combination of high domestic leverage and increased exposure to short-term foreign debt raises the sensitivity of the banking sector to currency and interest rate shocks.

Stresses in emerging market economies may affect advanced economies through a number of channels. Large banks in advanced economies have increased their exposure to emerging market economies over the past two decades (Figure 1.21, panel 6), making them susceptible to profit fluctuations and asset quality issues in those markets.<sup>21</sup> Portfolio investment, as detailed earlier in this section, has also increased, and advanced economies' equity markets appear to have become more directly influenced by equities in emerging economies, as seen in the emerging market turmoil of 2013–14. And, as detailed in Chapter 2 of the April 2014 *World Economic Outlook*, many firms in emerging market economies are now well integrated into global supply chains, increasing the potential for spillovers related to finance as well as to trade.

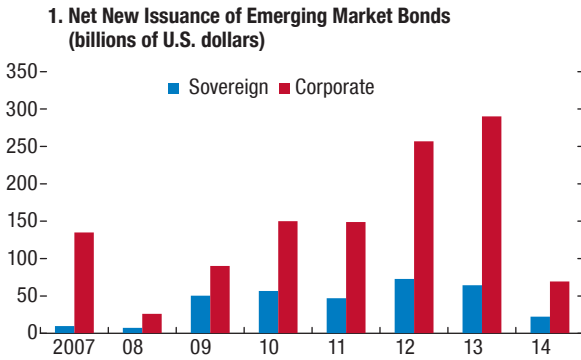
### *Risks in China's nonbank financial sector*

Nonbank institutions have become an important source of financing in China and this is a natural consequence of a reform process that has prioritized the diversification of a bank-dominated financial system. Estimates of the size of nonbank credit outstanding (excluding bonds) vary, reflecting difficulties in measurement, a lack of disclosure, and a large informal sector. Unofficial conservative estimates that cover only the formal sector range between 30–40 percent of GDP, a doubling since 2010. Nonbank credit has

<sup>21</sup>Asset quality spillovers to a parent bank may be more significant in the case of direct cross-border lending, but less so for subsidiary-based operations.

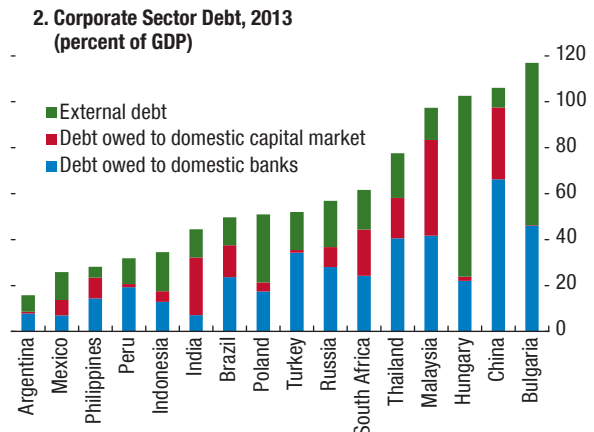
**Figure 1.20. Corporate Debt in Emerging Markets**

Easy access to bond markets and prolonged low interest rates enabled record net issuance of hard currency debt ...



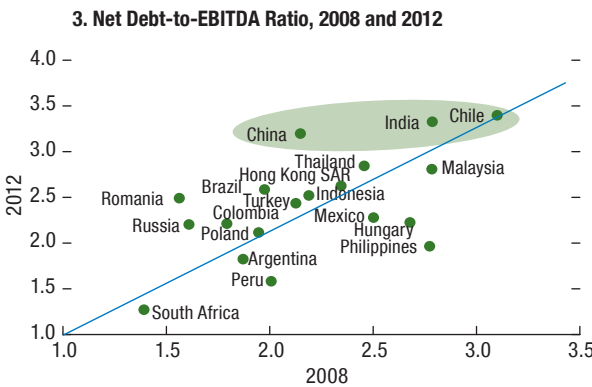
Sources: Bond Radar; and Morgan Stanley.  
Note: The 2014 data are through March 24, 2014.

... precipitating the rise in corporate debt above GDP in several countries.



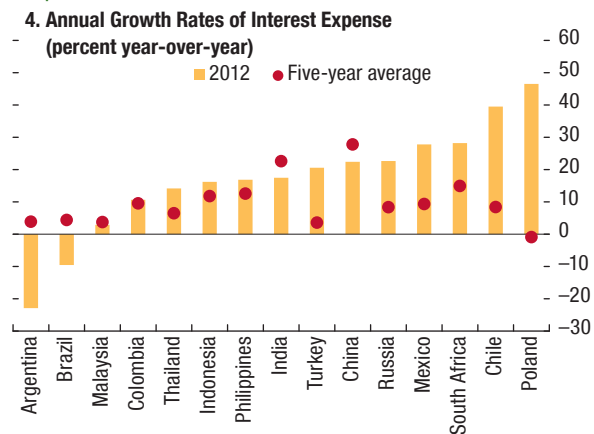
Sources: Bloomberg L.P.; IMF, Quarterly External Debt Statistics database; Financial Soundness Indicators database; and IMF staff calculations.  
Note: External debt includes liabilities from affiliates, direct investments, and other sources.

Slowing profitability is beginning to pressure firms' capacity to service debt ...



Source: S&P Capital IQ.  
Note: Based on median. EBITDA = earnings before interest, taxes, depreciation, and amortization.

...while higher debt loads have led to growing interest expense despite low rates.



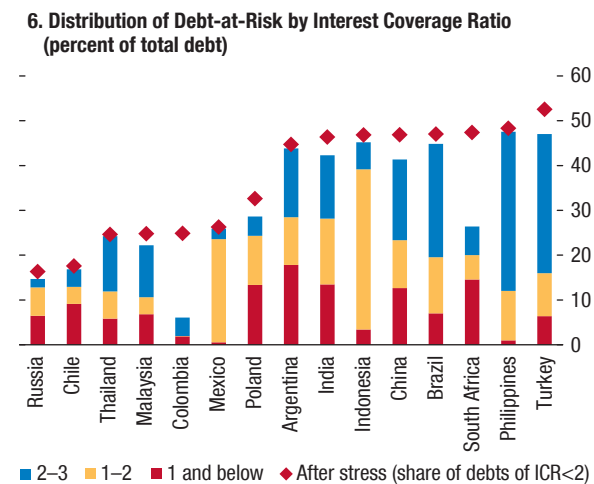
Source: S&P Capital IQ.  
Note: The growth rates are based on average of sample firms across each country.

The share of total corporate debt held by weak firms is rising again...



Source: S&P Capital IQ.  
Note: Weak firms refer to those with interest coverage below two times. Interest coverage is defined as EBITDA/Interest Expense. Asia = China, India, Indonesia, Malaysia, Philippines, Thailand; Latin America = Argentina, Brazil, Chile, Colombia, Mexico; and Europe, Middle East, and Africa = Poland, Russia, South Africa, Turkey. EBITDA = earnings before interest, taxes, depreciation, and amortization.

...while balance sheets have become more sensitive to shocks...

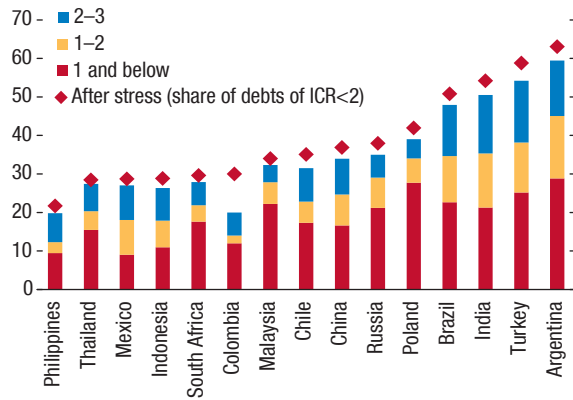


Sources: S&P Capital IQ; and IMF staff calculations.  
Note: Debt-at-risk refers to the share of debts of weak firms (with interest coverage ratio below 2) after shocks. ICR = interest coverage ratio.

**Figure 1.20 Corporate Debt in Emerging Markets (continued)**

...and for a large share of firms.

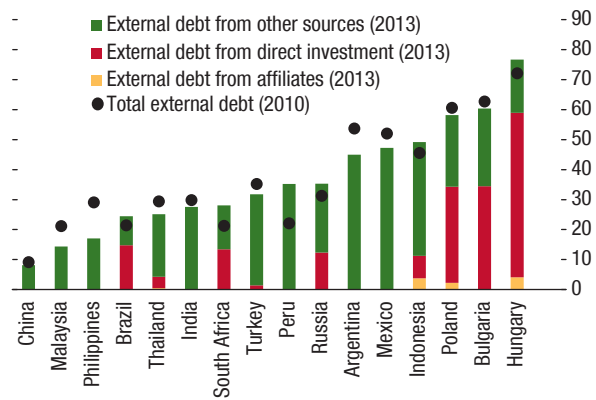
**7. Distribution of Firms-at-Risk by Interest Coverage Ratio (percent of total firms)**



Source: S&P Capital IQ; and IMF staff calculations.  
Note: Firms-at-risk refers to the share of weak firms (with interest coverage ratio below 2) after shocks. ICR = interest coverage ratio.

Corporate external borrowing has increased...

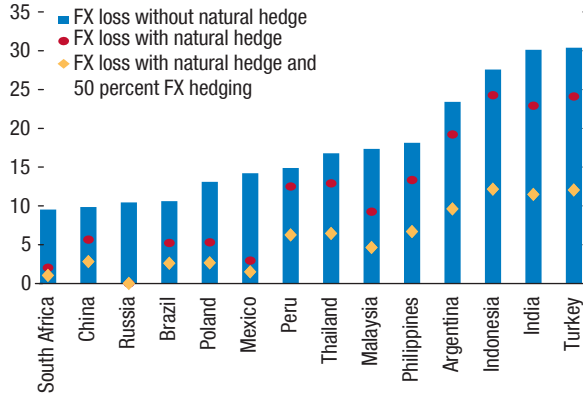
**8. Share of Corporate Debt Owed to Nonresidents (percent of total corporate debt)**



Sources: Bloomberg L.P.; IMF, Quarterly External Debt Statistics; Financial Soundness Indicators; and IMF staff calculations.  
Note: Other sources include loans, money market instruments, trade credits, and bonds.

...making firms more sensitive to exchange rate shocks.

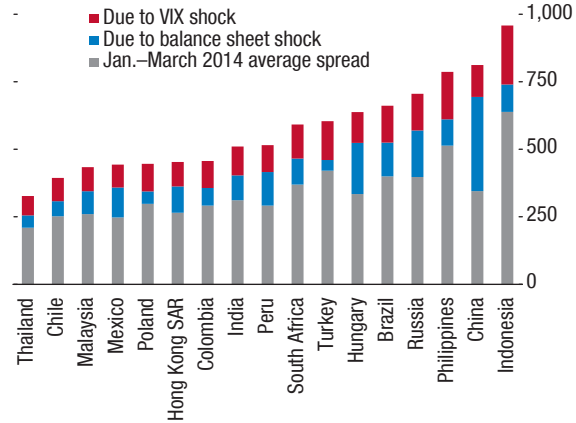
**9. Net Foreign Exchange Loss on Debt Principal and Interest (percent of EBITDA)**



Sources: Bloomberg L.P.; S&P Capital IQ; IMF, Financial Soundness Indicators, Quarterly External Debt Statistics; and IMF staff calculations.  
Note: FX loss on debt principal is derived from full mark-to-market revaluation of all foreign currency debts, while loss on interest expense is computed based on interest payments in 2014. The natural hedges are approximated by overseas revenues, which may be a subset of total foreign currency earnings in some countries. EBITDA = earnings before interest, taxes, depreciation, and amortization; FX = foreign exchange.

Corporate bond spreads are also sensitive to external and balance sheet factors.

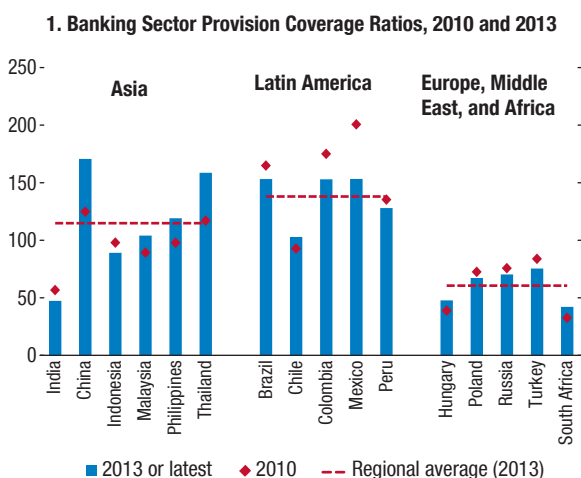
**10. Corporate Bond Spreads and Sensitivity to Shocks (basis points)**



Sources: JPMorgan Chase & Co.; S&P Capital IQ; and IMF staff calculations.  
Note: The sensitivity analysis assumes two-standard deviation deterioration in the balance sheet metrics (see main text), and a 10 percentage point increase in the VIX equity volatility index. VIX = Chicago Board Options Exchange Volatility Index.

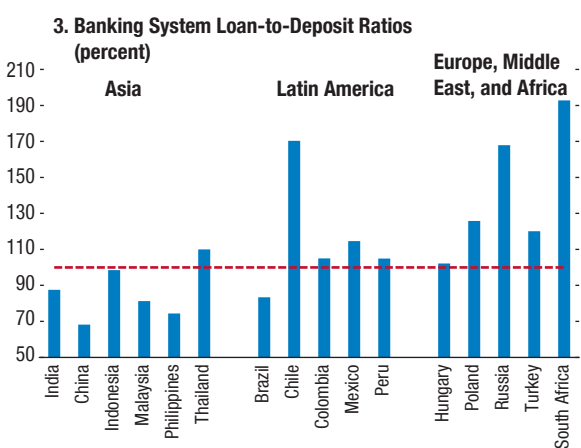
**Figure 1.21. Emerging Market Bank Resilience**

Tier 1 capital may be high, but loan loss provisioning appears weak in some countries...



Sources: IMF, Financial Soundness Indicators; and IMF staff calculations.

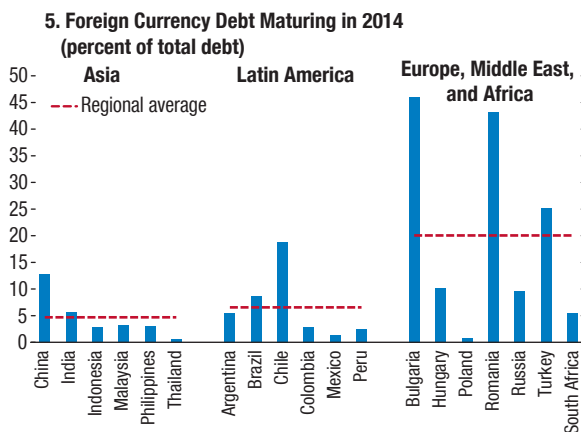
High loan-to-deposit ratios also expose banks to funding risks...



Source: IMF, Financial Soundness Indicators.

Note: The ratio is total loans divided by customer deposits. In India, if the statutory liquidity ratio (at 23 percent) is included, the banking system loan-to-deposit ratio could increase to 102 percent.

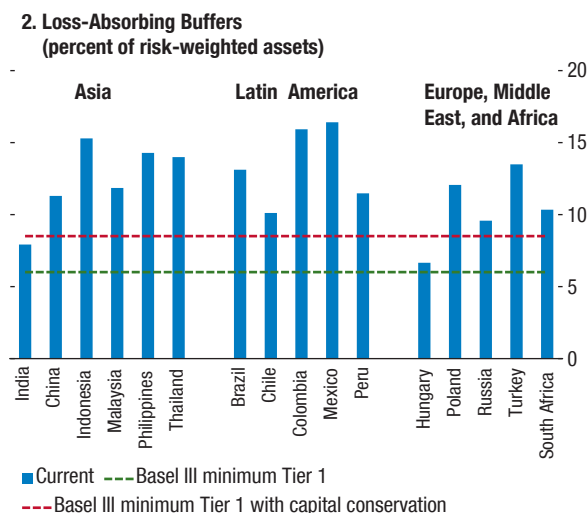
EMEA is particularly exposed, as a high share of foreign currency debt matures this year for banks.



Source: Bloomberg L.P.

Note: Based on banks' foreign currency bonds and loans, as reported in Bloomberg L.P.

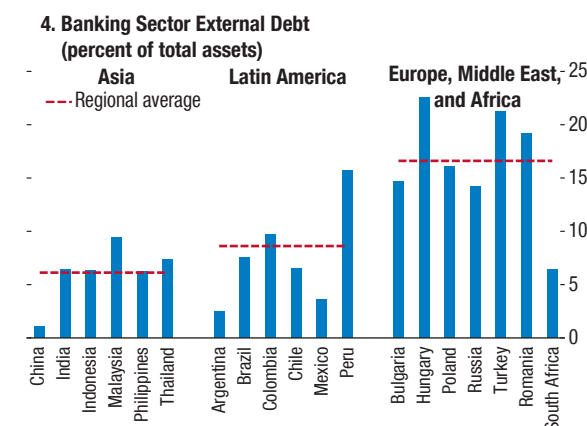
...suggesting that buffers may be insufficient to absorb unanticipated loan losses.



Sources: IMF, Financial Soundness Indicators; and IMF staff calculations.

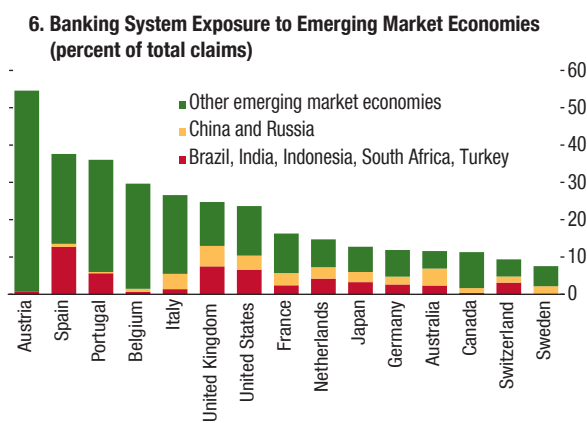
Note: Loss absorbing buffers are computed as Tier 1 capital + loan loss reserves – nonperforming loans, all divided by risk-weighted assets.

...and reliance on external funding could exacerbate this risk.



Sources: IMF, Quarterly External Debt Statistics, Financial Soundness Indicators.

The presence of large advanced economy banks raises the potential spillovers.



Sources: Bank for International Settlements; and IMF staff estimates. Note: Figure shows consolidated data on an ultimate risk basis.

grown strongly since 2010 as macroeconomic policies turned highly stimulative in the immediate aftermath of the global financial crisis. It has continued to expand rapidly, notwithstanding the broad tightening of domestic financial conditions during 2013.

Much of the nonbank credit provision in China, excluding bond financing, has consisted of commercial banks doing bank-like business away from their own balance sheets. In many cases, this reflects the desire of banks to move particular types of loans off their books to avoid constraints on certain lending activities. One common approach is to sell a loan to a trust company and help the trust finance the loan by raising funds from the bank's own customers. The bank may do this by selling trust products to its wealthy customers and also by selling shares in collective wealth management products (WMPs) that then invest in trusts or other assets. The stock of WMPs is now estimated to be about 10 trillion Chinese yuan, or nearly 20 percent of GDP (Figure 1.22, panel 1). The growth of WMPs helped finance a near doubling of trust loans in 2013 with at least 40 percent of these products now intermediated through trusts (Figure 1.22, panel 2). Funding of trusts may also come from interbank markets, often to fill gaps caused by rollovers of WMPs, but lack of data impedes reliable estimates of how important this has become. Nonbank credit extends well beyond WMPs and trusts, but these are two important components that have grown rapidly and, due to the similarity with regular banking products, could pose some risks to financial stability.

Nonbank credit can play a useful and innovative role in providing financing to the real economy, but in China the provision of this credit may be affected by moral hazard on both the liability and asset sides of the balance sheet. Returning to WMPs on the liability side, the expected yield on WMPs is currently about 200 basis points greater than bank deposit rates (Figure 1.22, panel 4). But that margin is about the same whether or not the WMP carries an explicit guarantee (Figure 1.22, panel 3), which suggests that many savers consider their WMP or trust investments to be inherently safe or to be guaranteed by the sponsoring or issuing institution. But this perception of safety could quickly disappear in an environment of rising product defaults (or even yield shortfalls), raising the risk that investors could abandon their WMPs for bank deposits.

Maturity transformation represents another source of risk. Nonbank institutions typically finance at short maturities and invest in longer-maturity assets or lend

to borrowers undertaking long-term projects as one way to generate high expected returns. For example, over one-third of trusts are invested in real estate, infrastructure, and mining (the number may be higher as many trusts do not disclose their exposures), and these trusts, on average, offer yields of about 9 percent. Funding therefore needs to be rolled over frequently. This can contribute to sudden shifts in liquidity demand, raising the volatility of money market interest rates. The average tenor of WMPs is very short at about four months, and funds are typically switched back into deposits to meet the banks' month-end regulatory requirements, creating potential liquidity spikes around reporting days.

On the asset side, nonbank institutions lend to sectors that are widely considered to enjoy an implicit public guarantee, notably local government financing vehicles (LGFVs) and state-owned enterprises. Yet regulators have put many of these borrowers off limits for bank credit because many of them are highly leveraged with deteriorating cash flows.

This combination of quasi-deposit liabilities, maturity transformation, weaker asset quality, and inadequate disclosure presents a significant risk for the commercial banks involved in nonbank credit provision. Capital cushions in nonbank institutions are low, given that risk is nominally passed on to investors. For example, the leverage ratio for trusts, conservatively including assets under management, stood at 35 times equity at the end of 2012 (Figure 1.23, panel 1). In reality, however, if investors in nonbank investment products continue to avoid return shortfalls even when underlying assets do not perform adequately, then banks that sold the product may face pressures to compensate investors and absorb losses.

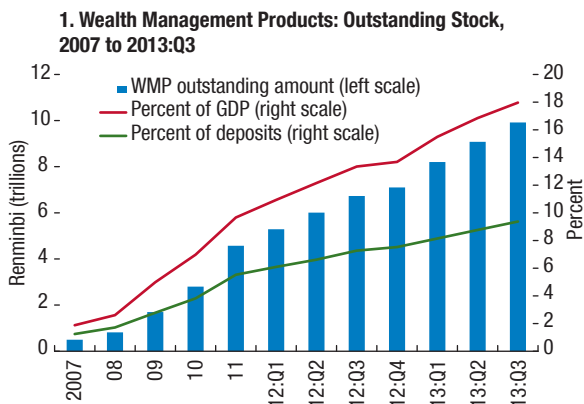
Pockets of stress have already begun to emerge, particularly in the trust sector, with spillovers to other parts of the financial system. Some trusts have begun to have difficulty making principal and interest payments. But until now, compensating payments from the issuing bank or trust company, evergreening into new trust products, or takeovers by third parties have prevented defaults in most cases. Likewise, WMPs have not defaulted, in part because banks have been able to cross-subsidize returns through the practice of asset pooling.

Borrowers from nonbank institutions, notably LGFVs, are also experiencing sharply higher funding costs (Figure 1.23, panel 2). Because regulators have increasingly required investment products to hold



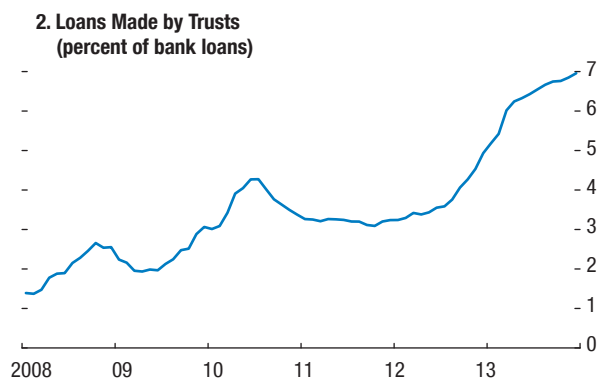
**Figure 1.22. China: Wealth Management Products and Trusts**

Assets held in WMPs mainly issued by commercial banks have increased rapidly...



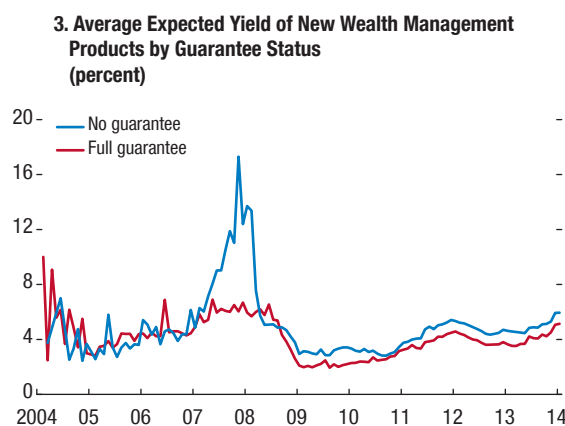
Sources: China Banking Regulatory Commission; CEIC; local media; and IMF staff calculations.

...with many WMPs financing the rapid growth in loans made by trusts.



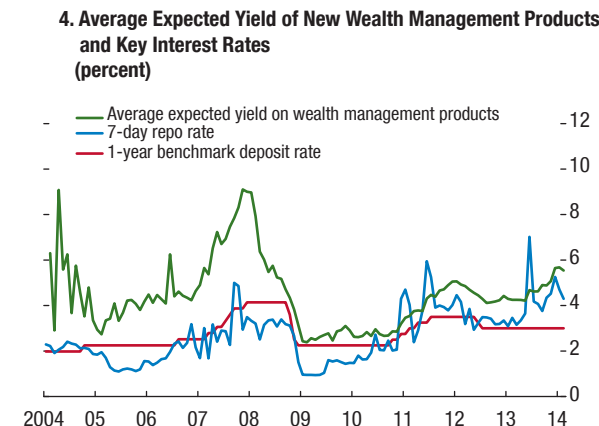
Sources: CEIC; and China Trust Association.

The difference in expected yield between explicitly guaranteed and nonguaranteed WMPs remains small, suggesting little distinction...



Sources: WIND; and IMF staff estimates.  
Note: Sample covers all products issued by banks covered in WIND.

...and WMPs remain attractive to investors as they offer a sizable expected yield premium over regulated bank deposit rates.

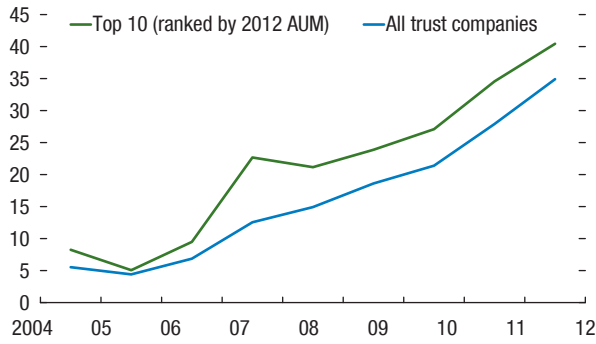


Sources: WIND; People's Bank of China; and IMF staff calculations.

**Figure 1.23. China: Selected Financial Sector Developments**

Conservatively including assets under management, indicators of trust leverage have risen significantly.

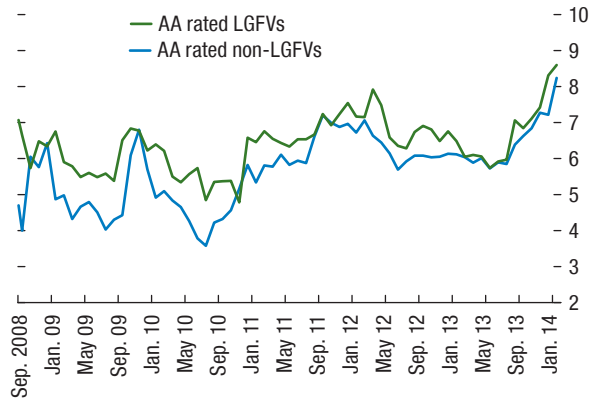
**1. Trusts: Assets under Management to Equity Ratio**



Sources: WIND; and IMF staff calculations.  
Note: AUM = assets under management.

Funding costs for local government financing vehicles, large users of nonbank credit, have increased.

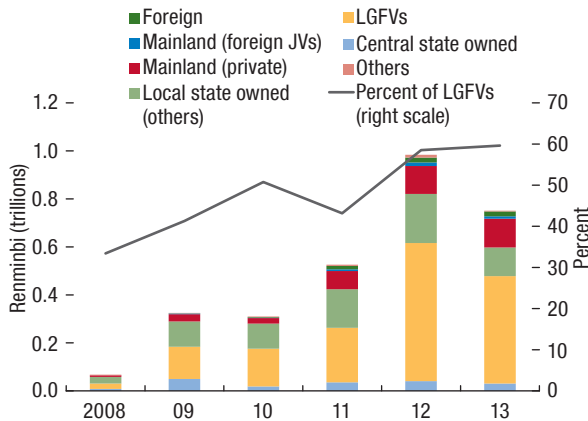
**2. Corporate Bonds: Coupons Paid on New Issues (percent)**



Sources: WIND; and IMF staff estimates.  
Note: LGFV = local government financing vehicle.

Increasing constraints on nonbank credit since 2011 have encouraged some borrowers to turn more to the bond market.

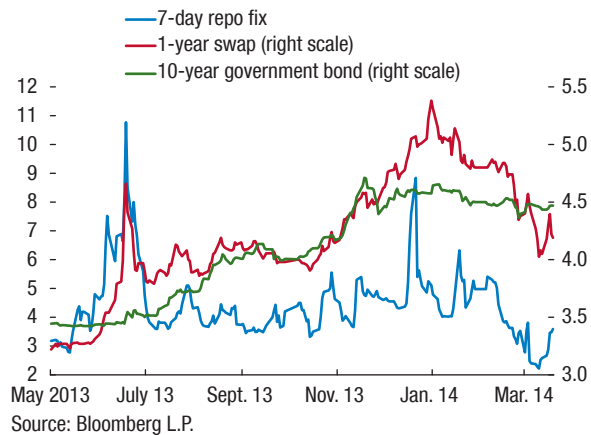
**3. Issued Amount of AA Rated Nonfinancial Corporate Bonds**



Sources: WIND; IMF staff estimates.  
Note: Local government financial vehicles (LGFVs) are mainly local state-owned. JVs = joint ventures.

The rapid growth of nonbank credit has likely contributed to more volatile money market interest rates.

**4. Selected Market Interest Rates (percent)**



Source: Bloomberg L.P.

“standard” (that is, exchange-traded) assets, LGFVs have shifted notably to the bond market since 2011 (Figure 1.23, panel 3). Property developers also rely on nonbank credit and this group has, until now, been able to absorb higher interest rates as property prices have kept rising.

China retains significant macroeconomic policy space to respond to spillovers from nonbank credit markets, but the impact on the broader financial system could still be considerable in the event of a large shock. Although the major banks have substantial capital positions that provide some buffer, spillovers could be amplified by shortfalls in disclosure that cloud assessments of counterparty risks and systemic linkages across institutions. Both factors may have played some part in the rise in money market volatility since mid-2013 (Figure 1.23, panel 4). Large unpredictable changes in liquidity demand by institutions funding off-balance-sheet positions, a resulting hoarding of liquidity, and the possibility of rising counterparty risks may already have triggered large spikes in interbank interest rates.

Any first-round cross-border financial spillovers from stress in China’s financial system should be limited because capital account restrictions effectively insulate the domestic financial system. Linkages are increasing, however, as reflected in the rapid growth of offshore borrowing by Chinese firms, especially through Hong Kong SAR banks, for which nonbank mainland exposures broadly measured reached almost 20 percent of total assets at the end of 2013. The offshore renminbi (CNH) market is another potential spillover channel. Unanticipated changes in the CNH exchange rate can lead to material losses for mainland firms that increasingly use this market, including complex structured products, to manage their exposures. Second-round cross-border effects arising from a growth slowdown would be more substantial at this point. Growth remains largely dependent on investments in infrastructure and property development; without an alternative driver of growth, an impaired credit channel could weaken China’s aggregate demand and growth, with potentially large spillovers to other economies.

Policymakers have made welcome progress in addressing some of the risks posed by the rapid growth in nonbank credit. Moving quickly to implement financial sector reform plans and adopting a broader approach will help to ensure the nonbank sector contributes to healthy financial sector diversification. Important advances that have been made include restricting per-

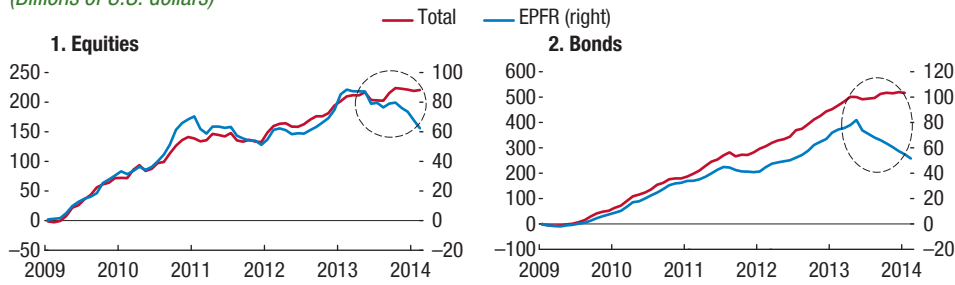
missible investments for WMPs and banning the pooling of WMP and trust assets. However, unless implicit guarantees are explicitly removed, the incentives for market participants to evade will remain too high for these constraints to fully succeed. The challenge for policymakers is to manage the transition to a monetary policy framework and financial sector in which market forces play a larger role—including the removal of implicit guarantees—without triggering broad-based financial system stress. In this process, investors and lenders may have to bear some costs of previous financial excesses, and market prices will need to more accurately reflect risks. An important step in this direction was taken in March 2014 with the first onshore corporate bond default, by a small solar industry firm. The market reaction to this default has been orderly. Pacing further adjustment appropriately is important—too fast risks a disorderly adjustment; too slow and vulnerabilities will continue to build. As implicit guarantees are removed, upgrading the central bank’s liquidity management framework to address unpredictable shifts in liquidity demand is critical. The central bank has recently made progress in this direction, including temporarily broadening access to, and clarifying the terms of, the Standing Lending Facility.

On the path to greater market discipline, increased disclosure and transparency would reduce uncertainty and help contain adverse spillovers. Efforts to improve data quality, including by addressing double-counting in some indicators, would be welcome. More could be done to enhance disclosure, such as identifying how nonbank credit is funded, what assets are held in nonbank investment products and reporting cross-ownership and leverage. The authorities have announced plans to establish formal deposit insurance and liberalize deposit rates, both of which would weaken incentives for regulatory arbitrage and encourage more accurate risk pricing for explicitly nonguaranteed investment products. Extending the regulatory perimeter, upgrading supervisory capacity, and strengthening the resolution framework for failed financial institutions will also be integral components of a broad-based policy response.

#### *Sensitivity to portfolio outflows and market liquidity*

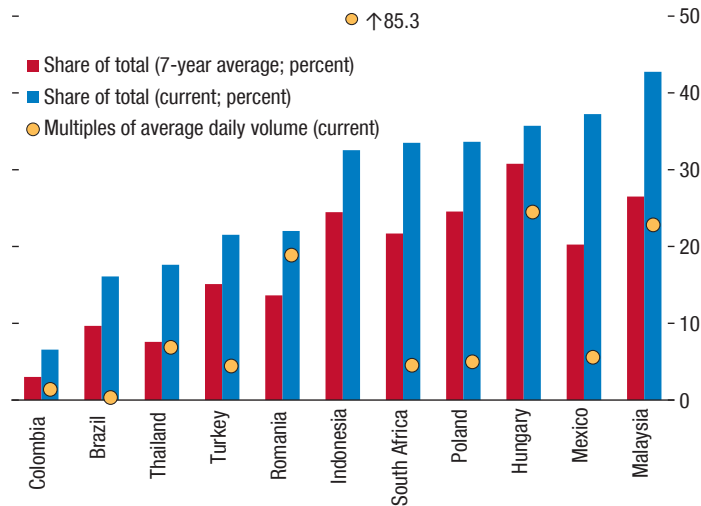
It is too early to judge how the reduction in U.S. monetary accommodation will affect long-term portfolio flows to emerging market economies, but early indications suggest those economies that proceeded to

**Figure 1.24. Total and Retail Portfolio Flows to Selected Emerging Market and Other Economies**  
(Billions of U.S. dollars)



Sources: Bloomberg L.P.; EPFR Global; national authorities; and IMF staff calculations.  
Note: For equities, the total flows are to Brazil, India, Indonesia, Korea, Philippines, South Africa, Thailand, and Turkey. For bonds, the total flows are to Brazil, Hungary, Indonesia, Korea, Malaysia, Mexico, Poland, Russia, South Africa, and Turkey.

**Figure 1.25. Share of Nonresident Holdings of Local Currency Government Debt and Market Liquidity**



Sources: Asian Development Bank; national authorities; and IMF staff calculations.  
Note: The liquidity is expressed as nonresident holdings of debt divided by the average daily trading volume. The higher the number, the longer it takes for nonresident capital to leave the domestic market, all else being equal.

enhance the credibility of their policy frameworks were less exposed to recent bouts of volatility. In addition, the scope and pattern of outflows may be significantly different from those of reduced inflows. Indeed, portfolio flows to emerging market bonds and equities continued to increase in 2013, albeit at a slower pace than in the previous year, and the strong reversal of retail flows did not serve as a leading indicator for the behavior of total flows in 2013 (Figure 1.24). However, last year’s May-June stress test in the United States in the wake of the announcement of eventual policy normalization highlighted the circumstances

that could lead to destabilizing asset price corrections and tightening of financial conditions.

Analysis in the October 2013 GFSR showed that the large increase in nonresident holdings of local currency debt coincided with a decline in liquidity conditions in secondary markets (Figure 1.25); this combination can create larger market price fluctuations during periods of outflows even if the outflows are small. The situation represents a “systemic liquidity mismatch” between the potential for portfolio outflows from emerging market economies and the capacity of local institutions and market makers (in particular

Table 1.6. Summary of Indicators

	Domestic Sector Vulnerabilities			External Sector Vulnerabilities		Nonfinancial Corporate Vulnerabilities <sup>1</sup>			Banking Sector Vulnerabilities	
	Real Credit and GDP Growth Differential (percent)	Inflation 2014 Forecast Relative to Target Rate (y-o-y; percent)	Two-Year Real Interest Rate Relative to 2003–08 (percent)	Current Account Balance; 2014 Forecast (percent of GDP)	Reserves to External Financing Requirements	Increase in Debt-at-Risk (percent of total debt)	Increase in Firms-at-Risk (percent of total firms)	FX Loss / EBITDA (percent; including natural hedges and based on 50% hedging)	Gross NPL Ratio (latest versus 5-year average, percentage point difference)	Provision Coverage Ratio (latest available)
Brazil	-2.8	1.4	-3.1	-3.6	2.3	27.5	16.1	2.6	-0.3	153.1
Bulgaria	-2.7	...	...	-0.4	...	...	...	...	...	63.0
Chile	3.3	0.0	-0.9	-3.3	1.0	4.6	12.2	...	0.0	102.8
China	5.1	...	3.0	2.2	6.6	23.5	12.2	2.8	-0.5	170.7
Colombia	10.4	-0.3	-1.2	-3.3	1.1	22.9	16.0	...	-0.3	153.0
Hungary	-7.5	-0.1	0.5	2.7	1.5	...	...	...	7.0	47.8
India	3.0	...	-2.3	-2.4	1.4	18.2	18.8	11.5	1.0	47.3
Indonesia	10.3	1.0	-1.8	-3.0	1.1	7.7	11.0	12.1	-0.8	89.1
Malaysia	7.9	...	-0.9	4.1	3.0	14.2	6.1	4.6	-1.3	104.0
Mexico	7.9	1.0	-3.7	-1.9	1.2	2.7	10.7	1.5	0.1	153.2
Peru	8.5	0.3	...	-4.8	...	...	...	6.2	0.8	128.0
Philippines	4.9	0.0	-4.6	3.2	5.3	36.3	9.4	6.7	-0.6	80.1
Poland	-0.2	-0.4	-1.1	-2.5	1.1	8.3	7.9	2.7	-1.0	67.3
Romania	-7.7	...	0.2	-1.7	0.9	...	...	...	9.3	90.4
Russia	10.7	0.3	5.9	2.2	3.9	3.5	8.9	0.0	-0.5	70.3
South Africa	0.3	1.8	-2.3	-5.4	0.8	27.3	7.7	1.0	-1.0	42.1
Thailand	3.7	0.1	-0.2	0.2	2.4	12.7	8.1	6.5	-2.3	158.6
Turkey	19.2	3.0	-2.9	-6.3	0.5	36.6	20.6	12.1	-0.8	75.4

<sup>1</sup>Based on sensitivity analysis.

Sources: Bank for International Settlements, IMF Financial Soundness Indicators, World Economic Outlook database, S&P Capital IQ, and IMF staff calculations.

Note: For countries with inflation target bands, the center of the band is considered to be the inflation target. International reserves for Colombia, Mexico, and Poland exclude their Flexible Credit Lines. See previous figures and table for explanation of each column. EBITDA = earnings before interest, taxes, depreciation, and amortization; FX = foreign currency; NPL = nonperforming loans; y-o-y = year over year.

international banks) to absorb those outflows. Bouts of illiquidity can cause significant price changes and spill across markets, including—as asset managers seek to hedge exposures—in more liquid markets (see Chapter 2 on the changing sensitivity of capital inflows to emerging market economies).

The discussion of the domestic and external vulnerabilities of the private and public sectors throughout this section provides guideposts for judging an economy's soundness and susceptibility to external shocks. Table 1.6 summarizes the indicators presented in this section.

### Policy implications

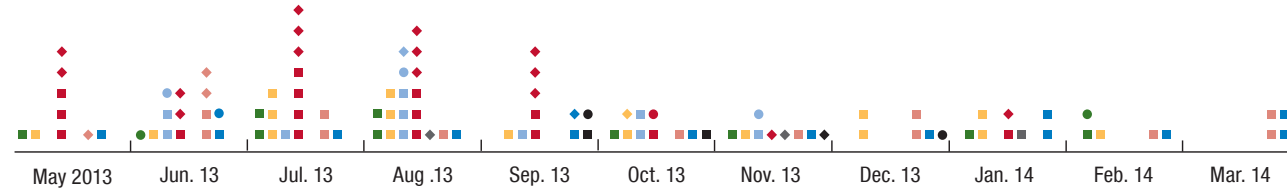
Policymakers in emerging market economies have moved to stem the growing tide of concerns about the vulnerabilities that have built up during the past few years. Figure 1.26 gives a brief summary of the steps taken by some economies, but more could be done to mitigate risks in the face of increased market volatility and tighter external conditions:

- Foremost is the need to address macroeconomic imbalances where they exist. Confidence is crucial, and coherent and credible policies and frameworks are central. As highlighted in the April 2014 *World Economic Outlook*, addressing macroeconomic imbalances may require further monetary tightening where inflation remains high. Additional steps to strengthen policy frameworks may be needed where the credibility of nominal anchors is weak.
- In many cases, markets have responded negatively to monetary, fiscal, or regulatory measures that they have perceived as being inappropriate, even if other fundamentals are good. However, confidence can often be regained if there is a decisive shift toward credible, sustainable policies.
- Currencies should be allowed to respond flexibly to changing fundamentals to facilitate external adjustment. But very abrupt changes in currencies could be disruptive. If reserve buffers are adequate, intervention could seek to smooth unusually high exchange rate volatility or prevent financial disruption. The scope for short-term intervention

**Figure 1.26. Summary of Selected Emerging Market Policy Actions since May 2013**

Country: **Brazil, Turkey, Indonesia, India, South Africa, China, Russia, Mexico**

Policy: ■ Monetary ● Fiscal ◆ Macroprudential and other



	Monetary Policy	Fiscal Policy	Macroprudential and Other
<b>Brazil</b>	Policy rate hikes and currency intervention program through currency swaps and repurchase agreements	Proposed \$18.5 bn fiscal tightening and a new primary surplus goal of 1.9% for 2014	IOF tax rate on foreign purchases of fixed-income debt instruments reduced to zero
<b>China</b>	Introduction of prime interest rate for commercial bank loans, banks allowed to issue deposit certificates with market-determined interest rate, and elimination of government floor on bank lending rates; regular weekly open market operations and special liquidity operations		Tighter rules on banks with foreign currency loans exceeding 75% of their foreign currency deposits
<b>India</b>	Policy rate hikes, liquidity tightening measures, and currency intervention	Government departments asked to cut non-plan expenditure by 10%	Tighter rules on lending against gold, some gold imports restrictions, higher taxes on gold import, lower cap on capital inflows for investors and Indian residents; subsidy program for banks hedging nonresident foreign currency deposits and bank capital, easing investment rules for foreigners and Indian expatriates
<b>Indonesia</b>	Policy rate hikes, currency intervention, relaxed holding period of central bank securities, and tightening of the secondary reserve requirement	Curbed energy subsidies to reduce external and fiscal pressures	Lower loan-to-value ratios on second and third mortgages and lower loan-to-deposit ratio-linked reserve requirement
<b>Mexico</b>	Policy rate cut	Amendments to the Fiscal Responsibility Law and tax overhaul that seeks to boost the government's nonoil revenue	Financial Sector Reform aiming to foster competition, increase credit and reduce bank fees and loan interest rates
<b>Russia</b>	Policy rates hike, higher intervention threshold to shift the foreign exchange band with discretion allowed as an alternative to rule-based actions, better clarity over the short-term rate corridor, rationalization of the structure of monetary policy instruments	Pension reform and changes to energy taxation	Higher risk weights for consumer loans, introduction of higher provisioning requirements for uncollateralized retail loans to limit unsecured retail lending growth
<b>South Africa</b>	Policy rate hike		
<b>Turkey</b>	Policy rate hike, and currency intervention		Introduction of credit card limits and changes to provisioning rates for uncollateralized consumer loans and on export and small and medium enterprise loans

Source: National authorities.

- measures to avoid excessive volatility varies widely by country, but multilateral efforts for cooperation could provide additional buffers.
- If confronted with significant outflows, policymakers should act swiftly to prevent self-reinforcing feedback loops and to ensure orderly market conditions. Possible actions include using cash balances, reducing the supply of long-term debt, and performing switching auctions to temporarily reduce supply on the long end of yield curves.
  - Supervisory and macroprudential policies remain important to safeguard stability. Many firms have sufficient buffers to withstand normal shocks to both their domestic and external conditions. Nonetheless, several emerging market economies face significant challenges in managing the increased leverage of their corporate sectors.
  - Stronger macroprudential policies may be needed in economies where large capital inflows have accompanied rapid credit growth and the buildup of overly leveraged positions.<sup>22</sup> Policymakers should contain the rapid growth of corporate leverage, particularly in foreign currency. In some cases, the accumulation of foreign currency debt will have to be matched by appropriate hedges. Additionally, policymakers should endeavor to improve data collection and disclosure on corporate foreign exchange exposures and hedging.
  - For most emerging market economies, the corporate sector as a whole should not present undue challenges to banking stability. But weak bank provisioning and equity capital buffers in a few economies could raise vulnerabilities in the event of further deterioration in the corporate sector. Moreover, even where provisioning and capital buffers look strong, they may be exaggerated by unrecognized losses and loan forbearance, which ultimately render buffers insufficient to cushion losses in a downside scenario. Regulatory authorities need to ensure that banks actively and adequately clean their balance sheets and maintain adequate buffers by increasing countercyclical provisioning and equity capital as needed.
  - In China, building on current policy efforts to contain financial stability risks in the nonbank financial system is a top priority. Containing these risks will require tighter prudential oversight, better disclosure, the removal of incentives for regulatory arbitrage, and

<sup>22</sup>The IMF's view on management of capital flows was summarized in 2012, and it recognizes the need for capital flow management measures, but not as a substitute for warranted macroeconomic adjustment. See also IMF (2012).

facilitation of a gradual removal of implicit guarantees. Enhancing the central bank's liquidity management framework is essential to manage changing patterns of liquidity demand as this process evolves.

### Improving Euro Area Bank Asset Quality to Support Credit

*Market sentiment toward banks has improved—particularly those in stressed euro area countries.<sup>23</sup> But banks in the stressed euro area remain burdened by the large and growing stock of nonperforming loans, largely the result of the corporate debt overhang and the economic slowdown. This burden has been limiting banks' profitability and capacity to provide credit. Without a flow of new credit, it will be difficult for the euro area to complete its transition from financial fragmentation to integration. Euro area policymakers face the difficult task of accelerating the cleanup of bank and corporate balance sheets without disrupting the recovery in market sentiment. Authorities also need to guard against the potential for any further deleveraging to curtail domestic credit and to avoid cross-border spillovers to credit conditions in other economies.*

#### *Banking systems and the credit cycle*

Banking systems are at different stages of the transition through the corporate credit cycle, reflecting the state of the economy in which they operate as well as banks' and nonfinancial companies' balance sheet health. For example, the Japanese and U.S. banking systems are in a period of credit growth and loosening credit standards (Figure 1.27, panel 1). Following financial crises (Japan in the late 1990s and the U.S. in the late 2000s), each economy strengthened its banking sector by resolving nonviable banks and by providing strong fiscal backstops for viable institutions. The United Kingdom is in an intermediate phase, where the banking system is in a position to loosen corporate credit standards, but where credit is still declining year over year.

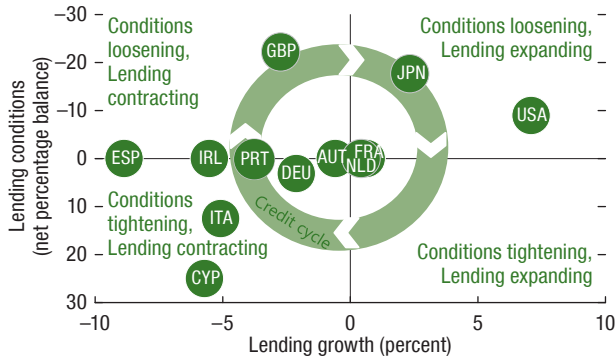
In the euro area, credit conditions continue to be fragmented. Although some banking systems are in a neutral phase of stable credit growth and lending standards, others remain in a phase of falling credit or tightening conditions on corporate loans. If the euro area is to make the transition from financial fragmentation to integration,

<sup>23</sup>Stressed euro area countries generally include Cyprus, Greece, Ireland, Italy, Portugal, Spain, and Slovenia, though in some parts of this section it may refer to a subset of these economies.

**Figure 1.27. Bank Credit and Market Indicators**

Banking systems are at different stages of the corporate credit cycle.

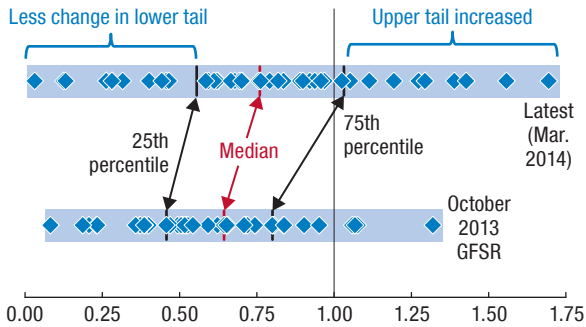
**1. Bank Lending to Nonfinancial Companies: Growth and Conditions**



Sources: National statistics; and IMF estimates.  
 Note: AUT = Austria; CYP = Cyprus; DEU = Germany; ESP = Spain; FRA = France; GBR = United Kingdom; IRL = Ireland; ITA = Italy; JPN = Japan; NLD = Netherlands; PRT = Portugal; USA = United States. Lending growth based on banks located in each country. Lending conditions based on surveys that may not be fully comparable across countries.

... with euro area price-to-book ratios increasing ...

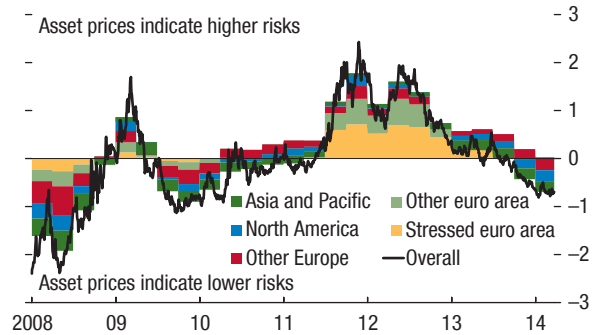
**3. Euro Area Bank Price-to-Book Ratios**



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

Market sentiment toward banks has continued to improve ...

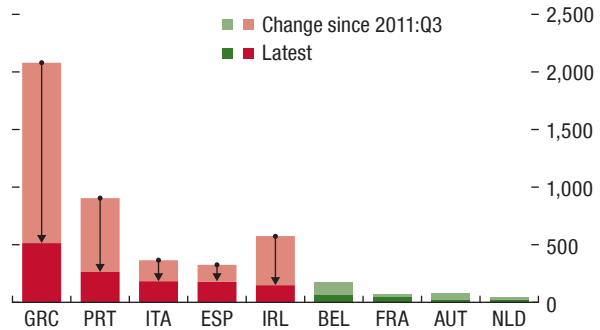
**2. Market Indicator of Banking Risks (standard deviation from mean)**



Sources: Bloomberg L.P.; and IMF staff estimates.  
 Note: Shows an average of z-scores of bank credit default swaps and price-to-book ratios, calculated over 2008–13. Based on a sample of large banks and weighted by end-2012 bank assets.

... while sovereign spreads in stressed euro area economies have tightened.

**4. Euro Area 10-Year Sovereign Spreads (basis points)**



Sources: Bloomberg L.P.; and IMF staff estimates.  
 Note: AUT = Austria; BEL = Belgium; ESP = Spain; FRA = France; GRC = Greece; IRL = Ireland; ITA = Italy; NLD = Netherlands; PRT = Portugal. Shows spread to German 10-year bonds.



credit conditions need to improve and credit needs to flow throughout the region. This section discusses the progress being made toward this goal and the policies needed to help support faster financial integration in the euro area.

### *Market sentiment toward banks has been improving*

Market sentiment toward banks at the global level has continued to improve since the October 2013 GFSR. Aggregate bank price-to-book ratios have risen, and aggregate credit default swap spreads have tightened, signaling that risks are below their 2008–13 average (Figure 1.27, panel 2). This improvement in bank asset prices follows the continuing trend in global markets of buoyant asset prices, increasing capital ratios at banks inside and outside Europe, regulatory developments that have reduced uncertainty for banks (Box 1.5 discusses this in more detail), and a continued warming in sentiment toward the euro area.

The focus of markets has shifted away from the pricing of systemic threats in the euro area to identifying idiosyncratic risks in individual institutions. This shift is due, in part, to better policies at the national and European levels, including steps toward a euro area banking union (Box 1.6) and higher capital ratios in banks inside and outside Europe. However, although price-to-book ratios of the euro area banks with the highest valuations have improved significantly since the October 2013 GFSR, the lowest valued institutions—where idiosyncratic risks may lurk—have not improved as much (Figure 1.27, panel 3).

### *The bank-sovereign nexus has now gone into reverse to the benefit of banks*

Euro area bank asset prices have improved in lock-step with the tightening in sovereign spreads in stressed euro area economies (Figure 1.27, panel 4). Spreads have fallen following the introduction of the European Central Bank's Outright Monetary Transactions framework and as demand for sovereign bonds from global real money fund managers and domestic banks has grown. Indeed, bank holdings of domestic government bonds have increased rapidly in Italy and Spain over the past two years, despite the recent lowering in exposures ahead of the ECB's comprehensive assessment (ECA) of banks.<sup>24</sup> While not at unprecedented

levels, government bond holdings now represent about 10 percent of total assets.

The rise in bank exposures to sovereigns has strengthened the sovereign-bank nexus (see Box 3.4 in Chapter 3 for a discussion of banks and sovereign linkages). But in contrast to the situation at the height of the euro area crisis, the effect of the nexus on banks has been operating in reverse. Lower sovereign spreads have helped reduce bank wholesale funding costs, yet greater reliance on interest income from holdings of government bonds has increased banks' sensitivity to sovereign financing shocks, such as those that could result from a bumpy exit of U.S. monetary policy. Furthermore, the Single Resolution Mechanism could go some way toward severing sovereign-bank links (see Box 1.6).

### *Stressed euro area banks are still burdened by the stock of nonperforming loans*

High and rising levels of nonperforming loans continue to burden banks in stressed euro area economies. This stock of nonperforming assets has doubled since the start of 2009 and now stands at more than €800 billion for the euro area as a whole (Figure 1.28, panel 1). While European banks have also been facing a deterioration in the quality of their household exposures, the bulk of the overall stock of defaulted exposures stems from the corporate loan book (Figure 1.28, panel 2). The majority of current defaulted assets are also from domestic exposures, but as noted above, banks with sizable cross-border activities could face spillovers from risks in emerging market economies.

This weak tail of corporate exposures—defined in the October 2013 GFSR as firms whose earnings (before interest and taxes) are less than interest expenses—is significant and has been persistent, representing about 20–30 percent of corporate debt in Italy and about 30–40 percent of corporate debt in Spain and Portugal, on average, in 2012 (Figure 1.28, panel 3).

Banks have been making efforts to increase capital ratios to bolster their resilience (as discussed in Box 1.7). Institutions have also been striving to maintain or increase provisioning ratios against the backdrop of the rising level of nonperforming loans.<sup>25</sup> These actions have allowed banking systems in many euro

<sup>24</sup>See ECB (2013) for more details. The asset equity reviews and stress tests are being conducted across the European Union, coordinated by the European Banking Authority.

<sup>25</sup>For example see, IMF (2014).

### Box 1.5. Financial Regulatory Reform: Can We Make It to the Finish Line?

Five years ago the London and Pittsburgh Summits of the G20 established an unprecedented regulatory reform agenda, and the first few years of implementation saw fast progress in formulating the new regulatory requirements. New capital standards, rules for credit ratings agencies and hedge funds, compensation principles, and rules for derivatives trading were all agreed to in a time frame thought impossible in precrisis days. But over the past two years reforms have begun to lag under the weight of discussions on the more controversial rules—such as the convergence of accounting standards and tougher liquidity standards for banks—and the even harder work of implementation.

The leverage ratio, agreed upon by the Basel Committee in January 2014, is the latest example. The leverage ratio is intended to limit the potential for undercapitalization from the use of risk-weighted assets for calculating the regulatory capital ratio. A mandatory and binding non-risk-based minimum 3 percent leverage ratio backstop to the main risk-weighted capital ratio is seen by many to be a credible way to restore confidence in the capital adequacy standards for internationally active banks. A number of academic studies on the determinants of bank failure or distress during the crisis found that leverage ratios are one of the strongest predictors of bank financial distress, outperforming other metrics including risk-based regulatory capital.<sup>1</sup>

However, recent modifications of the leverage ratio to include risk-based credit conversion factors for off-balance-sheet transactions may have weakened the original aims of simplicity, transparency, and comparability across institutions. The final proposal also softens the requirements on derivatives and allows netting of securities financing transactions. Furthermore, there is a risk of dilution because the Basel Committee agreed that additional adjustments to calibration and definitions can be made until 2017, with the key decision on whether the leverage ratio will be binding (Pillar I) or advisory (Pillar II) also postponed. There are already indications that some jurisdictions may adopt a more ambitious leverage ratio than the Basel minimum—for example, the United States has signaled its intention

to implement a higher leverage ratio as part of its final rules on capital.

The Net Stable Funding Ratio (NSFR), also proposed in the Basel III framework, is still under construction but is expected to go into effect in January 2018. The Basel Committee revisions to the original NSFR proposal seek to reduce cliff effects within the measurement of funding stability and alter its calibration to focus more on shorter-term, potentially more volatile funding sources. While the revisions have the advantage of improving the NSFR's alignment with the Basel III Liquidity Coverage Ratio, they are also expected to be more accommodative to banks' business models, requiring less change than banks had originally anticipated.

The issue of “too-important-to-fail” (TITF) still remains to be fully tackled (Chapter 3 discusses this in more detail). Notwithstanding the progress since 2011 (the European Union agreement on the Bank Recovery and Resolution Directive reached in December 2013 being the most recent milestone), many jurisdictions have yet to fully align their resolution regimes with best practice. Moreover, further efforts are needed to (1) identify and remove barriers to firms' resolvability, requiring reforms to operating and funding structures, and consensus on gone concern loss-absorbing capacity and (2) give cross-border effect to resolution measures.

Major jurisdictions have undertaken their own rules to address the TITF issue, most recently rules affecting the structure of banks and their permitted activities. The latest proposal comes from the European Commission, which has released its draft regulation for imposing structural measures on banks. Like the U.S. Volcker Rule and the U.K. Vickers Report, the European Commission proposal aims to reduce the exposure of depositors to trading risk by prohibiting (including through ring-fencing) or limiting proprietary trading. In addition, several European jurisdictions approved national rules aiming to achieve similar objectives. This proliferation of national and regional rules applicable to global institutions will be a challenge both to regulators and to the affected institutions and may result in unintended spillovers or regulatory arbitrage.

Progress on the nonbank side of the agenda has been more mixed in comparison with the Basel agenda. While reporting and clearing requirements for over-the-counter derivatives trading have been agreed upon internationally, harmonization of these rules across borders—imperative in a market that is

Note: Prepared by Marc Dobler, Jennifer Elliott, Michaela Erbenova, and Christopher Wilson.

<sup>1</sup>See, for example, Blundell-Wignall and Roulet (2013); Brealey, Cooper, and Kaplanis (2011); Detragiache, Demirgüç-Kunt, and Merrouche (2010); and IMF (2009).

**Box 1.5 (continued)**

truly global—remains elusive. Progress on trading standardized contracts on exchanges and electronic trading platforms continues to lag behind the original timetable. Leadership from both the United States and the European Union is critical to moving this agenda forward. The question of how to best deal with the emergence of central counterparties as new TITF entities, especially regarding possible liquidity assistance in a crisis, recovery, and resolution, is now a high priority. The Financial Stability Board and standards setters are conducting important work developing further guidance on recovery and resolution of central counterparties to address this issue.

Regulatory standards for banks' interactions with shadow banks are being tightened, including through counterparty risk exposures and consolidation. Priorities include enhancing data availability, both nationally and internationally, to enable the identification of shadow banking entities and activities as well as information sharing within the Financial Stability Board's policy framework for "other" shadow banking entities. Definitions for the treatment of new shadow banking activities are being finalized, and information-sharing procedures for authorities are being developed. Recommendations for securities lending and repos (haircuts and margins) have been agreed to at the global level and will be finalized in the second quarter of 2014.

The regulatory framework for internationally active insurance groups and global systemically important insurers (G-SIIs) and other systemically important nonbanks must be completed. Although the criteria for identification of G-SIIs were finalized last year with the identification of nine G-SIIs, the International Association of Insurance Supervisors (IAIS) is continuing its review of the reinsurance business model, which may also have the potential to generate systemic risks. The IAIS is also working on developing global Basic Capital Requirements for G-SIIs, which are expected in 2015 or shortly thereafter. For identification of noninsurer, nonbank global systemically important financial institutions, the International Organization of Securities Commissions and the Financial Stability Board have produced a consultation document on an assessment methodology. This approach is consistent with the identification approach for global systemically important banks and G-SIIs, notwithstanding the greater data difficulties.

Reaching a better understanding of the implications of these reforms for financial services and their impact on different economies is key to the completion of the reform agenda. Regaining momentum will require a strong political commitment. In the face of persistent low growth, increased volatility in emerging market economies, and a fraying international consensus, this is indeed a challenge.

### Box 1.6. Rollout of Banking Union Is Progressing, but Challenges Remain

The recent trilogue agreement between the European Commission, European Parliament, and European Council on the Single Resolution Mechanism (SRM) constitutes an important step toward an effective Banking Union. If adopted by the plenary session of the Parliament, the SRM—comprising a Single Resolution Board (SRB) and a Single Resolution Fund (SRF)—would have the following features:

- **Coverage:** The SRM would cover all banks in the member states that participate in the Single Supervisory Mechanism. The SRB would be the primary decision-making body regarding resolution for banks directly supervised by the European Central Bank (ECB) or other cross-border banks, while national authorities will remain responsible for other banks (unless resolution requires access to the SRF, in which case the SRB would always be responsible).
- **Decision making:** Upon a decision by the ECB, or by national authorities after consultation with the ECB, that a bank is failing or likely to fail, the SRB would be authorized to place the bank under resolution, determine the resolution scheme and oversee its implementation. The SRB may also invite the ECB to assess whether a bank is failing or likely to fail and will be able to act on its own initiative if the ECB declines to do so. The Commission is responsible for endorsing resolution schemes adopted by the SRB and can require amendments to be effected prior to implementation of the scheme by national resolution authorities. The trilogue agreement allows the Council to object to the Commission's decision, albeit under specific circumstances. When resolution envisages state aid, such aid would have to be approved by the Com-

mission prior to adoption of the resolution scheme by the SRB.

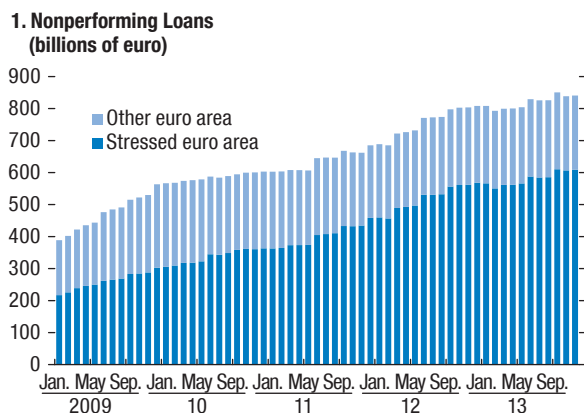
- **Funding:** The SRF, administered by the SRB, will be financed by bank levies raised at the national level, with a target level of €55 billion. It would consist of national funds to be progressively mutualized into a common fund during an eight-year transition period, with 60 percent of national resources being pooled in the first two years. In case of a shortfall, ex post levies on banks in the affected country would be possible.
- **Backstops:** If the cost of resolution actions exceeds both the relevant national fund and the mutualized funds during the transition period, bridge financing would be available via optional lending arrangements between the national funds or from the European Stability Mechanism, in accordance with existing procedures for providing financial assistance to euro area members (indirect recapitalization). The trilogue agreement does not foresee a public guarantee or other form of public support for the SRF. Instead, its firepower will be augmented via private borrowing arrangements. Details of this facility have not yet been defined, but its effectiveness will hinge on timely and unhampered activation, including in times of stress.

In parallel, efforts to complete the Single Rulebook are advancing with recent agreements on the Bank Recovery and Resolution Directive (BRRD) and the Deposit Guarantee Schemes (DGS) Directive. The BRRD, which is expected to enter into force on January 1, 2015, seeks to ensure that failing banks can be wound down in a predictable and orderly fashion with minimum recourse to public funds, while the recast DGS Directive will, among other things, contribute to faster pay-outs of insured funds.

Prepared by Constant Verkoren and Marc Dobler.

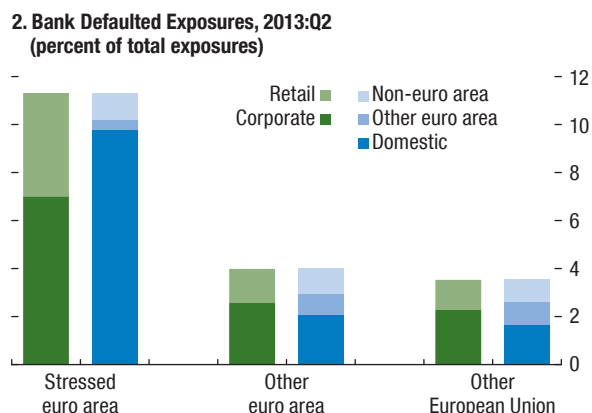
**Figure 1.28. Euro Area Bank Asset Quality**

The stock of euro area nonperforming loans has doubled since the start of 2009 . . .



Sources: National central banks; and IMF staff estimates.  
 Note: Differences in definitions complicate the comparison of nonperforming loans across economies.

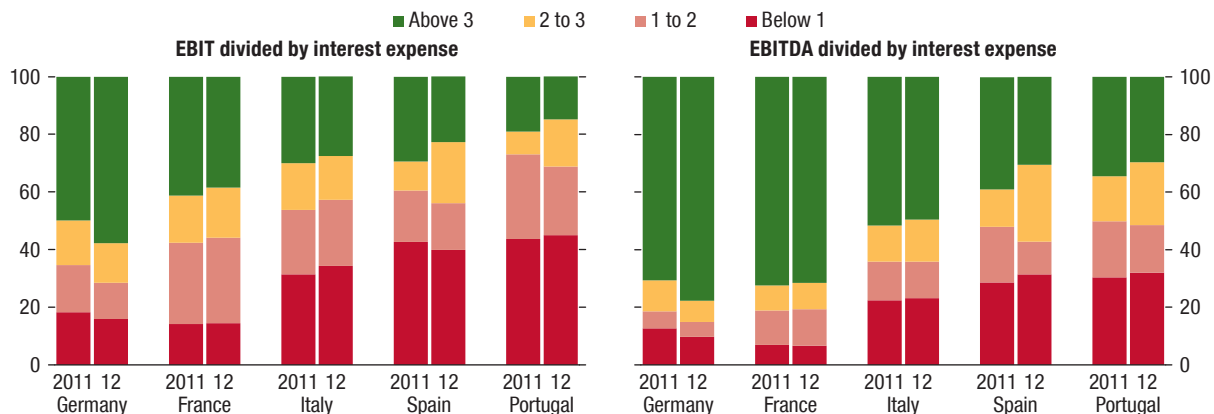
. . . with most of this relating to the corporate loan book . . .



Sources: European Banking Authority; and IMF staff estimates.  
 Notes: Defaulted exposures are taken from the EU-wide transparency exercise conducted by the European Banking Authority. The panel shows consolidated data for a sample of large banks headquartered in each region.

. . . with a weak tail of companies facing debt servicing pressures.

**3. Share of Debt at Firms with Various Interest Coverage Ratios (percent of total debt)**



Sources: Amadeus database; national central banks; and IMF staff estimates.  
 Note: Interest coverage ratio is earnings divided by interest expense. Financial revenues are included in earnings. 2012 data for France are estimated from central bank data using a smaller sample of firms. EBIT = earnings before interest and taxes; EBITDA = earnings before interest and taxes, depreciation, and amortization.

### Box 1.7. European Union Bank Deleveraging

Large EU banks have continued to deleverage—reducing assets by \$2.4 trillion over the two years to 2013:Q3—a pace that is in line with the baseline scenario in the October 2012 GFSR (Table 1.7.1).

However, banks have also been derisking—reducing their risk-weighted assets—by more than had been envisaged. They have accomplished this by substituting capital-intensive businesses for lower risk-weighted activities, holding a greater proportion of assets with low risk weights, and optimizing risk-weight models.

This deleveraging and derisking, along with increases in capital levels, have played a key role in raising EU bank capital ratios (Figure 1.7.1).

Balance sheets have evolved in strikingly different ways. In institutions from stressed euro area econo-

mies, domestic private sector exposures have shrunk significantly (Figure 1.7.2). However, their balance sheets are only about 2 percent smaller because banks have increased their holdings of domestic government bonds, while defaulted exposures have also increased.

Banks in other euro area countries, however, have been deleveraging more aggressively, reducing their assets by almost 8 percent (Figure 1.7.2). But much of this deleveraging has come from cutbacks to external private sector and government exposures—including to stressed euro area economies—as well as to inter-bank exposures. Institutions from other EU countries have not reduced their assets in aggregate—deleveraging in some banks has been offset by rising assets in other institutions.

**Figure 1.7.1. Large European Union Bank Deleveraging**

	Change in Balance Sheet						Smooth Adjustment
	(Trillions of U.S. dollars)						
	Actual Change 2011:Q3–2013:Q3		October 2012 GFSR Scenarios 2011:Q3–2013:Q4			Progress against Baseline (Percent)	
Gross [a]	Net	Complete	Baseline [b]	Weak	[a] / [b]		
Tangible assets (minus derivatives and cash)	-2.4	-2.1	-2.3	-2.8	-4.5	87	89
Risk-weighted assets	-1.7	-1.7	-0.8	-1.0	-1.9	173	89

Sources: SNL Financial; and IMF staff estimates.

Note: For a sample of 58 large EU banks. Gross shows the results for banks in the sample that cut back balance sheets. Net shows the change for all banks in the sample. Smooth adjustment shows the progress that would have been made in the baseline scenario, assuming an even reduction of assets in each quarter. The data are rounded to the nearest 0.1 trillion.

This box was prepared by William Kerry.

(continued)

area economies to stabilize the ratio of buffers (capital and provisions) to nonperforming loans (Figure 1.29, panel 2), despite continued increases in nonperforming loans. But the stock of impaired assets—associated with the corporate debt overhang and economic slowdown—remains high relative to overall buffers in some countries, and has acted as a drag on profitability at banks in some stressed euro area economies in aggregate (Figure 1.29, panel 1). This weakening in profitability and worsening of asset quality has created a challenging environment for weaker banks to support new lending.

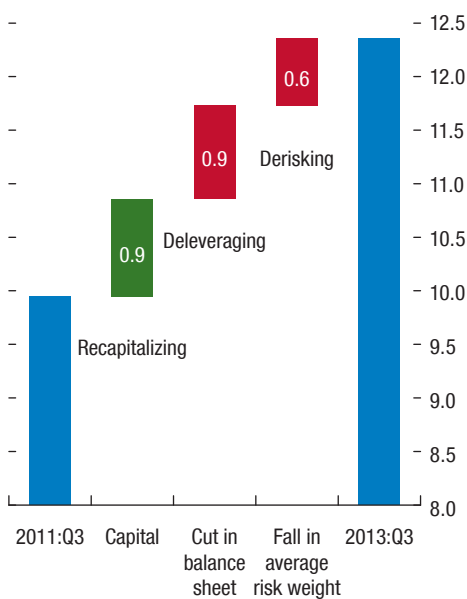
High levels of nonperforming loans—along with the weak economic environment—have also affected credit demand. The lack of progress on corporate sector restructuring has left a weak tail of highly

indebted companies unwilling to demand credit. One way of illustrating this progress is through the amount of nonperforming loan transactions, which have so far represented less than 6 percent of the stock of bad loans (Figure 1.29, panel 3). At the same time, banks have raised the interest rate charged on loans to stressed euro area companies, further dampening the demand for new loans and leading to fragmentation in bank lending rates (Figure 1.29, panel 4).

Cuts in bank credit supply, and the low level of demand, have induced falls in the stock of loans in the stressed euro area. This decline has been a key factor behind the balance sheet deleveraging discussed in Box 1.7. The aggregate balance sheet of banks in the euro area has fallen by about 11 percent since May 2012. Indeed, as Figure 1.30 shows, this deleveraging has been

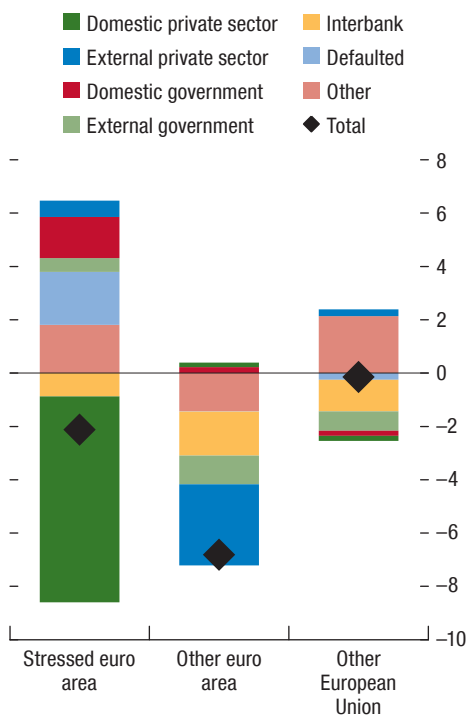
Box 1.7. (continued)

**Figure 1.7.1. Change in Large European Union Bank Core Tier 1 Capital Ratios**  
(Percent of risk-weighted assets)



Sources: SNL Financial; and IMF staff estimates.  
Note: For a sample of 58 large EU banks.

**Figure 1.7.2. Changes in European Union Bank Exposures, 2010:Q4–2013:Q2**  
(Percent)



Sources: European Banking Authority; and IMF staff estimates.  
Note: Based on a sample of large banks in each region.

accelerating in recent months as institutions have shored up their balance sheets ahead of the ECA. Policymakers need to be vigilant to ensure that the ECA encourages banks to adjust balance sheets in a healthy manner, for example, by increasing capital levels or by disposing of nonperforming assets, to avoid putting undue pressure on domestic credit supply and to avoid cross-border spillovers to credit conditions in other economies.

Restoring bank balance sheet strength and resolving the burden of nonperforming loans are key to restarting the flow of credit in stressed euro area economies. The connections between credit, nonperforming loans, and bank buffers are illustrated through simulations based on a vector autoregression (VAR) framework (see Annex 1.3 for details). The simulations show the cumulative change in the level of corporate credit fol-

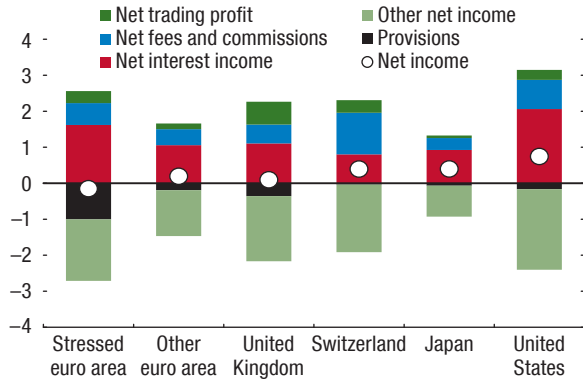
lowing a one standard deviation increase in the ratio of bank buffers (capital and reserves) to the level of nonperforming loans. The simulations illustrate that an improvement in bank asset quality (a fall in the level of nonperforming loans) or an increase in bank buffers could kick-start credit. The simulations suggest that the cumulative rise in the level of credit could amount to almost 8 percent in Spain (from a 170 basis point increase in the bank buffer ratio), more than 5 percent in Italy (130 basis point increase), and almost 5 percent in France (30 basis point increase) within four years (Figure 1.31). Naturally, there is some uncertainty around these estimates; Figure 1.31 shows the cumulative error bands over the simulation period.

While these results illustrate the potential impact on corporate credit of a one-off improvement in bank bal-

**Figure 1.29. Euro Area Bank Profitability, Buffers, and Interest Rates**

Provisions for nonperforming loans have acted as a drag on bank profitability . . .

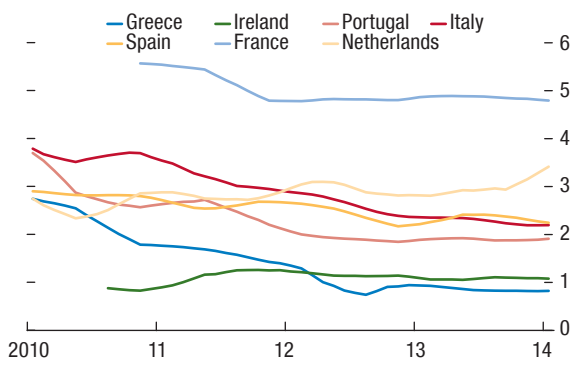
**1. Bank Profitability, 2013 (percent of tangible assets)**



Sources: SNL Financial; and IMF staff estimates.  
Note: Based on a large sample of banks headquartered in each region.

. . . reducing the income available to banks as they build up buffers.

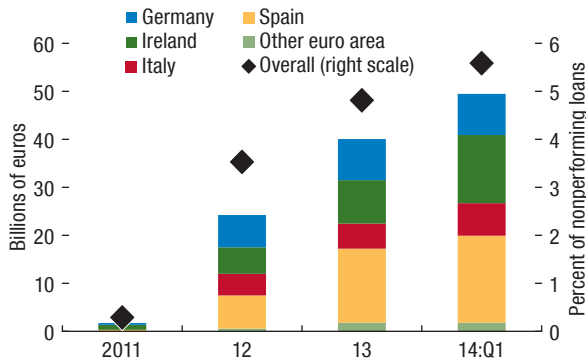
**2. Bank Buffers to Nonperforming Loans (ratio)**



Sources: European Central Bank; IMF Financial Soundness Indicators; national statistics; and IMF staff estimates.  
Note: The figure shows a six-month moving average of bank buffers (capital and reserves) to nonperforming loans for banks located in each country. Differences in definitions of nonperforming loans make cross-country comparisons difficult. Italian nonperforming loans have been adjusted, following Barisitz (2013).

Progress in removing corporate nonperforming loans has been slow.

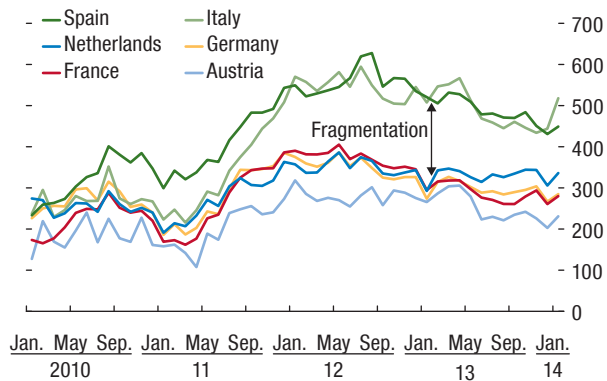
**3. Cumulative Transactions in Nonperforming Loans**



Sources: Fondo de Reestructuración Ordenada Bancaria; national central banks; PricewaterhouseCoopers; investment bank reports; and IMF staff estimates.  
Note: Shows cumulated nonperforming loan portfolio transaction volumes as a percentage of the nonperforming loan stock at the end of the previous year.

Bank credit supply remains tight and interest rates on bank loans relatively elevated.

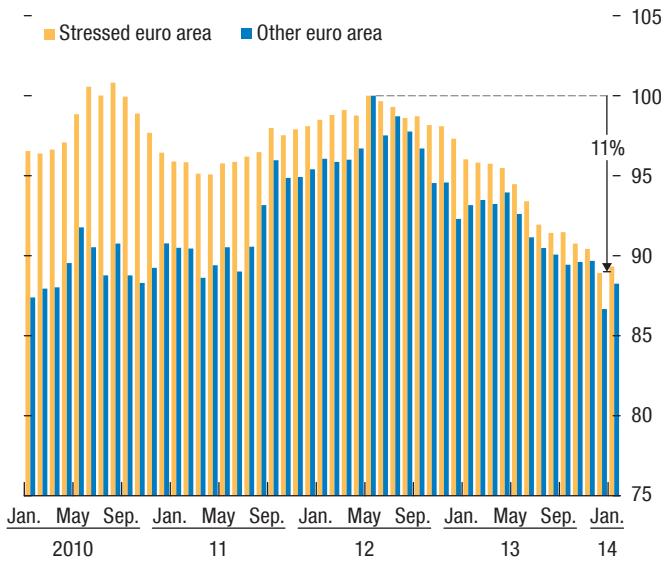
**4. Spread on One- to Five-Year New Bank Loans (basis points)**



Sources: European Central Bank; and IMF staff estimates.  
Note: Shows the spread of one- to five-year corporate loans of less than €1 million to five-year German government bonds. The comparison of interest rates across countries can be difficult due to different proportions of loans with the same maturity.



**Figure 1.30. Assets of Banks in the Euro Area**  
(Index: May 2012 = 100)



Sources: European Central Bank; and IMF staff estimates.

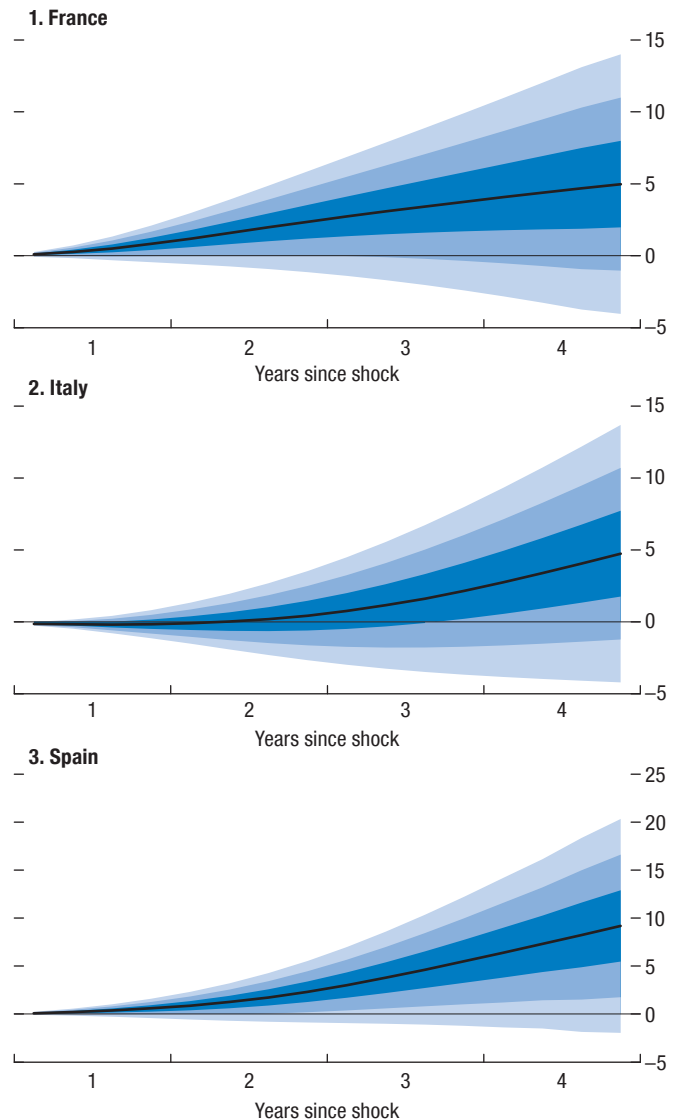
ance sheet health, a concerted effort to tackle the resolution of nonperforming loans—in conjunction with a continued strengthening of bank buffers—could have a mutually reinforcing impact on bank credit. Interestingly, the simulations also imply that it may take a couple of years for the improvement in bank buffers to feed through to a rise in the level of credit, suggesting a lag between actions by banks to improve their balance sheets and the restoration of credit growth. This result also highlights the need for prompt action to improve bank balance sheets, given that the benefits will come with a delay. Finally, the simulations hint at the support to economic growth from a strengthening in bank balance sheets, as discussed in Box 1.1 of the April 2014 *World Economic Outlook*.

*Euro area corporate sector restructuring and recovery remain incomplete*

There is a need to resolve impaired loans on bank balance sheets, but corporate sector restructuring has been hampered by four factors. First, limitations in banks’ financial capacity—capital and provisioning buffers—are hindering the disposal of nonperforming loan portfolios given the current gap between book valuation of loans and collateral and market valuation of nonperforming assets. This problem is illustrated

**Figure 1.31. Simulated Cumulative Response of Bank Corporate Credit**

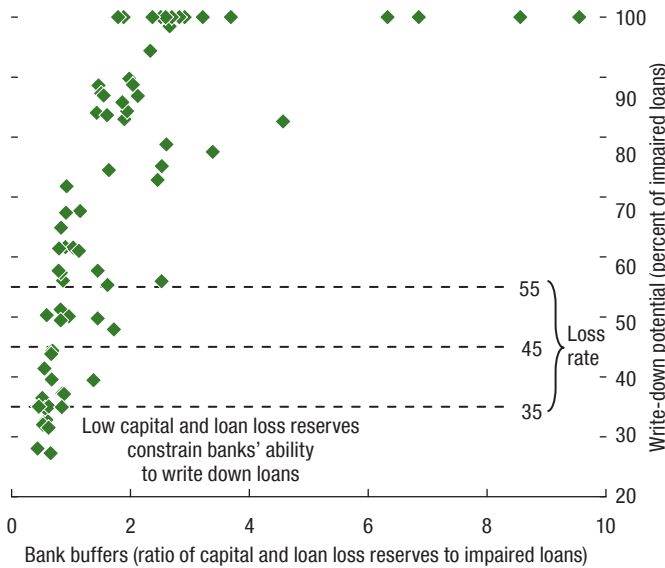
(Cumulative percentage change in the level of credit from a one standard deviation increase in the ratio of capital and reserves to nonperforming loans)



Source: IMF staff estimates.

Note: The impulse responses are generalized (Pesaran and Shin, 1998), so they do not depend on a specific ordering of the variables. The shaded areas show the cumulative error bands. One standard deviation shocks in basis points are: Spain 170, Italy 130, and France 30. See Annex 1.3 for more details.

**Figure 1.32. Euro Area Bank Write-Down Potential**



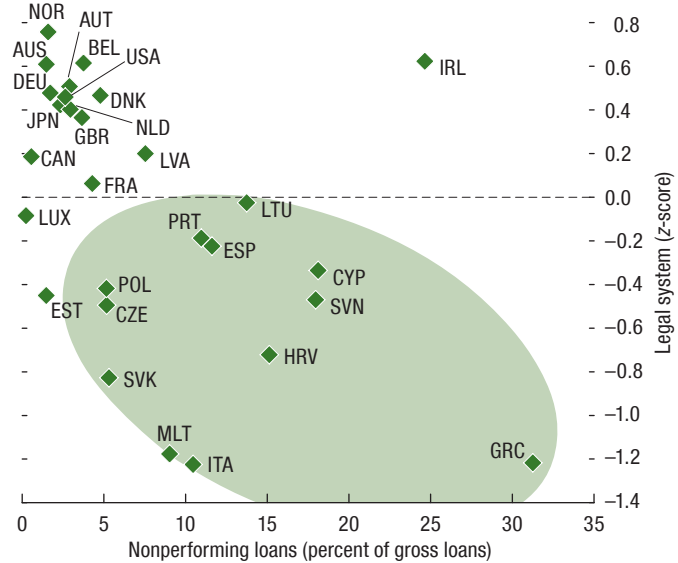
Sources: SNL Financial; and IMF staff estimates.  
 Note: The write-down potential shows the estimated level of excess common equity Tier 1 (CET1) capital against an 8 percent CET1 ratio, plus loan loss reserves, as a percentage of impaired loans.

in Figure 1.32 which shows the amount of loan losses that individual euro area banks could absorb at present with their current stock of provisions and excess capital. Although some institutions appear to be in a comfortable position and able to withstand a high level of losses, there is a group of banks that would be unable to maintain capital ratios with even relatively modest additional losses on their existing loans.

Second, problems in legal capacity have also slowed the resolution of bad loans. Difficulties in enforcing creditor rights, impediments to the sale of collateral, and long legal delays provide further disincentives for banks to resolve impaired assets.<sup>26</sup> Furthermore, investors demand a discount to compensate for these legal difficulties and bid lower prices of impaired assets coming to market. Figure 1.33 shows that there are a number of countries where legal systems are assessed to be weaker than average, based on a World Bank study of indicators relating to the strength of a country's insolvency system. Although a number of countries in the stressed euro area have recently reformed their bankruptcy procedures in an effort to accelerate cor-

<sup>26</sup>European Commission (2013) suggests that sound debt restructuring and resolution procedures support a faster reduction of nonperforming loan ratios to their long-term rate.

**Figure 1.33. Strength of Insolvency Procedures and Nonperforming Loans in Advanced Economies, 2013**



Sources: IMF, Financial Soundness Indicators; World Bank Doing Business Survey (2013); national statistics offices; and IMF staff estimates.  
 Note: The legal system indicator is an average of z-scores from seven different indicators of legal system strength from the Doing Business Survey, relating to resolving insolvency, enforcing contracts, and the strength of legal rights. Differences in definitions of nonperforming loans make cross-country comparisons difficult. Italian nonperforming loans have been adjusted, following Barisitz (2013). AUS = Australia; AUT = Austria; BEL = Belgium; CAN = Canada; CYP = Cyprus; CZE = Czech Republic; DEU = Germany; DNK = Denmark; ESP = Spain; EST = Estonia; FRA = France; GBR = United Kingdom; GRC = Greece; HRV = Croatia; IRL = Ireland; ITA = Italy; JPN = Japan; LTU = Lithuania; LUX = Luxembourg; LVA = Latvia; MLT = Malta; NLD = Netherlands; NOR = Norway; POL = Poland; PRT = Portugal; SVK = Slovak Republic; SVN = Slovenia; USA = United States.

porate debt restructuring,<sup>27</sup> these legislative reforms have yet to bear fruit, in part because the reforms are relatively recent, but also because of operational constraints in the judicial system, relative to the rise in new bankruptcies, in some countries.

Third, banks are also facing operational capacity constraints in their efforts to resolve their nonperforming loans. These constraints are affecting their ability to promptly identify early signs of distress, as well as to design and monitor resolution strategies. Resource constraints may also limit the quantity of nonperforming loans that banks can try to resolve at any one time.

Fourth, the relative immaturity of frameworks for out-of-court debt restructuring in some countries,

<sup>27</sup>For example, reform of Concordato Preventivo in Italy (August 2012) and the Royal Decree on Refinancing and Restructuring in Spain (March 2014).

as well as a notable paucity of mechanisms to foster creditor coordination as advocated under the London Approach, may hamper corporate restructuring.<sup>28</sup> Effective coordination mechanisms are particularly important when a number of creditors are involved, each of which will behave according to its specific financial position and incentives.

### *The difficult task of cleaning up balance sheets*

Policymakers now face the difficult task of accelerating the cleanup of balance sheets without disturbing the improvement in market sentiment. One action likely to help is more monetary easing, because the associated stronger demand in the economy could play a major role in improving corporate balance sheet health. At the same time, the ECB needs to deliver a credible, reliable, and transparent ECA. But it also needs to ensure that any unexpected shortcomings identified at banks are covered by remedial actions and that this course of action is communicated to the market without disrupting its optimistic mood. Similarly, policies to resolve the corporate debt overhang should avoid encouraging an excessively rapid disposal of nonperforming assets because there is a risk that this could drive asset prices down and destroy value.

### *Asset cleanup and resolution*

However, the ECA could act as a first step in a revolution in the resolution of nonperforming assets. Policymakers could take the following steps to help kick-start this process:

- **Increase incentives for bank provisioning and write-offs:** Supervisors need to continue to provide strong incentives for banks to maintain prudent provisioning levels. For example, supervisors should ensure that provisioning reflects forward-looking expected credit losses, rather than simply

<sup>28</sup>The London Approach was defined and disseminated by the Bank of England in the mid-1980s as a framework to bring debtors and their banks together and broker restructuring or amended lending arrangements. The London Approach, adapted to fit to local circumstances, has subsequently been used in other countries that encountered a rapid buildup in distressed debt, including in the wake of the Asian crisis of the late 1990s. Although the London Approach cannot guarantee successful workouts, it does allow for an efficient and time-bound process—underpinned by intercreditor agreements—for voluntary resolution of distressed debt without recourse to the judicial system, including bankruptcy proceedings. For a discussion of the London Approach, see Liberman and others (2005).

the incurred loss-based impairment recognition model under the International Financial Reporting Standards (IFRS).<sup>29</sup> Regulators should play an active role in ensuring banks' early warning and credit risk management systems monitor and recognize counterparty default in a timely manner and should ensure that banks conservatively estimate income from nonperforming loans. Supervisors should also encourage banks to use prudent approaches to collateral valuation, recovery rates, and resolution time to help reduce the gap between book and market values of impaired assets.<sup>30</sup> At the same time, policymakers should seek to remove any disincentives for bank provisioning.<sup>31</sup>

- **Ensure that banks use capital buffers to crystallize losses:** Institutions that are overcapitalized for precautionary reasons should use their capital buffers to help clean up their balance sheets. Some of the private sector debt overhang could be resolved through targeted debt discharge mechanisms designed to avoid adverse alteration of debtor behavior.
- **Improve underlying transparency of bank and corporate balance sheets:** Improvements in the consistency, timeliness, frequency, and availability of balance sheet information are essential to enhance market discipline for both listed and unlisted banks. Using harmonized definitions of nonperforming loans—such as those proposed by the European Banking Authority—would be a big step forward.<sup>32</sup> Enhanced information disclosure on corporate sector balance sheets, including small and medium enterprises (SMEs), is also desirable to reduce information asymmetries for potential new lenders, and thus facilitate broader access to credit.
- **Ensure that legal frameworks are reformed and adequately resourced to facilitate timely resolu-**

<sup>29</sup>Accounting standards are for financial reporting purposes. Therefore, for countries following IFRS, income statements can only reflect impairment losses, assessed in accordance with International Accounting Standard 39. The additional provisions based on regulatory requirement should be put in a reserve account. The new accounting standard (IFRS 9) on credit loss recognition, which is in progress, will be expected-loss based and will hopefully better align accounting and regulatory requirements.

<sup>30</sup>For example, banks should undertake more frequent valuations of their collateral, in some cases using third-party valuations. See IMF (2013a) for a summary of collateral valuation requirements introduced in Ireland.

<sup>31</sup>See Banca d'Italia (2013) and IMF (2013b) on measures recently taken in Italy and Spain.

<sup>32</sup>See EBA (2013). A further discussion on bank transparency is provided in Gandrud and Hallerberg (2014).

**tion:** A number of countries have reformed their insolvency or bankruptcy proceedings to facilitate fast-track debt workouts or speed up creditors' access to collateral.<sup>33</sup> However, the efficacy of these measures is being diminished by sluggish creditor coordination, a lack of new financing for companies undergoing restructuring, inadequate screening of companies, and an overburdened judicial system that is ill equipped to deal with large volumes of distressed debt. Authorities need to keep the efficiency of these procedures under review to remove artificial blockages to debt resolution that may arise.

- **Promote a secondary market for nonperforming loans:** An active market for nonperforming loans should be encouraged by the policies described above because these steps should help reduce the current gap between bank and market valuation of nonperforming loans.<sup>34</sup> In addition, regulatory measures could be taken to encourage disposal of problem loans by banks, for example, guidance on time limits for bad loan provisioning and retention or requirements to keep rigorous loan-servicing records and security documentation.
- **Establish specialized capacity for handling the stock of nonperforming loans:** This capacity should be developed either within banks, such as through dedicated in-house units, or across different institutions for corporate or noncore loans. Another option could be to use external management companies that would allow banks to pool operational resources for debt workouts and enable more effective coordination of the resolution of companies with several creditors.
- **Enhance affordability assessment frameworks through standardization:** Harmonization can dramatically enhance the efficiency of debt-resolution processes, particularly when multiple creditors are involved. Examples of harmonization include the use of common terminology and definitions, standardization of templates to describe debtors' financial situations, and employment of a single debtor engagement protocol. Harmonization can be achieved through voluntary or mandatory codes of conduct.
- **Promote debtor understanding and awareness:** Anecdotal evidence suggests that debtors are more

<sup>33</sup>For example, see IMF (2013c) for a description of legal reforms in Portugal.

<sup>34</sup>See IMF (2013d) for a discussion on fostering a market for distressed debt in Italy.

likely to engage in meaningful conversations with creditors when they understand their rights and financial options. For personal debt, this understanding can be promoted through impartial and affordable debt-counseling services (including budgeting and legal advice) as well as public awareness resources. Enterprises usually have more complicated credit management issues arising from trade credit and debts with multiple banks; therefore, education of small enterprises is often best achieved through the development or enhancement of national institutes for credit management.

Although the crisis has led to some rescue mergers and the eventual resolution of other banks, domestic European authorities have been far more reluctant to countenance the outright removal of banking licenses. Hence, any strategy to address the debt overhang in Europe also needs to include the resolution of nonviable banks.

#### *Developing nonbank sources of new credit*

Euro area nonfinancial companies remain reliant on banks for their credit (Figure 1.34). Authorities should seek to facilitate an increase in corporate equity levels as well as further use of nonbank credit channels to broaden their funding sources. However, there are potential risks associated with greater use of the nonbank sector in credit provision, so there is a need for moves in this direction to be accompanied by effective regulation and supervision to avoid building future problems. A number of approaches could be taken:

- **Existing regulatory constraints on nonbanks acting as direct lenders to hard-to-service borrowers (notably SMEs) need to be reviewed.** In some jurisdictions, the provision of credit has been limited to banks, while other intermediaries with capacity to hold long-duration loans directly (such as life insurers and pension funds) have been excluded from doing so.
- **Market regulators should facilitate the listing of high-yield bonds by smaller firms.** While the European high-yield market has recently grown apace, issuers (outside France) tend to be larger and more established companies. Italy and Spain have recently launched mini-bond markets for SMEs.<sup>35</sup> To foster such a market, authorities need to review

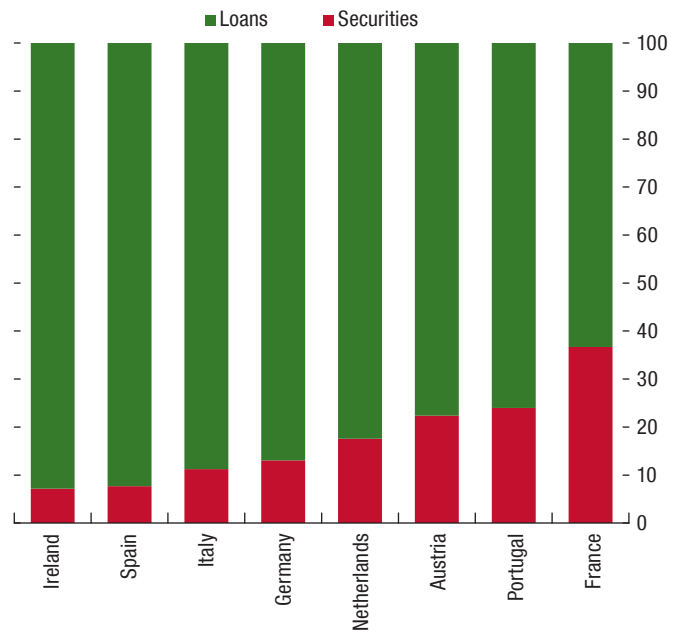
<sup>35</sup>In Spain, this refers to the Alternative Fixed-Income Market (MARF).

any restrictions on insurance and pension funds from investing in such instruments and may consider whether temporary tax incentives are appropriate to help incubate the market.

- **Impediments to the securitization of loans need to be reconsidered.** Current regulatory proposals for European insurers (Solvency II) often make the holding of securitized assets more capital intensive than holding the underlying loans. Such regulations need to be reviewed to address such barriers to securitization. Restarting the asset-backed securities market on a sound basis should enable banks to release assets and capital to support lending elsewhere.
- **In the interim, state guarantees of part of the risk associated with SME lending may be required to overcome credit constraints.** In a number of stressed economies, state credit guarantors are easing credit rationing for SMEs by taking some or all of the credit risk for a fee. This can be a valuable way for banks to be able to continue lending in a less capital-intensive way, although guarantees should be offered in amounts consistent with the overall fiscal position of the economy and need to be structured wisely to prevent poor credit risks from being left with the state guarantor.

In sum, euro area policymakers face a daunting task in addressing the legacy debt burden to help complete the transition to an integrated financial system. Without significant policy efforts to address the burden of nonperforming loans, some economies may find that they remain stuck in the mire of low profitability, low credit, and low growth.

**Figure 1.34. Sources of Nonfinancial Corporate Credit, 2013:Q3**  
(Percent of total)



Sources: National central banks; and IMF staff estimates.  
Note: Excludes estimated value of intercompany loans.

## Annex 1.1. Constructing Term Premium Estimates for Major Advanced Economies<sup>36</sup>

This annex explains the methodology and data sources used in the construction of cross-comparable term premium estimates for five major advanced economies: Canada, Germany, Japan, the United Kingdom, and the United States. It also explains how these estimates are then used to assess the sensitivity of advanced economy term premium to changes in the U.S. term premium.

### Methodology

The term premium estimates are based on the methodology outlined in Wright (2011). In particular, four affine term structure models with no-arbitrage restrictions are used to decompose long-term rates into term premium and expected short-rates:

- *Model 1* is a purely statistical model of the term premium that captures the first three principal components of the zero-coupon yield curve for each country. These factors are often interpreted as the level, slope and curvature of the yield curve.
- *Model 2* is another statistical model that captures the principal components of both global and country-specific interest rates. Models 1 and 2 both omit macro variables.
- *Model 3* is a macro-financial model that includes (1) principal components of the zero-coupon yield curve; and (2) key macroeconomic variables driving interest rates (i.e., quarterly inflation and GDP growth). This is the baseline model of Wright (2011).
- *Model 4* is a more extended macro-financial model similar to that estimated by Bernanke, Reinhart, and Sack (2004). It includes short-term (three-month) interest rates, quarterly inflation and GDP growth, and year-ahead forecasts of inflation and GDP growth.

Finally, to avoid relying on a single model, we calculate average term premium estimates for each country by averaging estimates under the four different models. The results reported in the main text are based on the average estimates.

### Data

The models are estimated with a panel dataset of zero-coupon government bond yields at maturities

<sup>36</sup>Prepared by Serkan Arslanalp and Yingyuan Chen.

**Table 1.7. Yield Curve Data Sources**

Country	Source	Start Date	Frequency
Canada	Bank of Canada	Jan. 2000	Monthly
Germany	Bundesbank	Jan. 2000	Monthly
Japan	Ministry of Finance	Jan. 2000	Monthly
United Kingdom	Bank of England	Jan. 2000	Monthly
United States	Federal Reserve	Jan. 2000	Monthly

Source: IMF staff.

Note: Zero-coupon yields are available at maturities out to 10 years in all cases, except for Japan. For Japan, benchmark government bond yields provided by the Ministry of Finance are used.

ranging from three months to 10 years (in increments of three months). Data on zero-coupon yield curves come mainly from national central banks (Table 1.7). For Japan, official estimates of zero-coupon bond yields are not available, so benchmark government bond yields from the Ministry of Finance are used as a proxy. Given the very low coupon yields of Japanese government bonds, they should follow zero-coupon bond yields closely. For countries that have yield curve data only at maturities with one-year intervals, intervening values are interpolated using a linear fit. In all cases the data are available monthly, but only the end-quarter yields are used because the macroeconomic series' used in the analysis are available at only a quarterly frequency.

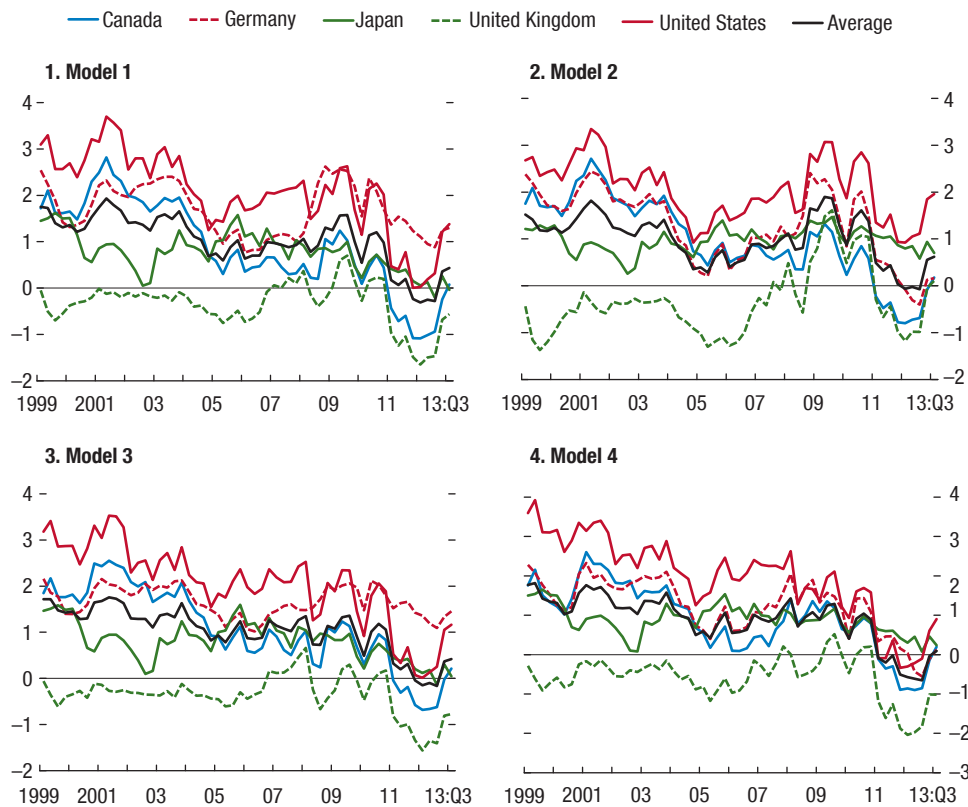
The macroeconomic variables (quarterly inflation and GDP growth) are obtained from the OECD's Main Economic Indicators. In line with Wright (2011), they are smoothed by applying an exponential weighted moving average filter with a parameter of 0.75. Year ahead inflation and growth expectations come from Consensus Forecasts.

### Results

The results from all four models are reported in Figure 1.35. While levels of term premium clearly differ from model to model, there is a high correlation among term premium across countries, as reported in Table 1.8. The correlations with the U.S. term premium are, on average, highest for Canada, followed by those for the United Kingdom, Germany, and Japan.<sup>37</sup>

<sup>37</sup>Sample-size corrected estimates of the term premium by Bauer, Rudebusch, and Wu (2014) provide similar results.

**Figure 1.35. Term Premium Estimates under Alternative Affine Models**  
(Percent)



Source: IMF staff estimates based on Wright (2011).

**Table 1.8. Correlation of Term Premium Estimates**

Country	Model 1	Model 2	Model 3	Model 4	Average of all Models
Canada	0.95 ***	0.76 ***	0.94 ***	0.86 ***	0.94 ***
Germany	0.56 ***	0.91 ***	0.48 ***	0.82 ***	0.79 ***
Japan	0.48 ***	0.20	0.60 ***	0.54 ***	0.46 ***
United Kingdom	0.73 ***	0.57 ***	0.67 ***	0.65 ***	0.59 ***

Source: IMF staff estimates.

Note: Significance level: \*\*\* 0.01, \*\* 0.05, \* 0.1.

**Sensitivity to Changes in U.S. Term Premium**

We estimate the sensitivity of other country term premium to the U.S. term premium on the basis of the beta coefficients in the following ordinary least square (OLS) regression over the period from 2000:Q1 to 2013:Q3:

$$\Delta T_{i,t} = \alpha_i + \beta_i \times \Delta T_{US,t} + \epsilon_{i,t}$$

where  $i$  = Canada, Germany, Japan, or the United Kingdom, and  $\Delta T$  denotes the changes in term premium.

Regression results suggest that the sensitivity of advanced economy term premium to changes in the U.S. term premium is statistically significant and positive (Table 1.9). As with our finding on correlations, the beta coefficients are highest for Canada, followed by those for the United Kingdom, Germany, and Japan.

Furthermore, Granger causality tests, based on the following regression, suggest that there is a causal relationship from the changes in the U.S. term premium to those of other countries, except for Japan (Table 1.10):

**Table 1.9. Sensitivity to the U.S. Term Premium**

Country	Model 1	Model 2	Model 3	Model 4	Average of all Models
Canada	0.59 *** (0.05)	0.68 *** (0.04)	0.63 *** (0.04)	0.57 *** (0.06)	0.62 *** (0.04)
Germany	0.32 *** (0.07)	0.71 *** (0.06)	0.23 *** (0.05)	0.54 *** (0.07)	0.43 *** (0.06)
Japan	0.28 *** (0.07)	0.24 *** (0.06)	0.23 *** (0.07)	0.25 *** (0.06)	0.27 *** (0.07)
United Kingdom	0.48 *** (0.06)	0.68 *** (0.09)	0.47 *** (0.05)	0.59 *** (0.06)	0.56 *** (0.06)

Source: IMF staff estimates.

Note: Standard errors in parentheses. Significance level: \*\*\* 0.01, \*\* 0.05, \* 0.1.

**Table 1.10. Granger Causality**

Country	Canada	Germany	Japan	United Kingdom
Chi-square statistics	4.6	8.19	0.06	6.44
Significance	***	***		***

Source: IMF staff estimates.

Note: Based on the average term premium estimates. Significance level: \*\*\* 0.01, \*\* 0.05, \* 0.1.

$$\Delta T_{i,t} = \alpha_i + \sum_{n=1}^3 A_i \times \Delta T_{i,t-n} + \sum_{n=1}^3 A_j \times \Delta T_{j,t-n} + \epsilon_{i,t},$$

where  $i$  = Canada, Germany, Japan, or U.K.,  $j$  = all countries other than  $i$ ,  $\Delta T$  denotes the changes in term premium,  $n$  is the maximum number of lagged observations included in the model, and  $A$  is the coefficient matrix.

Why are term premium correlated across most major advanced countries? The literature is still exploring the topic and has not yet come to a strong conclusion. But several studies have suggested that there may be a common global factor (i.e., a global price of risk) that leads to correlations in term premium.<sup>38</sup> Also, to

<sup>38</sup>For example, Diebold, Li, and Yue (2008) find that common global factors exist in the term structures of government bond yields

the extent that term premium are countercyclical, as suggested by several studies (Campbell and Cochrane (1999), Cochrane and Piazzesi (2005), and Wachter (2006)), the global business cycle may be driving the correlations in term premium. That could explain why we find a higher correlation of term premium between countries with stronger real linkages and synchronization of business cycles (e.g., between Canada and the United States).

for Germany, Japan, the United Kingdom, and the United States, generally explaining significant fractions of country yield curve dynamics. Similarly, Abbritti and others (2013) construct an affine term structure for international yield curves and find that global factors account for the largest share of the term premia dynamics in advanced economies.



## Annex 1.2. Emerging Market Corporate Sensitivity Analysis<sup>39</sup>

### Objectives and Analytical Approach

Corporate vulnerabilities posed by higher leverage and pressures on profitability amid slowing growth prospects were discussed in the October 2013 GFSR. Motivated by the observation that median country-level balance sheet leverage for nonfinancial corporations has increased for some economies or remained high in others, this GFSR extends the analysis to a broader sample of nonfinancial firms, including small firms. Although the levels of corporate leverage have been reduced since the Latin American and Asian financial crises in the 1990s, falling revenues and tighter financing conditions as global liquidity recedes could constrain firms' debt-servicing capacity, thereby raising liquidity and solvency risks. Moreover, these risks could be exacerbated by exchange rate depreciation as easy access to overseas financing has increased exposure to foreign currency debt.

The capacity to service debt hinges on the firm's interest coverage ratio (ICR), computed as EBITDA/interest expense (EBITDA is earnings before interest, taxation, depreciation, and amortization).<sup>40</sup> The lower the ratio, the more the company is burdened by debt expense. Very often, an ICR of less than one is used as a threshold because it implies that a firm is not generating sufficient revenues to service its debt without making adjustments such as reducing operating costs, drawing down its cash reserves, or borrowing more. This analysis uses an ICR threshold of two to take into account the potential vulnerabilities to funding risks, in addition to earnings risks, that could emanate in a high stress scenario if funding liquidity thins, particularly during times of heightened global risk aversion.

### Data

The analysis is based on firm-level annual data from Standard & Poor's Capital IQ database. The sample includes close to 15,000 firms, both publicly traded and private, from 19 emerging market economies across Asia (China, India, Indonesia, Philippines,

<sup>39</sup>Prepared by Julian Chow, Evan Papageorgiou, and Shamir Tanna.

<sup>40</sup>EBITDA is used as a measure of earnings instead of EBIT (earnings before interest and taxation) because it does not penalize firms with large investments that could result in higher depreciation and amortization that are purely accounting constructs.

**Table 1.11. Coverage of Firms by S&P Capital IQ**

	Number of Firms	Total Assets (U.S.\$ million)
<b>Asia</b>		
China	3,819	6,697,040
India	3,871	1,382,003
Indonesia	403	326,957
Philippines	216	150,073
Malaysia	1,112	584,064
Thailand	530	304,025
<b>Latin America</b>		
Argentina	181	86,108
Brazil	704	1,751,977
Chile	445	522,069
Colombia	83	211,077
Peru	190	82,961
Mexico	203	703,792
<b>Central and Eastern Europe, Middle East, Africa</b>		
Bulgaria	40	9,282
Hungary	40	38,039
Poland	782	171,357
Romania	657	21,421
Russia	383	1,770,443
Turkey	316	261,930
South Africa	410	440,505

Source: S&P Capital IQ.

Malaysia, and Thailand), Latin America (Argentina, Brazil, Chile, Colombia, Mexico, and Peru) and EMEA (Poland, Romania, Hungary, Bulgaria, Russia, Turkey, and South Africa). Capital IQ's coverage of firms' total assets is about three-quarters of the total GDP of these sample economies (see Table 1.11).

### Estimating the Proportion of Weak Firms and Their Debts

As mentioned above, weak firms are defined as those with ICRs below two times, to capture potential vulnerabilities to both funding and earnings risks. To gauge the sensitivity of firms to potential increases in interest rates and declines in earnings, a simultaneous shock of a 25 percent increase in interest expense and a 25 percent decline in EBITDA is applied across the sample firms.<sup>41</sup> The proportion of weak firms with ICRs of less than two times after the shocks (i.e., firms-at-risk) for each economy is computed by the following equation:

$$\frac{\sum \text{Firms with ICR} < 2}{\sum \text{Firms}}$$

<sup>41</sup>These levels of shocks are consistent with high stress events in the aftermath of the Lehman Brothers bankruptcy; EBITDA declined 20–30 percent in the weak tail of firms, while interest expense rose 10–50 percent.

Accordingly, the total debt of these weak firms (i.e., debt-at-risk) is computed by the following equation:

$$\frac{\sum \text{Debt of Firms with ICR} < 2}{\sum \text{Debt of All Firms}}$$

### Estimating the Share of Corporate External Debt

The breakdown of firm-by-firm foreign currency borrowing is not available through Capital IQ or other in-house databases, so such debts are approximated at the aggregate level by using external debt statistics and other sources as follows:

Corporate Borrowing from	Data Source
External debt <sup>1</sup>	World Bank Quarterly External Debt Statistics (QEDS)  Note: QEDS shows a breakdown of corporate external debt according to debt from affiliates, direct investment, and others, which include loans, money market instruments, trade credits, bonds, and notes.
Domestic banks	Banking system data from IMF Financial Soundness Indicators
Domestic capital markets	Bloomberg L.P.

<sup>1</sup>Although external debt could be in foreign or local currency, most foreign holdings of corporate debt are in hard currencies given that (1) many emerging market local currency debt markets are illiquid; (2) most foreign funds are less willing to take exchange rate risk in addition to liquidity and corporate credit risks (carry-trade-driven funds, however, would prefer local currency government debt rather than corporate debt because the former are more liquid and easier to unwind); and (3) disclosures and covenants in some emerging market local currency bonds are weak and are not rated by widely accepted international rating agencies.

The share of aggregate corporate external debt to total corporate debt is estimated by the following expression:

$$\frac{\text{External Debt}}{\text{External Debt} + \text{Loans from Domestic Banks} + \text{Borrowings from Domestic Capital Markets}}$$

### Estimating Potential Exchange Rate Losses from Foreign Currency Debts

Potential exchange rate losses from foreign currency debt could emanate from two sources: (1) revaluation of loans and bond principal based on mark-to-market

accounting; and (2) interest payments due in the current year.

Foreign exchange loss<sup>42</sup> on debt principal is computed by the following expression:

$$\frac{\sum \text{External Debt}}{\sum \text{Debt}} \times \sum \text{Debt} \times \frac{\text{Nominal Exchange Rate Depreciation}}$$

Foreign exchange loss on foreign currency interest expense is approximated by the following expression:

$$\frac{\sum \text{External Debt}}{\sum \text{Debt}} \times \sum \text{Interest Expense} \times \frac{\text{Nominal Exchange Rate Depreciation}}$$

The estimation of potential exchange rate losses from foreign currency debts assumes full revaluation of the stock of foreign currency debt, in line with IFRS 13 on fair valuation of financial or nonfinancial liabilities. Moreover, firms that need to refinance their debt liabilities in principle should value those liabilities at market prices.<sup>43</sup>

### Accounting for Natural Hedges

To a certain extent, foreign exchange losses from foreign currency debt principal and interest expense are offset by foreign exchange gains from overseas earnings. Such gains are used as proxies for natural hedges. They are computed by the following expression:

$$\frac{\sum \text{Overseas Revenues}}{\sum \text{Total Revenues}} \times \sum \text{EBITDA} \times \text{Nominal Exchange Rate Depreciation}$$

Overseas revenues are derived as the difference between each firm's total revenue and domestic revenue, and are obtained by filtering out the segment revenues by geography. It is worth noting that the effectiveness of natural hedges is an approximation given that it may fall short of expectations. Past episodes have demonstrated that overseas revenues declined in tandem with depreciating currencies during turbulent periods.

<sup>42</sup>We took the share of foreign currency debt as those from "other sources" from the QEDS data as debts from affiliates and direct investment are often long term in nature and are stable in many cases.

<sup>43</sup>Also noteworthy of consideration is that while debt maturity plays an important role in determining liquidity risks for some firms, certain covenants on their debt may make some debt contracts callable in full if they breach particular debt service ratios.

Thus, net foreign exchange loss after accounting for natural hedges is computed by the following expression:

$$FX \text{ Loss from Foreign Currency Debt Principal and Interest} - FX \text{ Gain from Natural Hedges}$$

### Accounting for Financial Hedges

Currency hedging of foreign currency debts could also mitigate potential foreign exchange losses. Assuming that firms undertake these financial hedges on net foreign exchange exposures after natural hedges, the residual foreign exchange loss is computed by the following expression:

$$Net \text{ FX loss after accounting for natural hedges} \times (1 - Hedge \text{ Ratio}).$$

Because information on financial hedging is sparse, it is assumed that at least 50 percent of these debt liabilities, on aggregate, are hedged after netting out natural hedges.

### Caveats

The sensitivity analysis presented in this report is a starting point to gauge the potential corporate exposures to foreign currency risk and other corporate sector risks. Given the data limitations, the caveats noteworthy of consideration are as follows:

- The natural hedges are approximated by overseas revenues, which may be a subset of total foreign currency earnings in some companies which derive part of those revenues from domestic operations. Additionally, natural hedges do not consider foreign currency assets such as cash and cash equivalents which may offset, to a certain extent, some of the firms' exposures to foreign currency risks.
- Foreign currency debt is approximated by external debt on the assumption that a significant portion of foreign holdings of corporate debts are in hard currencies. External debts from foreign direct investment and intercompany loans are not included on the assumption that these forms of funding are directed at the long-term going concern of the firms receiving them and thus are stable.

### CEMBI Spread Model

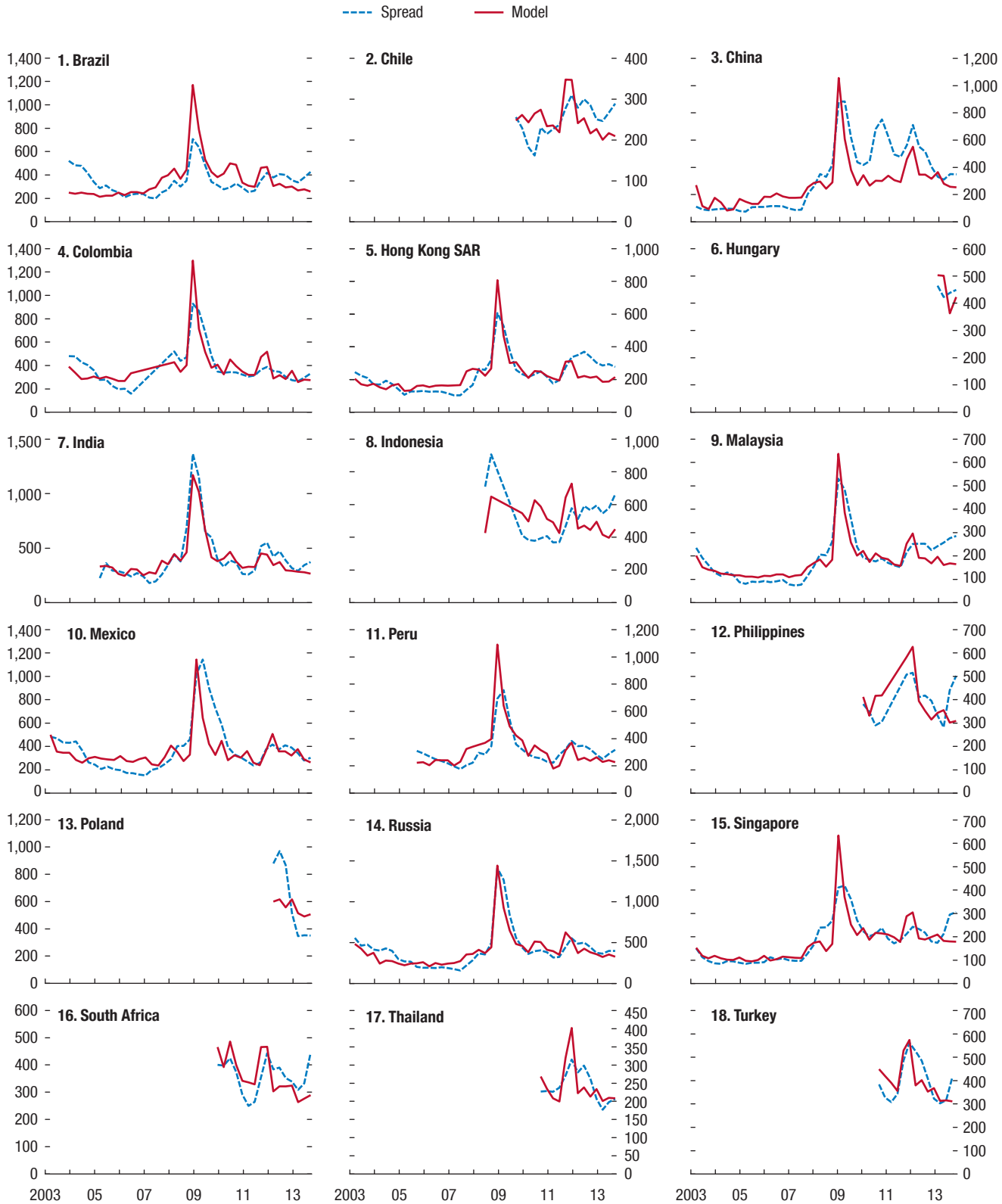
The sensitivity analysis on the J.P. Morgan CEMBI (Corporate Emerging Market Bond Index) in the main text of this chapter was performed using a fixed effects panel regression model over 18 economies (the 17 economies listed in Figure 1.20, panel 10, and Singapore). The model is as follows:

$$\begin{aligned} \log \text{ CEMBI spread} = & 0.22 \log(1 - WC2TA) & (0.7) \\ & - 0.94 \log(1 - RE2TA) - 0.20 \log(ND2TCE) & (0.47) \quad (0.09) \\ & - 7.34 \log(C2TA) & (1.05) \\ & + 6.75 \log(1 - EBIT2INTEXP/100) + 0.03 \text{ VIX} & (0.89) \quad (0.002) \end{aligned}$$

in which WC2TA is working capital to total assets, RE2TA is retained earnings to total assets, ND2TCE is net debt to total common equity, C2TA is cash to total assets, EBIT2INTEXP is EBIT to interest expense, and VIX is the S&P 500 implied volatility index. The formulation of this model closely follows typical default frequency models, such as the one for the Altman Z-score, augmented with VIX as a global risk factor. The figures in parentheses below the coefficients are the standard errors (all variables except WC2TA are statistically significant at the 5 percent level).

Estimation of the panel coefficients is performed on quarterly data starting from 2003:Q1 (or the earliest quarter thereafter; thus, it is an unbalanced panel). The corporate bond spreads correspond to the average of the three-month period for the entire economy's corporate sector (and may include financial firms) as reported by J.P. Morgan, while the balance sheet variables are constructed as the median of all available nonfinancial firms in the economy for each period with data from S&P Capital IQ. Negative values for net debt and interest expense were excluded, and even though it is possible for EBIT to be greater than 100 times the interest expense, there were no such occurrences in the median statistics (hence the variable  $\log(1 - EBIT2INTEXP/100)$  was well defined). The CEMBI spreads and model fitted values are shown in Figure 1.36.

**Figure 1.36. CEMBI Model Quarterly Spreads and Model Fits**  
(Basis points)



Sources: Bloomberg L.P.; JPMorgan Chase & Co.; S&P Capital IQ; and IMF staff calculations.  
Note: CEMBI = Corporate Emerging Markets Bond Index.

### Annex 1.3. Exploring the Relationship between Bank Capital Buffers, Credit, and Asset Quality<sup>44</sup>

#### Objectives and Approach

The aim of this exercise is to assess the potential effects of changes in bank buffers (capital and reserves) and asset quality on the provision of credit to nonfinancial firms directly from time series data.

The starting point is the broad notion that banks' willingness and ability to provide credit is likely related to (1) *asset quality*, which is captured by the evolution of nonperforming loans (NPLs); (2) the *strength of banks' capital buffers*; (3) the *state of the business cycle*, which affects the demand for loans and asset quality; and (4) the *slope of the sovereign yield curve*, which is relevant because lenders typically borrow short and lend at long maturities.

The objective of this exercise was simply to explore the historical correlations between these variables using simple multivariate methods. To this end we opted for autoregressive systems, taking an atheoretical stance (Sims, 1980). The advantage of this approach is that no theoretical assumptions on how these variables are interrelated are forced on the model—the idea is to simply explore the dynamic historical relationships in the data (i.e., without exclusion restrictions).

The first step of the exercise is to estimate simple vector autoregressive models (VARs), one for each economy. In this set-up, to each endogenous variable corresponds an equation, so each (lagged) variable appears in each equation, and all variables are treated symmetrically.

The following five endogenous variables make up the VAR for France, Italy, and Spain:

- *Corporate credit*, the level of credit extended to non-financial corporations by banks.
- *Bad or doubtful loans*, a measure of asset quality.<sup>45</sup>
- *Bank buffer ratio*, capital and reserves scaled by the amount of bad or doubtful loans in the economy. Hence, bank buffer ratios could be increased either by raising additional capital or by removing NPLs from the balance sheet.
- *The slope of the yield curve*, (10-year less 2-year maturity), the slope incorporates information about the expected future evolution of interest rates, and

lenders typically borrow at shorter maturities and lend at longer maturities.

- The state of the *business cycle*, captured by GDP. When the level of output declines, economic uncertainty rises, profits come under pressure, and demand for corporate loans typically falls (see GFSR October 2013 Chapter 3 for a discussion of demand and supply factors, and Annex 1.1).
- Finally, short-term Euro Overnight index Average (EONIA) rates are run exogenously, capturing *fund-ing costs* via money market rates (see Annex 1.1 in the October 2013 GFSR).

#### Data and Estimation

The scarce availability of relevant time series data on credit and NPLs limited the sample of economies to France, Italy, and Spain. The models were estimated using quarterly data for 1999–2013 (about 60 observations). In the set-up used, known as unconstrained VAR, each endogenous variable corresponds to an equation, resulting in a five-equation autoregressive system. Hence, the model can simply be written in matrix form as

$$y_t = v + Ay_{t-1} + u_t,$$

where the vector  $y_t$  includes the endogenous variables in the system,  $A$  is the coefficient matrix,  $v$  is the error term, and  $u_t$  is the vector of constants—one constant for each equation.

The final specification is found by first starting out with a large number of variables proxying the key determinants (including variables 1 through 5, described above), then narrowing the variable selection down to the best-performing specification via general-to-specific modeling backed by extensive diagnostic testing.<sup>46</sup> Because no (exclusion) restrictions were imposed on the parameters, the  $A$  matrix is fully populated by the autoregressive coefficients and is not sparse. Although the VARs' endogenous variables are individually nonstationary,<sup>47</sup> Johansen (Rank and Maximum Eigenvalue) tests show them to be cointegrated, and thus jointly stationary when estimated together as

<sup>46</sup>The final VARs were three-lag specifications, based on standard selection criteria including Schwarz Bayes Criteria (SBC) and Akaike Information Criteria (AIC). See Lutkepohl (2007).

<sup>47</sup>I(1) or integrated of order one, meaning they need to be differenced once to become stationary, unless they are cointegrated. Johansen trace and maximum Eigenvalue test show these series to be cointegrated.

<sup>44</sup>Prepared by Vladimir Pillonca.

<sup>45</sup>For the specific measures, use see Table 1.13.

a system. This is also evident from the VARs' residuals, which are stationary (Figure 1.37) and do not show any explosive or trending behavior. Because the long-term relationship between the variables is the main focus, and we do not want to throw away information by differencing, the VARs are expressed in (log) levels.

### Exploring the Relationships between Credit, Asset Performance, and Capital Buffers

Once the VARs are estimated, the second step is to explore how these variables are dynamically inter-related. This was done via impulse response analysis, i.e., shocking a given variable (capital buffers, nonperforming loans, etc.) and then tracing its effect on the key variable of interest: credit extended to nonfinancial firms. This standard exercise is also known as innovation accounting.

The graphs that trace the results of these hypothetical, simulated shocks are called impulse response functions (IRFs), as shown in Figure 1.38. A popular way to achieve the identification necessary to perform impulse response analysis is to use Choleski-type decompositions (to triangularize the covariance matrix).

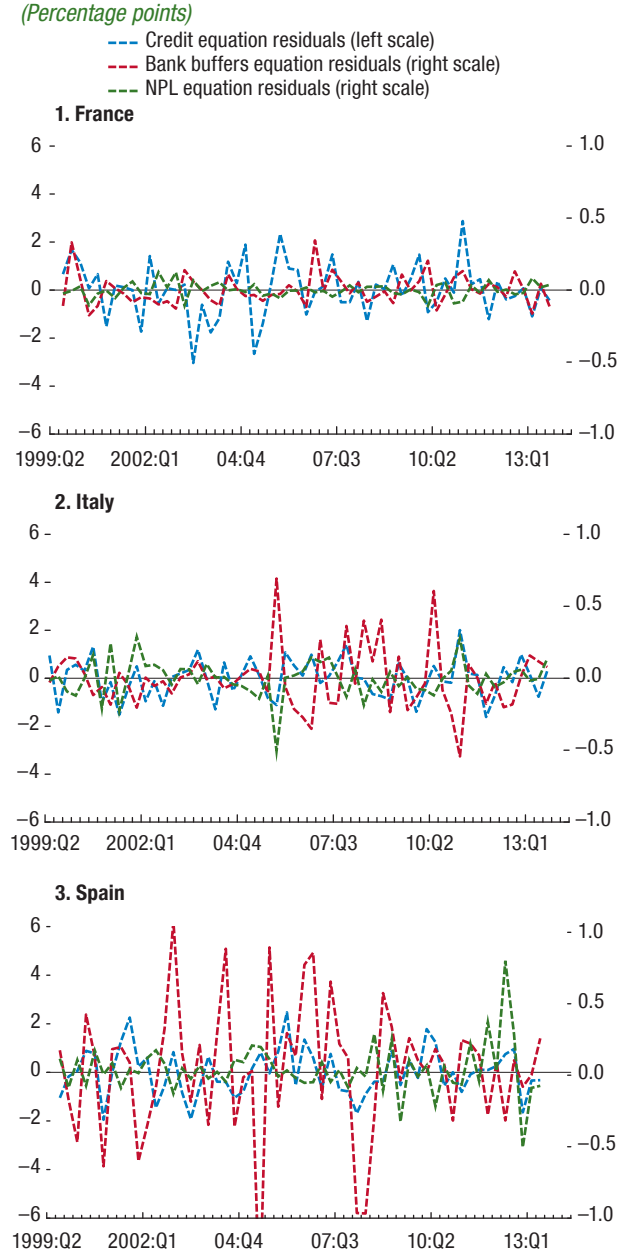
The problem with Choleski-type factorizations, however, is that different orderings of the variables (which generate different triangularizations) can lead to different-looking IRFs and hence different results<sup>48</sup> (because, broadly speaking, the shocks are generated from the VAR's covariance matrix, and then propagated by the VAR system's autoregressive coefficients).

To avoid the drawbacks of Choleski-type approaches, generalized IRFs are used, which has the advantage of (1) being independent of the specific ordering of the variables, and (2) not needing orthogonalization, which typically reduces realism.<sup>49</sup> Specifically, as noted by Pesaran and Shin (1998, p. 20), "the

<sup>48</sup>The Choleski decomposition consists of reducing the square covariance matrix into a triangular matrix (with the remaining elements set to zero). The degree to which different triangularizations will affect the results will hinge on the off-diagonal elements of the covariance matrix—the closer to zero they are, the smaller the impact of alternative variable orderings.

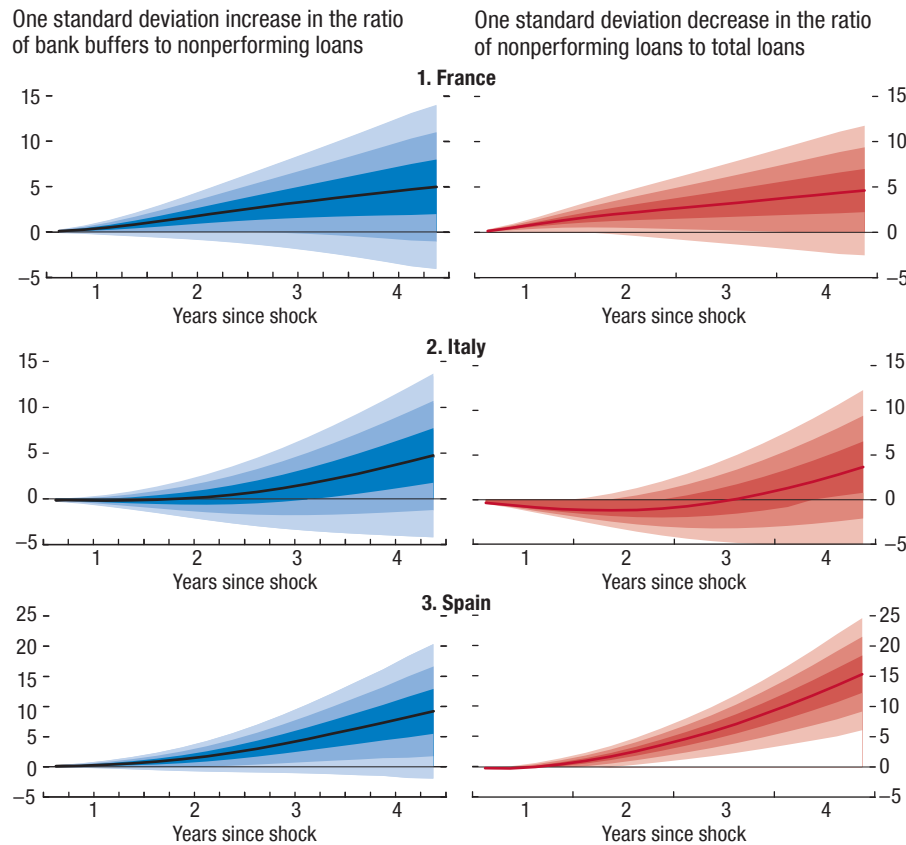
<sup>49</sup>Orthogonalization is not required with the generalized approach. An alternative route would have been to employ a structural model that imposes specific restrictions to achieve identification. However, the aim here is to use a simple atheoretical approach to explore the historical relationships between the variables via simple multivariate representations that capture the complex endogenous dynamics at play. A limitation of this approach is that it does not allow economic causality to be inferred, which in any case would have been subject to multiple empirical and theoretical caveats.

**Figure 1.37. Vector Autoregression Model Residuals**  
(Percentage points)



Source: IMF staff estimates.  
Note: NPL = nonperforming loan. The residuals are for the credit equation, bank buffers, and nonperforming loan equations of each country's vector autoregression.

**Figure 1.38. Comparing the Effects on Credit of One-Time Shocks: Cumulative Impulse Response Functions**



Source: IMF staff estimates.  
 Note: The impulse responses are generalized (Pesaran and Shin, 1998), so they do not depend on a specific ordering of the variables, and orthogonalization is not required; the responses are fully order-invariant. The shaded areas show the error bands. One standard deviation shocks to the bank buffer ratio in basis points are: Spain 170, Italy 130, and France 30. One standard deviation shocks to the nonperforming loan ratio in basis points are Spain 320, Italy 140, and France 40.

generalized impulse responses are unique and fully take account the historical patterns of correlations observed amongst the different shocks,” which is typically not the case with orthogonalization. In short, generalized IRFs arguably offer a more neutral and realistic platform for impulse response analysis.

**Key Findings**

The generalized IRFs shown in Figure 1.38 display the *cumulative* change in the level of corporate credit following two different shocks. In other words, we trace the *cumulative* effect on corporate credit of these

shocks (over four years), rather than the more standard noncumulative impact.

The first set of simulations (left panel of Figure 1.38) show that a one standard deviation increase in the bank buffer ratio would result in a *cumulative* rise in the level of credit of almost 8 percentage points in Spain (from a 170 basis point increase in the bank buffer ratio), more than 5 percentage points in Italy (130 basis points increase), and almost 5 percentage points in France (30 basis points increase) within four years. Naturally, there is some uncertainty around these estimates, as displayed by the cumulative error bands.

These results illustrate the potential impact of a one-off improvement in the bank buffer ratio, but a

**Table 1.12. Credit Variables Used in the Vector Autoregression Exercise**

	Italy	Spain	France
Credit to corporates	Bank lending to nonfinancial corporations (Banca d'Italia)	Credit to nonfinancial corporations (Bank for International Settlements)	Bank lending to nonfinancial corporations (Banque de France)
Nonperforming loan ratio	Bad debts, total bank loans (Banca d'Italia)	Doubtful loans: credit institutions, total lending by credit institutions (Banco de España)	Gross bad debts to corporations and other residents (Banque de France) Total French MFI lending to residents (Banque de France)
Bank buffer ratio	MFIs excluding Eurosystem liabilities: capital and reserves (ECB) Bad debts (Banca d'Italia)	MFIs excluding Eurosystem liabilities: capital and reserves (ECB) Doubtful loans: credit institutions (Banco de España)	MFIs excluding Eurosystem liabilities: capital and reserves (ECB) Gross bad debts to corporations and other residents (Banque de France)

Source: IMF staff.

Notes: ECB = European Central Bank; MFI = monetary financial institution.

concerted effort to resolve NPLs, in conjunction with a continued strengthening of bank buffers, could have a mutually reinforcing impact on bank credit. The IRFs also suggest that it may take several quarters for improvements in bank buffers to translate into increases in the level of credit, highlighting the benefits of prompt action to improve bank balance sheets. The results also hint at the benefits to economic growth from stronger bank balance sheets, as discussed in Box 1.1 of the *World Economic Outlook*, April 2014.

The second set of simulations (right panel of Figure 1.38) show that a one standard deviation improvement in asset quality, as proxied by a decline in the ratio of bad or doubtful loans to total loans, would increase corporate credit within four years by almost 14 percentage points in Spain (320 basis point decline in the doubtful loan ratio), 4–5 percentage points in Italy (140 basis point decrease), and about 4 percentage points in France (40 basis point decrease).

For Italy, the results on the impact of lowering NPLs are somewhat more lagged. There is uncertainty about why this should be the case, and alternative models may offer different interpretations. However, one possibility is that developments in asset quality affect credit with a longer lag because of Italy's extensive reliance on relationship banking. This banking model may render lenders more tolerant of short-term deteriorations in asset quality before they tighten credit standards relative to more mechanical approaches to lending.

## References

- Abbritti, Mirko, Salvatore Dell'Erba, Antonio Moreno, Sergio Sola, 2013, "Global Factors in the Term Structure of Interest Rates," IMF Working Paper No. 13/223 (Washington: International Monetary Fund).
- Banca d'Italia, 2013, *Financial Stability Report*, No. 6 (Rome, November).
- Barisitz, Stephan, 2013, "Nonperforming Loans in Western Europe—A Selective Comparison of Countries and National Definitions," *Oesterreichische Nationalbank Focus on European Economic Integration* Q1/13 (Vienna).
- Bauer, Michael, Glenn Rudebusch, and Jing Cynthia Wu, 2014, "Term Premia and Inflation Uncertainty: Empirical Evidence from An International Panel Dataset: Comment," *American Economic Review*, Vol. 104, No. 1, pp. 323–37.
- Bernanke, Ben, Vincent Reinhart, and Brian Sack, 2004, "Monetary Policy Alternatives at the Zero Bound: An Empirical Assessment," Finance and Economics Discussion Series 2004–48 (Washington: Federal Reserve Board).
- Blundell-Wignall, Adrian, and Caroline Roulet, 2013, "Business Models of Banks, Leverage and the Distance-to-default," *OECD Journal No. 103: Financial Market Trends*, Vol. 2012–2.
- Brealey, Richard A., Ian A. Cooper, and Evi Kaplanis, 2011, "International Propagation of the Credit Crisis," Social Science Research Working Paper (London: London Business School). [http://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=1712707](http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1712707).
- Campbell, John, and John H. Cochrane, 1999, "By Force of Habit: A Consumption-Based Explanation of Aggregate Stock Market Behavior," *Journal of Political Economy*, Vol. 107, No. 2, pp. 205–51.



- Cochrane, John, and Monika Piazzesi, 2005, "Bond Risk Premia," *American Economic Review*, Vol. 95, No. 1, pp. 138–60.
- Dattels, Peter, Rebecca McCaughrin, Ken Miyajima, and Jaume Puig, 2010, "Can You Map Global Financial Stability?" IMF Working Paper No. 10/145 (Washington: International Monetary Fund).
- Detragiache, Enrica, Asli Demirguc-Kunt, and Ouarda Merrouche, 2010, "Bank Capital: Lessons from the Financial Crisis," IMF Working Paper No. 10/286 (Washington: International Monetary Fund).
- Diebold, Francis, Canlin Li, and Vivian Yue, 2008, "Global Yield Curve Dynamics and Interactions: A Dynamic Nelson–Siegel Approach," *Journal of Econometrics*, Vol. 146, No. 2, pp. 351–63.
- European Banking Authority, 2013, Consultation Paper: "Draft Implementing Technical Standards on Supervisory Reporting on Forbearance and Non-performing Exposures under Article 95 of the Draft Capital Requirements Regulation" (London) <http://www.eba.europa.eu>.
- European Central Bank, 2013, "Comprehensive Assessment," (Frankfurt). <http://www.ecb.europa.eu/ssm/assessment/html/index.en.html>.
- European Commission, 2013, "Economic Impact of Rescue and Recovery Framework—Note for the Attention of LIME, Brussels, European Commission—Directorate General Economic and Financial Affairs—Structural Reforms and Competitiveness" (Brussels).
- Federal Reserve Board, 2014, "Senior Loan Officer Opinion Survey on Bank Lending Practices" (Washington, January)
- Financial Stability Board, 2013, "Peer Review of the United States," Review Report 27 (Basel).
- Financial Stability Oversight Council (FSOC), 2013, *Annual Report* (Washington: U.S. Department of the Treasury).
- Gandrud, Christopher, and Mark Hallerberg, 2014, *Supervisory Transparency in the European Banking Union*, Bruegel Policy Contribution, Issue 14/1.
- Government Accountability Office, 2013, "Financial Stability—Continued Actions Needed to Strengthen New Council and Research Office," Testimony before the Subcommittee on Oversight and Investigations, Committee on Financial Services, House of Representatives, March 14 (Washington: U.S. Government Accountability Office).
- International Monetary Fund, 2009, "Detecting Systemic Risk," Chapter 3 in *Global Financial Stability Report* (Washington).
- , 2010, "United States: Publication of Financial Sector Assessment Program Documentation—Financial System Stability Assessment," IMF Country Report No. 10/247 (Washington: International Monetary Fund).
- , 2011, "Institutional Models for Macroprudential Policy," by Erlend W. Nier, Jacek Osiński, Luis I. Jácome, and Pamela Madrid, *Staff Discussion Note* 11/18. (Washington).
- , 2012, "The Liberalization and Management of Capital Flows—An Institutional View," IMF Policy Paper (Washington).
- , 2013a, "Ireland: Tenth Review Under the Extended Arrangement," IMF Country Report No. 13/163 (Washington).
- , 2013b, "Spain: Financial Sector Reform—Fourth Progress Report," IMF Country Report No. 13/331 (Washington).
- , 2013c, "Portugal: Eighth and Ninth Reviews Under the Extended Arrangement and Request for Waivers and Applicability of End-September Performance Criteria," IMF Country Report No. 13/324 (Washington).
- , 2013d, "Strategy for Fostering a Market for Distressed Debt in Italy, Italy: Selected Issues," IMF Country Report No. 13/299 (Washington).
- , 2013e, "Key Aspects of Macroprudential Policy," Background Paper (Washington).
- , 2014, "Spain: Financial Sector Reform—Final Progress Report," IMF Country Report No. 14/59 (Washington).
- Kim, D. H., and J. H. Wright, 2005, "An Arbitrage-Free Three-Factor Term Structure Model and the Recent Behavior of Long-Term Yields and Distant-Horizon Forward Rates," Finance and Economics Discussion Series (FEDS): 2005-33 (Washington: Federal Reserve Board).
- Lieberman, Ira, Mario Gobbo, William Mako, and Ruth Neyens, 2005, "Recent International Experiences in the Use of Voluntary Workouts under Distressed Conditions," in *Corporate Restructuring: Lesson from Experience*, ed. by Michael Pomerlano and William Shaw (Washington: World Bank).
- Lutkepohl, Helmut, 2007, *New Introduction to Multiple Time Series Analysis* (New York: Springer-Verlag).
- Office of Financial Research (OFR), 2013, *Annual Report* (Washington: U.S. Department of the Treasury).
- Pesaran, H. Hashem, and Yongcheol Shin, 1998, "Generalized Impulse Response Analysis in Linear Multivariate Models," *Economics Letters*, Vol. 58, No. 1, pp. 17–29.
- Piwowar, Michael, 2014, "Advancing and Defending the SEC's Core Mission," speech at the U.S. Chamber of Commerce, Washington (January).
- Sims, Christopher, 1980, "Macroeconomics and Reality," *Econometrica*, Vol. 48, No. 1, pp. 1–48.
- Stein, Jeremy C., 2013, "Overheating in Credit Markets: Origins, Measurements and Policy Responses," Speech at the Federal Reserve Bank of St. Louis (February 7, 2013).
- Wachter, J. A., 2006, "A Consumption-Based Model of the Term Structure of Interest Rates," *Journal of Financial Economics*, Vol. 79, No. 2, pp. 365–99.
- World Bank, 2013, *Doing Business 2014: Understanding Regulations for Small and Medium-Size Enterprises* (Washington: World Bank Group).
- Wright, Jonathan H., 2011, "Term Premia and Inflation Uncertainty: Empirical Evidence from an International Panel Dataset," *American Economic Review*, Vol. 101, No. 4, pp. 1514–34.
- Wu, Tao, forthcoming, "Unconventional Monetary Policy and Long-Term Interest Rates," IMF Working Paper (Washington: International Monetary Fund).

